

# Valuation of intangible assets

205





# **BV 205: Valuation of Intangible Assets**

## **Course Manual**

BV 205: Valuation of Intangible Assets

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## About This Course

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The International Institute of Business Valuers emphasizes that these course materials are not authoritative. They are intended to be used as a foundation for course lectures and discussions, in conjunction with observations by the course instructors.

The valuations process and approaches presented in the course are:

- A. Not the only valuation processes and approaches used by competent valuers;
- B. Not the only way that valuation analysis may be completed;
- C. Not to be taken as a rote process or approach that should be used in any valuation analysis;

Valuations should be based on a full knowledge of the facts and circumstances of the subject company, its industry, and the economic environment. A particular valuation process or approach that is relevant for one company at a particular point in time may not be appropriate for the same or another company at another point in time.

The terminology and standards in this course are based on in this course are based on the International Valuation Standards (“IVS”) published by the International Valuation Standards Council (“IVSC”). The IVSC is an independent organization committed to building the public’s trust in the valuation profession by issuing universal standards and seeking their adoption around the world.

The IVS are referenced from the publication, International Valuation Standards 2017, Copyright © 2017 International Valuation Standards Council. Copies of the publication can be purchased from the following website: <https://www.ivsc.org/news/article/ivsc-launches-new-global-standards-for-valuation-profession>. In contexts where the IVS does not specifically address a valuation topic, references to other standards and sources will be made such as the International Glossary of Business Valuation Terms (“the International Glossary”) from the American Institute of Certified Public Accountants’ (AICPA’s) Statement on Standards for Valuation Services No. 1.

Business valuation, as with many other areas of professional knowledge, is a changing discipline: it is subject to constant evolution, based on analysis of the capital markets, the results of academic research and developing professional best practice. Continuing professional education is an essential component of the professional responsibilities of those engaged in business valuation. This manual includes details of the IVSC core competencies covered by each chapter. The iiBV core courses cover the IVSC competencies other than those which relate to the specific circumstances of the tax and legal regimes in various countries.

## Course Overview

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The valuation methods and assumptions presented in this course are NOT authoritative. They are NOT:

- ─ The only valuation methods that are used by competent appraisers
- ─ The only way the individual methods should or could be done
- ─ Cookbook methods that may be applied to any appraisal

Appraisals should be performed with significant understanding of the terms of the transaction, key market participant information and all other relevant information. A particular valuation method or assumption that is relevant and appropriate at one point in time may not be appropriate at another time or for another transaction.

### Prerequisites

#### Required Prerequisites

- ─ This course is open to all who choose to enroll

#### Suggested Prerequisites

- ─ Degree in finance and/or accounting
- ─ At least two years of business valuation experience
- ─ Six months' or more experience performing or reviewing intangible asset appraisals
- ─ General familiarity with fair value guidance

### Pre-Course Preparation

For detailed insights on intangible asset valuation, students should review:

- ─ AICPA Practice Aid entitled "Assets Acquired to Be Used in Research and Development Activities", Working Draft Released November 18, 2011
- ─ The Appraisal Foundation, Best Practices for Valuations in Financial Reporting: Intangible Asset Working Group, "The Identification of Contributory Assets and the Calculation of Economic Rents", issued May 31, 2010

For insights on relevant rules impacting fair value, students should review:

- International Financial Reporting Standard (“IFRS”) 3, Business Combinations
- Accounting Standard Codification (“ASC”) 805, Business Combinations
- IFRS 13, Fair Value Measurement
- ASC 820, Fair Value Measurement

Mapping of International Financial Reporting Standards and US Generally Accepted Accounting Principles

Fair Value Measurement

- IFRS 13 (May 2011 final release) and ASC 820 (formerly FAS 157)
- Two standards are fully converged – joint presentation by FASB and IASB Valuation Specialists at ASA Fair Value conference in May 2011

Business Combinations

- IFRS 3, ASC 805 (formerly FAS 141R)
- Two standards are highly converged

Intangible Assets

- IAS 38, Intangible Assets
- ASC 360, Property, Plant and Equipment

Goodwill Impairment

- IAS 36, Impairment of Assets (one standard for finite and indefinite lived intangibles)
- ASC 350-20, Intangibles-Goodwill and Other-Goodwill (formerly FAS 142)

Impairment of Finite Lived Assets

- IAS 36, Impairment of Assets
- ASC 360, Property, Plant and Equipment (formerly FAS 144, Accounting for the Impairment and Disposal of Long-Lived Assets)

Reorganizations

- ASC 852-10-45-19, Reorganizations (formerly SOP 90-7, Financial Reporting by Entities in Reorganization Under the Bankruptcy Code)

### Contingencies

- IAS 37, Provisions, Contingent Liabilities and Contingent Assets
- ASC 450, Contingencies (formerly, FAS 5, Accounting for Contingencies) ASC 718, Compensation – Stock Compensation (formerly FAS 123R, Share-Based Payments)

### Income Taxes

- IAS 12, Income Taxes
- ASC 740, Income Taxes (formerly FAS 109, Accounting for Income Taxes)

### Financial Instruments

- IAS 7, Financial Instruments
- ASC 825, Financial Instruments (formerly FAS 159, Fair Value Option)

### Share Based Payments

- IFRS 2, Share-based Payments
- ASC 718, Compensation – Stock Compensation

### Summary of Abbreviated Terms

- MPEEM – Multi-Period Excess Earnings Method
- IPR&D – In-Process Research and Development
- PIGA – Primary Income Generating Asset
- RFR Method – Relief from Royalty Method
- WACC – Weighted Average Cost of Capital
- WARA – Weighted Average Return on Assets
- IRR – Internal Rate of Return

# Chapter 1 - Valuation of Intangible Assets

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## I Chapter 1 Overview

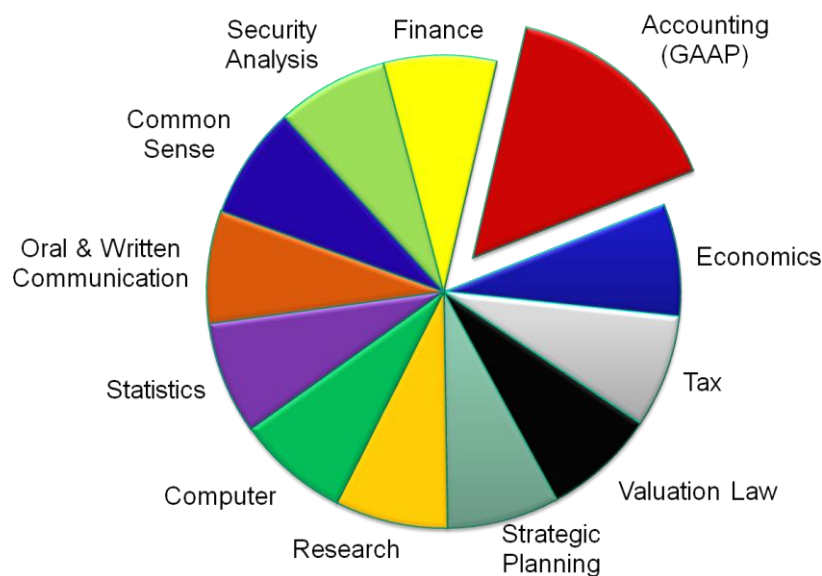
- A) Importance of intangible assets in today's global economy
- B) History and Context of intangible assets
- C) Reasons for Valuing Intangible Assets
- D) International Valuation Standards
- E) Definitions

## II Emphasis on Intangibles – Remarks of Mark W. Olson, Chairman, Public Company Accounting Oversight Board ("PCAOB") on June 7, 2007

- A) "The PCAOB's mandate, of course, is to protect the interests of investors and further the public interest in the preparation of informative, fair, and independent audit reports."
- B) "For financial statements to be useful to investors, they must be both relevant and reliable. They must be relevant in the sense that they give investors the type of information they need in order to decide whether to buy, sell, or hold a company's securities. They must be reliable in the sense that the numbers reported both reflect a company's underlying economic results and are accurate. Auditors play an essential role in assuring that financial statements are both relevant and reliable."
- C) Observation – Fair value estimates: (1) will be audited, (2) are increasingly important in financial statements, and (3) are subject to significant third-party reliance.
- D) "Advocates of fair value accounting maintain that it holds the promise of offering investors more relevant information. In many situations, providing investors with more current values for a company's assets and liabilities will be more useful to investors than providing only historical data. In considering this benefit, however, we must be mindful that any apparent improvement gained by providing investors with more relevant, fair value information, will be lost if that information is not also reliable. In this regard, the increased use of fair value accounting poses a challenge for auditors and the PCAOB."
- E) "I will take a moment to mention a few of the challenges auditors are confronting as issuers transition to fair value. First, valuation requires training, and many auditors may not have extensive training in valuation techniques. Second, auditors should be mindful that financial statement preparers can be biased (even if unknowingly so) in their

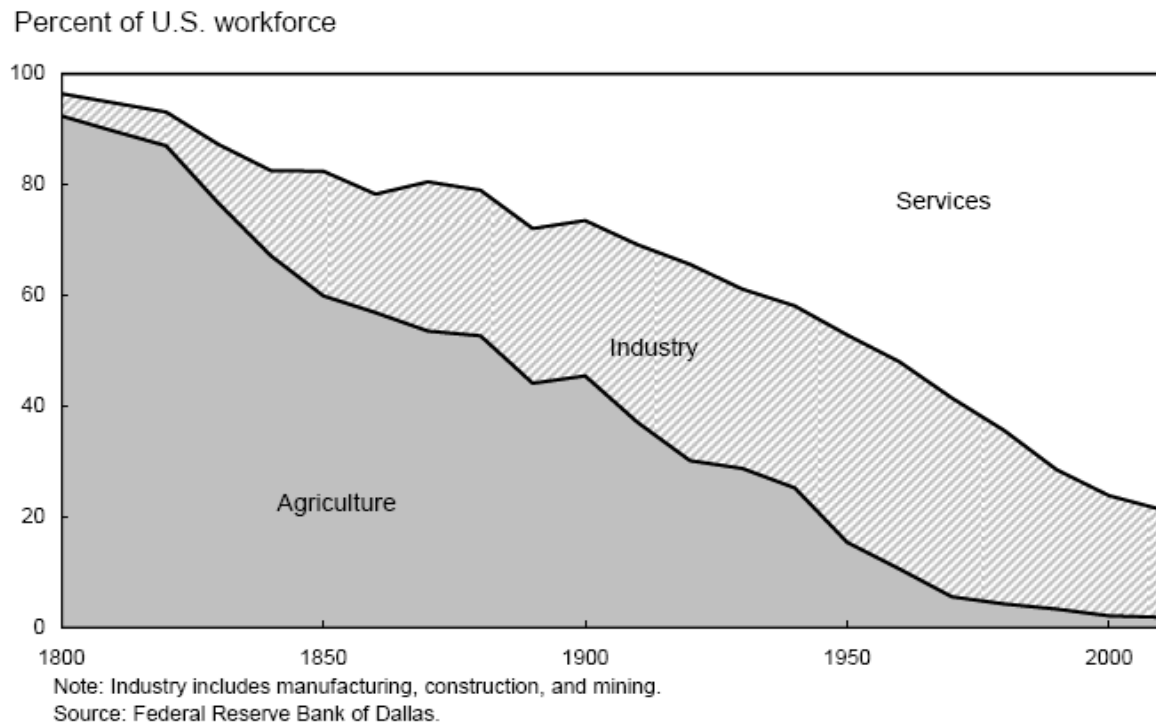
assessments of fair values. As a result of this potential bias, preparers may fail to consider alternative valuation scenarios.”

- F) “In summary, fair value accounting, while presenting the promise of greater relevance, represents an area of potential audit risk. Thus, we are monitoring this area to understand how firms are addressing this potential risk.
- G) “Many of the fair value measurement issues we see at the Commission can be characterized as a subset of one overarching problem: an insufficient understanding of how certain guidance, in current authoritative accounting literature, may impact fair value methodologies and assumptions. Now, when I say an ‘insufficient understanding,’ I mean that preparers of certain fair value measurements (that is, management which may also include a retained valuation specialist), and/or their auditors, were unaware of certain relevant accounting guidance that affected the fair value measurements in question.” (Cheryl K. Tjon-Hing, Valuation Specialist, Office of the Chief Accountant, U.S. Securities and Exchange Commission)
- H) Required skills for a valuation analyst



## I) US Economy has increased focus on Intangibles

## US Economy Has Changed Markedly Over Time



## J) Changing mix of business over time

**Labor force – by occupation (2016)**

– Goods producing, excluding agriculture	- 12.6%
– Services, excluding special industries	- 80.3%
– Agriculture	- 1.5%
– Non-agriculture, self employed	- 5.6%
– Total	- 100.0%

Note: figures exclude the unemployed

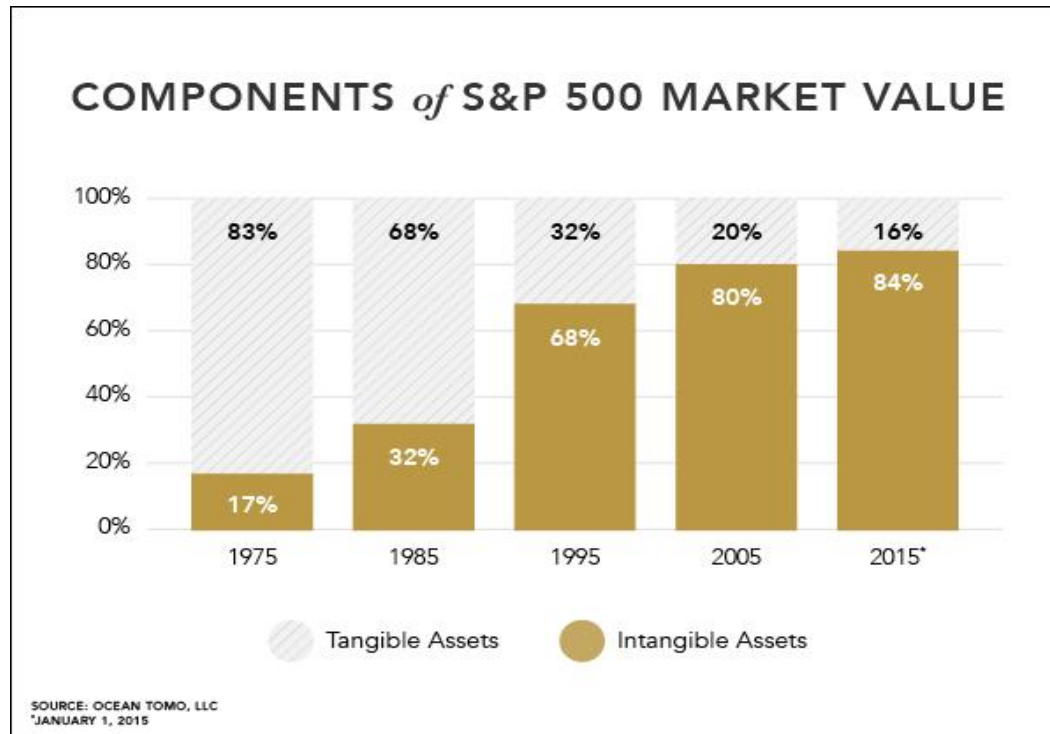
Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment by Major Industry Sector

- Under current accounting rules, many internally created intangible assets are not included on the balance sheet of the owner. Hence, the book value of the firm often does not reflect the true value. Balance sheets are no longer a full measure of the financial position of many firms.

- As intangible assets assume increasing importance in the economy, Price to Book Value multiples are increasing as represented by the S&P 500. Increasing multiples reflect increasing recognition of the importance of intangibles.
  - 1977                      1.2 to 1.0
  - 1980                      1.3 to 1.0
  - 1985                      1.6 to 1.0
  - 1990                      1.8 to 1.0
  - 1995                      3.0 to 1.0
  - 2000                      4.2 to 1.0
  - 2005                      2.9 to 1.0 (Post ASC 805)
  - 2011                      2.3 to 1.0
  - 12/2017                      3.4 to 1.0



## K) Relative Values of Tangible and Intangible Assets



## L) Direct Example of Market Value to Book Value Relationship

Importance of Intangible Assets					
Comparison of Market Cap to Book Value for Selected Companies as of December 31, 2017					
\$ in billions					
Country / Company	Ticker	Business	Market Capitalization at 12/31/2017	Book Value of Equity	Ratio of MC to BVE
<b>China</b>					
Tencent Holdings, Inc.	TCEHY	Internet Software and Services	\$ 489.7	\$ 36.8	13.3
Baidu	BIDU	Internet Software and Services	\$ 81.3	\$ 16.9	4.8
Lenovo	LNVG	Computers and Peripherals	\$ 6.8	\$ 4.2	1.6
<b>Japan</b>					
Sony Corporation	SNE	Electronics, entertainment	\$ 57.0	\$ 30.1	1.9
Toyota Motor Corp.	TM	Automobiles	\$ 186.6	\$ 157.2	1.2
NTT	NTDTY	Telecommunications	\$ 16.7	\$ 7.7	2.2
<b>France (EUR \$Billion)</b>					
Compagnie Generale DES Etablissements Michelin SCA	MGDDY	Auto Components	\$ 25.8	\$ 11.9	2.2
LVMH Moet Hennessy Louis Vuitton	LVMUY	Textiles, Apparel and Luxury Goods	\$ 147.9	\$ 36.3	4.1
Danone	DANOY	Food Products	\$ 52.8	\$ 14.3	3.7
<b>Germany</b>					
Daimler AG	DDAIF	Automobiles	\$ 90.9	\$ 74.1	1.2
Allianz SE	AZSEY	Insurance	\$ 102.9	\$ 80.8	1.3
Bayer AG	BAYRY	Pharmaceuticals	\$ 103.1	\$ 44.0	2.3
<b>United Kingdom</b>					
BAE Systems plc	BAESY	Aerospace and Defense	\$ 24.7	\$ 4.5	5.5
HSBC Holdings plc	HSBC	Commercial Banks	\$ 207.0	\$ 198.7	1.0
GlaxoSmithKline plc	GSK	Pharmaceuticals	\$ 87.5	\$ 6.5	13.5
<b>United States</b>					
Apple Inc.	AAPL	Computers and Peripherals	\$ 860.9	\$ 134.0	6.4
The Coca-Cola Company	KO	Beverages	\$ 195.5	\$ 22.2	8.8
The Walt Disney Company	DIS	Entertainment	\$ 162.1	\$ 41.3	3.9
Book value of equity as of latest quarter end.					
Market cap as of December 31, 2017.					
Source: Capital IQ					

## M) Market Value to Book Value at January 5, 2017 – Key Industry Sectors

Industry Name	Number of firms	PBV	ROE	EV/ Invested Capital	ROIC
Advertising	41	13.98	-1.06%	10.00	71.83%
Aerospace/Defense	96	4.65	24.21%	4.66	31.88%
Air Transport	18	3.19	41.28%	2.03	17.86%
Apparel	58	3.10	14.39%	2.60	14.81%
Auto & Truck	15	1.84	31.51%	1.08	5.87%
Auto Parts	63	2.81	20.38%	2.00	21.28%
Bank (Money Center)	10	1.06	9.46%	1.09	-0.01%
Banks (Regional)	645	1.45	9.03%	1.46	-0.03%
Beverage (Alcoholic)	25	3.70	18.57%	4.16	17.93%
Beverage (Soft)	36	8.18	32.48%	5.12	25.31%
Broadcasting	30	5.45	25.85%	3.07	19.50%
Brokerage & Investment Banking	45	1.37	8.48%	1.14	-0.01%
Building Materials	41	4.04	25.65%	3.26	18.39%
Business & Consumer Services	165	4.36	14.54%	4.62	23.85%
Cable TV	14	2.38	25.41%	2.35	14.66%
Chemical (Basic)	45	2.60	8.84%	1.90	14.85%
Chemical (Diversified)	8	3.10	30.24%	2.52	15.62%
Chemical (Specialty)	100	3.84	11.26%	3.06	17.15%
Coal & Related Energy	38	2.74	-33.82%	1.40	-8.03%
Computer Services	117	4.76	30.69%	4.55	29.66%
Computers/Peripherals	55	4.14	25.00%	3.00	24.35%
Construction Supplies	51	3.42	10.63%	2.26	9.45%
Diversified	24	2.19	10.52%	2.30	8.08%
Drugs (Biotechnology)	426	5.87	16.78%	2.93	15.33%
Drugs (Pharmaceutical)	164	4.14	13.91%	3.23	16.55%
Education	36	1.95	3.10%	2.41	12.03%
Electrical Equipment	119	4.15	14.25%	4.17	21.63%
Electronics (Consumer & Office)	24	3.03	-4.36%	2.21	5.79%
Electronics (General)	164	2.40	9.22%	2.37	10.74%
Engineering/Construction	48	2.00	2.11%	3.10	15.45%
Entertainment	79	3.29	19.56%	4.10	33.15%
Environmental & Waste Services	89	3.70	9.84%	4.20	20.48%
Farming/Agriculture	37	2.25	11.57%	1.55	6.73%
Financial Svcs. (Non-bank & Insurance)	258	1.96	-0.10%	1.06	0.21%
Food Processing	87	3.08	10.91%	3.90	19.45%
Food Wholesalers	16	4.56	12.37%	3.84	20.09%
Furn/Home Furnishings	30	2.94	18.61%	2.65	18.14%
Green & Renewable Energy	25	0.74	-5.99%	0.90	3.78%
Healthcare Products	254	3.63	11.90%	3.97	16.50%
Healthcare Support Services	121	2.82	16.46%	5.90	41.84%
Healthcare Information and Technology	125	3.95	10.83%	4.21	15.81%
Homebuilding	33	1.33	13.12%	1.23	8.71%
Hospitals/Healthcare Facilities	38	3.49	4.97%	1.89	13.44%
Hotel/Gaming	69	3.06	12.73%	2.14	10.71%
Household Products	129	5.22	22.77%	5.13	31.04%
Information Services	64	5.35	20.36%	6.41	36.41%
Insurance (General)	19	1.07	3.39%	1.14	4.37%
Insurance (Life)	22	0.86	8.06%	0.94	7.27%
Insurance (Prop/Cas.)	50	1.44	9.94%	1.44	9.36%
Investments & Asset Management	156	1.63	10.85%	1.66	5.85%
Machinery	127	3.98	13.18%	4.52	23.85%
Metals & Mining	97	2.07	-43.33%	1.55	3.73%
Office Equipment & Services	24	3.88	25.15%	3.02	22.72%
Oil/Gas (Integrated)	7	1.85	0.49%	1.67	-2.19%
Oil/Gas (Production and Exploration)	330	2.20	-39.05%	1.67	-7.17%
Oil/Gas Distribution	78	1.56	1.92%	1.40	7.37%
Oilfield Svcs/Equip.	148	1.95	-8.40%	1.94	4.38%
Packaging & Container	26	3.70	14.71%	2.75	14.74%
Paper/Forest Products	23	1.68	29.90%	1.60	7.37%
Power	68	1.93	4.37%	1.47	7.32%
Precious Metals	109	1.40	-9.47%	1.32	6.43%
Publishing & Newspapers	37	1.46	3.74%	2.05	13.42%
R.E.I.T.	238	2.03	8.56%	1.44	3.01%
Real Estate (Development)	18	1.34	9.17%	1.22	1.58%
Real Estate (General/Diversified)	11	2.11	1.85%	1.83	5.13%
Real Estate (Operations & Services)	54	2.13	11.25%	2.09	11.22%
Recreation	66	3.86	18.30%	2.89	16.44%

Industry Name	Number of firms	PBV	ROE	EV/ Invested Capital	ROIC
Reinsurance	3	1.06	9.41%	1.06	9.15%
Restaurant/Dining	86	21.76	39.80%	4.24	15.88%
Retail (Automotive)	25	6.11	35.64%	2.38	10.97%
Retail (Building Supply)	6	17.44	59.16%	4.95	25.61%
Retail (Distributors)	88	3.13	13.95%	2.24	12.84%
Retail (General)	19	3.21	16.91%	2.30	11.57%
Retail (Grocery and Food)	14	4.01	23.74%	2.08	8.10%
Retail (Online)	57	9.95	15.04%	8.11	17.86%
Retail (Special Lines)	108	3.43	15.51%	2.48	11.98%
Rubber& Tires	4	1.76	10.76%	1.30	17.60%
Semiconductor	80	3.44	14.24%	2.35	12.88%
Semiconductor Equip	45	3.74	15.32%	3.01	15.89%
Shipbuilding & Marine	11	1.34	-6.56%	1.36	4.43%
Shoe	10	5.48	24.95%	4.82	22.14%
Software (Entertainment)	13	3.92	13.95%	5.63	25.89%
Software (Internet)	297	4.15	9.62%	3.74	15.00%
Software (System & Application)	236	5.21	15.00%	3.91	15.20%
Steel	38	2.50	-17.15%	2.04	1.02%
Telecom (Wireless)	17	1.93	-3.91%	1.41	2.44%
Telecom. Equipment	107	2.82	14.19%	2.41	15.53%
Telecom. Services	67	3.07	19.89%	2.52	15.82%
Tobacco	22	22.99	-14.86%	10.20	60.73%
Transportation	17	6.66	30.14%	3.88	23.86%
Transportation (Railroads)	7	3.19	16.27%	2.23	12.51%
Trucking	30	3.26	15.68%	1.73	7.84%
Utility (General)	18	2.10	9.57%	1.58	6.81%
Utility (Water)	22	2.70	10.38%	1.93	6.10%
<b>Total Market</b>	<b>7330</b>	<b>2.68</b>	<b>10.38%</b>	<b>1.83</b>	<b>6.10%</b>
<b>Total Market (without financials)</b>	<b>6100</b>	<b>3.22</b>	<b>10.24%</b>	<b>2.49</b>	<b>11.60%</b>

#### N) Purchase Allocation of Wyeth, Inc. (Pfizer, Inc. Form 10-K - \$ in mm)

Working capital, excluding inventories	\$16,342
Inventories	8,388
Property, plant and equipment	10,054
<b>Identifiable intangible assets, excluding in-process research and development</b>	<b>37,595</b>
<b>In-process research and development</b>	<b>14,918</b>
Other noncurrent assets	2,394
Long-term debt	(11,187)
Benefit obligations	(3,211)
Net tax accounts	(24,773)
Other noncurrent liabilities	(1,980)
<b>Total identifiable net assets</b>	<b>48,612</b>
<b>Goodwill</b>	<b>19,954</b>
Net assets acquired	68,566
Less: Amounts attributable to non-controlling interests	(330)
<b>Total consideration transferred</b>	<b>68,236</b>

## O) 2017 Houlihan Lokey Survey of Purchase Price Allocations by US Firms in 2016

- 455 transactions with sufficient disclosure
- Intangibles include:
  - Developed technology
  - IPR&D
  - Customer-related assets
  - Trademark and trade name
  - Others (non-competes, licenses, core deposits)
    - Source: Houlihan Lokey, 16th *Annual Purchase Price Allocation Study*, November **2017**

## Allocation of Intangible Assets vs. Goodwill

Summary Allocation Percentages  
2016 Study

\$ in millions

	Count	Purchase Consideration		Intangible Assets, % of PC				Goodwill, % of PC			
		Median	Mean	Low	High	Median	Mean	Low	High	Median	Mean
All Industries	455	\$131	\$1,423	0%	173%	33%	35%	0%	96%	36%	36%
Aerospace, Defense & Government	26	244	863	15%	94%	29%	34%	1%	66%	37%	37%
Consumer, Food & Retail	74	98	838	2%	96%	36%	37%	1%	92%	35%	36%
Energy	8	269	3,180	14%	100%	30%	38%	8%	63%	34%	36%
Financial Institutions	65	561	2,346	0%	49%	1%	7%	0%	73%	5%	12%
Healthcare	91	57	1,787	4%	100%	50%	50%	0%	96%	37%	37%
Industrials	48	110	1,322	2%	83%	33%	34%	1%	73%	45%	43%
Infrastructure Services & Materials	20	146	449	1%	63%	28%	27%	6%	54%	28%	30%
Technology	116	60	1,177	8%	173%	35%	37%	5%	86%	50%	48%
Telecom	7	495	1,918	8%	77%	48%	42%	16%	39%	22%	25%

- In 2016, the median EV/EBITDA transaction multiple was 12.2x, and the median allocation of PC to goodwill was 36.5%.
- In 2015, the median EV/EBITDA transaction multiple was 12.5x, and the median allocation of PC to goodwill was 38.3%.

## P) Competitive Advantage of Firms is Increasingly Driven by Intangibles

- “Wealth and growth in today's economy are driven primarily by intangible (intellectual) assets. Physical and financial assets are rapidly becoming commodities, yielding at best an average return on investment. Abnormal profits, dominant competitive positions, and sometimes even temporary monopolies are achieved by the sound deployment of intangibles, along with other types of assets.”

- *Intangibles Management, Measurement and Reporting*, Baruch Lev Brookings Institution Press, Washington D.C. 2001, p. 9.

#### Q) Intangible Assets Can Have Unlimited Scale

- “Physical, human, and financial assets are rival assets in the sense that alternative uses compete for the services of these assets. In particular, a specific deployment of rival assets precludes them from simultaneously being used elsewhere.”
- “In contrast, intangible assets are, in general, nonrival; they can be deployed at the same time in multiple uses, where a given deployment does not detract from the usefulness of the asset in other deployments.”
- “A major contributor to the nonrivalry of intangibles is the fact that these assets are generally characterized by large fixed (sunk) cost and negligible marginal (incremental) cost.”
- “Intangibles are often characterized by increasing returns to scale. The usefulness of the ideas, knowledge, and research embedded in a new drug or a computer operating system is not limited by the diminishing returns to scale typical of physical assets.”
  - *Intangibles Management, Measurement and Reporting*, Baruch Lev Brookings Institution Press, Washington D.C. 2001, p. 22.
- “Knowledge is cumulative, with each idea building on the last, whereas machines deteriorate and must be replaced. In that sense, every knowledge-oriented dollar makes a productivity contribution on the margin, while perhaps three-quarters of private investment in machinery and equipment is simply to replace depreciation.” Grossman and Helpman (1994, p.31)
  - *Intangibles Management, Measurement and Reporting*, Baruch Lev Brookings Institution Press, Washington D.C. 2001, p. 25.

### I History and Context

#### A) Historical Overview

- One of the first references to intellectual property can be traced back to Venice, Italy in 1474. The Venetian government provided for inventors to have any workable invention registered with the state. In return, the inventor would be able to prevent anyone from copying or selling the invention for a period of 20 years. After the 20-year period, anyone could use the invention. [World Intellectual Property Organization website]

- In the United States, the foundation for the statutory law surrounding patents, copyrights and trademarks can be traced to the powers given to Congress in Article I, Section 8 of the U.S. Constitution. The Constitution states,
- “Congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”
- The U.S. government granted the first patent to Samuel Hopkins of Philadelphia for “making pot and pearl ashes,” a cleaning formula used in making soap, in 1790.
- One of the first contributions to methodology for valuing intangible assets was civil litigation related to infringement on intellectual property. While certain types of intellectual property are protected through registration with the government, the only way to enforce those rights is through civil litigation.
  - The Patent Statute states,  
“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”  
[35 U.S.C. § 284]

#### B) The Formula Method

- The 18<sup>th</sup> Amendment to the U.S. Constitution in 1919 made the manufacture, sale or transportation of alcohol illegal. This is often referred to as “Prohibition”. Prohibition led to the recognition of the value of the intangible assets of a business. Due to Prohibition, the IRS issued Committee on Appeals and Review Memorandum 34 (ARM 34). ARM 34 provided a formula approach to compensate owners for the lost goodwill of businesses closed due to Prohibition.
- The formula recognized that business value potentially derives from working capital, fixed assets and intangible assets.
- The formula also recognized that the different asset categories also had different levels of risk related to each and therefore required different discount rates (rates of return for each).

- The Internal Revenue Code of the United States also provides guidance on the valuation of intangible assets. Tax guidance includes a variety of elements including the Code, Regulations, Revenue Rulings and other forms of guidance.
- Revenue Ruling 68-609 was issued to clear up misunderstandings regarding the use of the formula method in the valuation of goodwill.
- RR 68-609 suggested stratified rates of return and provided an example with specific discount rates.
- The Formula Method evolved with improved information on methods for determining rates of return into the Multi-Period Excess Earnings Method (MPEEM). While valid for valuing several types of intangible assets, the MPEEM is infrequently used in valuing total businesses since methods of direct valuation are available.

#### C) Purchase Price Allocations for Tax Reporting Purposes

- Prior to the enactment of Internal Revenue Code Section 197 (IRC§197) (and for certain intangible asset excluded from IRC§197), intangible assets acquired as part of a business acquisition could be amortized for tax reporting purposes if the intangible had:
  - (a) An ascertainable value separable from goodwill, and;
  - (b) A determinable useful life
- Many valuation techniques used in valuing intangible assets and estimating useful lives were developed and litigated with the IRS prior to the enactment of IRC§197.

#### D) Valuation of Intangible Assets for Tax Reporting Purposes

- Prior to the enactment of IRC§197, the valuation of intangible assets was a frequent area of dispute between the IRS and various corporate taxpayers that had recently made an acquisition.
- Under prior tax law, intangible assets with an ascertainable useful life could be valued separate from goodwill. As a result, this value would be amortized for tax reporting purposes resulting in reduced taxable income and tax expense.

- Given complexities of the issues, IRC§197 was enacted which resulted in 15-year tax amortization for all intangible asset value (see IRC§197 for exceptions for certain types of intangibles and industries).

#### E) In-Process Research and Development

- In 1999, the Securities and Exchange Commission raised concerns that corporate earnings were being managed by classifying a significant portion of the price of an acquired entity as in-process research and development (IPR&D), which is immediately written off in a business combination and accounted for as a purchase.
- According to the then SEC chief accountant Lynn Turner, “unreasonable valuations of IPR&D appear to be caused frequently by management's treatment of attributes of capitalized assets as if they were attributes of IPR&D. A common practice problem is the bifurcation of purchased rights to technology into two categories: the immediate value of any presently completed product, and the future value of the right to enhance or embellish that product. The latter right was deemed to be IPR&D because that right will be used in research and development.”
- This scrutiny resulted in an increased focus on valuations of intangible assets and additional accounting guidance including the American Institute of Certified Public Accountants Accounting & Valuation Guide: *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices, and Pharmaceutical Industries*. Latest Final Document released in 2013.

#### F) Key Developments Involving Fair Value Estimates for Non-Financial Assets and Liabilities

- 1998 – IPR&D valuations receive increased scrutiny by the SEC and AICPA. Various valuations revised and financial statements restated.
- 2001 – FAS 141, *Business Combinations* (now ASC 805), dramatically changes accounting for intangible assets
- 2001 – FAS 142, *Goodwill and Other Intangible Assets* (now ASC 350), provides guidance on impairment of goodwill and other indefinite lived intangible assets
- 2002 – FAS 144, *Accounting for the Impairment or Disposal of Long-Lived Assets* (now ASC 360), provides guidance on the impairment of finite lived intangible (and tangible assets)
- 2006 – FAS 157, *Fair Value Measurement* (now ASC 820), significantly enhances and standardizes valuation concepts and fair value measurement under US GAAP



G) Key Developments Involving Fair Value Estimates for Non-Financial Assets and Liabilities

- 2008 – FAS 141R, *Business Combinations*, (now ASC 805) replaced FAS 141 and included further changes impacting intangible assets
- 2009 – Accounting Standards Codification reorganized GAAP pronouncements into a consistent structure
- 2011 – FASB adds qualitative assessment for goodwill impairment assessment to ASC 350
- 2011 and 2013 – Paul Beswick speeches on valuation profession
- 2014 – PCC simplification of goodwill impairment testing for private companies
- IFRS changes in accounting standards are somewhat similar to those occurring under U.S. GAAP

H) Key Developments Involving Fair Value Estimates for Non-Financial Assets and Liabilities

- 2014 – PCC simplification of business combinations requirements to exclude customer-related intangibles and non-competition agreements
- 2015 – FASB revises ASC 350 goodwill impairment testing. Step two eliminated
- 2015 – Efforts to enhance quality of financial reporting valuations begin
- 2017 – Mandatory Performance Framework and CEIV designation released

II Reasons for Valuing Intangibles

- Compliance
  - Financial Reporting
  - Taxation
    - 1) Estate and Gift
    - 2) Transfer Pricing
    - 3) Ad Valorem
- Transactions
  - Licensing
  - Financing
  - Transaction Support

- Litigation
  - Marital Dissolution
  - Infringement
  - Bankruptcy

#### A) Financial Reporting

- For financial reporting, fair value accounting requires the valuation of intangible assets acquired as part of a business acquisition. The value not only needs to be known at the date of acquisition, but at other times to test for possible impairment of the value of the asset.
- The guidance for valuing intangible assets for financial reporting is continuously evolving and may vary between International Financial Reporting Standards (IFRS) and US Generally Accepted Accounting Principles (GAAP) and other accounting standards.
- ASC 805, *Business Combinations* and IFRS 3, *Business Combinations*, address allocation of all assets purchased (including goodwill and other intangible assets) in business combinations.
- ASC 350, *Intangibles–Goodwill and Other* and IAS 36, *Impairment of Assets*, relate to impairment of goodwill and other indefinite lived intangible assets.
- ASC 360, *Property, Plant & Equipment*, relates to impairment testing of long lived assets (both tangible and intangible) with definite lives.
- IAS 38, *Intangible Assets*, provides guidance on impairment of intangibles

#### B) Taxation of Intercompany or International Transfers

- Transfers between related parties are scrutinized by international, federal and state taxing authorities as these transfers could potentially result in the inappropriate transfer of taxable income and tax liabilities from one tax jurisdiction to another.
- The valuation of the transferred asset and the determination of appropriate intercompany charges can be crucial in supporting the reasonableness of those transactions before taxing authorities.
- It is important to be familiar with accepted methods and terminology specific to each taxing authority.
  - (a) Internal Revenue Code Section 482 (IRC§482) relates to transfer pricing.
  - (b) Regarding intangible assets IRC§482 states, “In the case of any transfer of intangible property, the income with respect to such transfer or license shall be commensurate with the income attributable to the intangible.”

- (c) Many other countries as well as many states in the US have adopted rules and regulations similar to IRC§482.

#### C) Taxation of Intercompany or International Transfers

- International transfer pricing rules outside of the U.S. vary.
  - (a) The OECD Guidelines (Organisation for Economic Co-operation and Development) has issued transfer pricing guidelines (OECD Guidelines) that have been adopted in some form by more than 50 countries (including the US)
  - (b) Local Country Rules –Many countries (including those that follow the OECD framework) have issued transfer pricing regulations with country-specific requirements
  - (c) US transfer pricing regulations under Section 482 are among the most voluminous and comprehensive in the world
- “In particular, valuations of intangibles contained in purchase price allocations performed for accounting purposes are not determinative for transfer pricing purposes and should be utilised in a transfer pricing analysis with caution and careful consideration of the underlying assumptions.”  
OECD Revised discussion draft on transfer pricing aspects of intangibles, 30 July 2013

#### D) Ad Valorem or VAT Taxes

- It is possible to separate the intangible asset value from the assessable (taxable) real property value (physical assets) for use in establishing the appropriate assessed value for property taxes.
  - (a) In certain jurisdictions, property taxes are based solely on the value of tangible assets.
  - (b) Also, tax rates may differ between real property and personal property.
- Certain types of real property may include intangible asset values as well as the value of the land and building.
  - (a) Health care entity values may include trademarks, patient lists, certificates of need, and other intangibles.
  - (b) Restaurant values may include significant contribution from franchise rights (i.e., McDonalds).
  - (c) Hotels.

#### E) Inheritance Taxes

- Individuals may own intangible assets such as patents, trademarks, copyrights, film rights, etc.

- Since many intangible assets may survive beyond the life of the individual, the fair market values of these intangible assets may require valuation for estate and/or gift tax purposes.

#### F) Licensing

- The licensing of the rights to an intangible asset provide the owner of that asset the ability to expand the use of the intangible and maximize returns in a manner that they may not otherwise be able to achieve.
- Through licensing, the owner grants certain of his/her rights to another in return for monetary compensation.
- The beginning process to the licensing negotiations may involve consideration of that intangible asset's value, since an alternative to licensing is selling the intangible asset.

#### G) Financing

- Intangible assets make up a large component of the value of a business.
- Today, many banks and other financial institutions are increasingly willing to make loans based on the increased relative certainty of cash flows of businesses with valuable intangible assets.
- Intangible assets, such as trademarks, broadcasting rights, licenses, or other transferable intangible assets, are increasingly being specifically pledged as collateral for borrowing.

#### H) Transaction Support

- Intangible assets are most frequently transacted as a component of a sale of a business enterprise. However, there are increasing instances of sales of specific intangible assets.
- Individual transactions involving intangibles are being facilitated by a growing number of groups dedicated to bringing together intangible asset owners (often universities performing research) with buyers who can use those assets in the creation of commercially viable products or services.
- In transactions involving businesses, intangible assets are increasingly major components of the value. Establishing their value can be an important if not critical part of the due diligence process. It not only allows for consideration of the effects on value, but for determining the tax and financial reporting effects of the transaction on a post-transaction basis.

#### I) Marital Dissolution

- Business owners or individuals may own intellectual property. If there is a divorce, these assets become part of the marital property to be divided in a marital dissolution.

- Celebrity divorces in particular may have significant intellectual property.

J) Infringement Damages

- Contractual or legal rights related to intangible assets may be infringed resulting in lost profits or diminution in value.
- The value of the intangible asset may be the basis for establishing damages caused by the infringement.

K) Bankruptcy

- Intangible assets (whether pledged as collateral or not) may need to be valued in the event of a bankruptcy action.
- The value of these intangible assets is necessary for presenting these assets to the court as part of the plan of reorganization or as payment to parties to the bankruptcy action.
- Accounting Standards Codification 852, *Reorganizations*. (often referred to as “fresh-start accounting”) addresses valuation requirements for firms that are exiting bankruptcy proceedings. ASC 852 requires valuation of the intangible assets, just like a business combination. The bankruptcy action is effectively an acquisition of the firm by the creditors and any other parties that receive equity in the recapitalized firm.

### III International Valuation Standards

#### A) Section 210 Intangible Assets

- In 2017, the International Valuation Standards Council issued updated International Valuation Standards. In addition to general standards covering all valuations, the IVS included Section 210 *Intangible Assets*.
- Contents of Section 210 include:
 

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### IV Definitions

#### A) Intangible Assets

- International Accounting Standard 38, paragraph 8 defines intangible assets as “identifiable non-monetary asset without physical substance.”
  - ASC 350, *Intangibles-Goodwill and Other* defines intangible assets as “Assets (not including financial assets) that lack physical substance. (The term intangible assets is used in this Statement to refer to intangible assets other than goodwill.)”
  - IVSC GN 4 *Valuation of Intangible Assets* paragraph 3 defines an intangible asset as “A non-monetary asset that manifests itself by its economic properties. It does not have physical substance but grants rights and economic benefits to its owner or the holder of an interest.
  - The International Glossary of Business Valuation Terms (IGBVT)<sup>1</sup> defines intangible assets as “non-physical assets such as franchises, trademarks, patents, copyrights, goodwill, equities, mineral rights<sup>2</sup>, securities and contracts (as distinguished from physical assets) that grant rights and privileges, and have value for the owner.”
  - Note difference in treatment of goodwill between ASC 350 and IGBVT.
    - <sup>1</sup> IGBVT 2001 is a glossary of business valuation terms prepared jointly by the AICPA, ASA, CICBV, IBA, and NACVA.
    - <sup>2</sup> EITF 04-02 states that mineral rights are a tangible asset.

B) Intangible Asset Definition Pursuant to IRC 482, Allocation of Income and Deductions Among Taxpayers

- Section 482 of the U.S. Internal Revenue Code (also known as “Transfer Pricing”): For purposes of Section 482, an intangible is an asset that comprises any of the following items and has substantial value independent of the services of any individual:
  - (a) Patents, inventions, formulae, processes, designs, patterns, or know-how
  - (b) Copyrights and literary, musical, or artistic compositions
  - (c) Trademarks, trade names, or brand names
  - (d) Franchises, licenses, or contracts
  - (e) Methods, programs, systems, procedures, campaigns, surveys, studies, forecasts, estimates, customer lists, or technical data
  - (f) Other similar items where value is derived not from physical attributes but from intellectual content or other intangible properties

C) Intellectual Property (“IP”) – Creations of the mind – creative works or ideas embodied in a form that can be shared or can enable others to recreate, emulate, or manufacture them.

- Four ways to protect intellectual property include:
  - (a) Patent,
  - (b) Trademark,
  - (c) Copyright, or
  - (d) Trade secret.

D) Patent – A patent is a document which describes an invention which can be manufactured, used, and sold with the authorization of the owner of the patent. An invention is a solution to a specific technical problem. A patent document normally contains at least one claim, the full text of the description of the invention, and bibliographic information such as the applicant’s name. The protection given by a patent is limited in time (generally 15 to 20 years from filing or grant). It is also limited territorially to the country or countries concerned.

- A patent is an agreement between an inventor and a country. The agreement permits the owner to exclude others from making, using or selling the claimed invention. [World Intellectual Property Organization (WIPO) PatentScope Glossary]
- What does it protect
  - Composition of matter (pharmaceuticals)
  - Apparatus

- Composition of matter (materials)
- Method of Use
- Manufacturing process
- Formulation
- Key valuation questions
  - Does it protect characteristics perceived to be of value by consumers?
  - How broadly does it exclude others? (how easily is it “avoided”)

#### E) Copyright

- A form of protection provided to the authors of “original works of authorship” including literary, dramatic, musical, artistic, and certain other intellectual works, both published and unpublished. [U.S. Library of Congress, Circular 1]
- The 1976 Copyright Act generally gives the owner of a copyright the exclusive right to reproduce the copyrighted work, to prepare derivative works, to distribute copies or phonorecords (recordings) of the copyrighted work, to perform the copyrighted work publicly, or to display the copyrighted work publicly.
- The copyright protects the form of expression rather than the subject matter of the writing. For example, a description of a machine could be copyrighted, but this would only prevent others from copying the description; it would not prevent others from writing a description of their own or from making and using the machine.
- “Copyrights protect original works of authorship fixed in any tangible medium of expression.”
- U.S. Copyright Act lists eight protected categories:
  - (a) Literary works
  - (b) Musical works
  - (c) Dramatic works
  - (d) Pantomimes and choreographic works
  - (e) Pictorial, Graphic and sculptural works
  - (f) Motion Picture and other audiovisual works
  - (g) Sound recordings
  - (h) Architectural works

Source: Litigation Services Handbook 5<sup>th</sup> edition: *The Role of a Financial Expert*, Chapter 18, John Wiley & Sons



## F) Trademarks and Trade Secrets

- Trademarks – Protect words, names, symbols, sounds, or colors that distinguish goods and services from those manufactured or sold by others and to indicate the source of the goods. Trademarks, unlike patents, can be renewed forever as long as they are being used in commerce. [USPTO Glossary]
- Trade secret – Information, including a formula, pattern, compilation, program, device, method, technique or process that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy. [Section 1(4) of the Model Uniform Trade Secrets Act]. In the U.S., trade secrets are governed by state laws. [USPTO Glossary]

## G) Trade Dress and Service Mark

- Trade dress – A product's design, product packaging, color, or other distinguishing nonfunctional element of appearance. [USPTO Glossary]
- Service mark – A word, name, symbol or device that indicates the source of the services and to distinguish them from the services of others. A service mark is the same as a trademark except that it identifies and distinguishes the source of a service rather than a product. The terms "trademark" and "mark" are often used to refer to both trademarks and service marks. [USPTO Glossary]
  - Fair Value in A Financial Reporting Context

## H) Fair Value in a Financial Reporting Context

- Fair Value (Accounting Definition under IFRS 13 and ASC 820):
  - (a) "Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." (IFRS 13 and ASC 820-10-20).
  - (b) "An orderly transaction is a transaction that assumes exposure to the market for a period prior to the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities . . . ." (IFRS 13 and ASC 820-10-20)
  - (c) "The transaction to sell the asset or transfer the liability is a hypothetical transaction at the measurement date, considered from the perspective of a market participant that holds the asset or owes the liability. Therefore, the objective of a fair value measurement is to determine the price that would be received to sell the asset or transfer the liability at the measurement date (an exit price)." (IFRS 13 and ASC 820-10-35-3)
  - (d) Fair value was previously thought to be an *entry price* (buy-side); what a company would pay to acquire an asset or pay to settle a liability.

- (e) A fair value measurement is for a particular asset or liability. Therefore, the measurement should consider attributes specific to the asset or liability, for example, the condition and/or location of the asset or liability and restrictions, if any, on the sale or use of the asset at the measurement date. (ASC 820 and IFRS 13)
- (f) “The asset or liability might be a standalone asset or liability (for example, a financial instrument or an operating asset) or a group of assets and/or liabilities (for example, an asset group, a reporting unit, or a business).” (IFRS 13 and ASC 820)
- (g) It is essential to view fair value from the point of view of market participants rather than a specific entity. Market participants are unrelated parties, knowledgeable of the asset or liability given due diligence, willing and able to transact for the asset/liability, and may be hypothetical. (IFRS 13 and ASC 820)
- Fair Value Under IFRS, *Fair Value Measurement, International Financial Reporting Standard 13 (paragraph IN6)*:
  - This IFRS defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (an exit price). The definition of fair value retains the exchange price notion in the definition of fair value used previously (i.e. the amount for which an asset could be exchanged, a liability settled, or an equity instrument granted could be exchanged, between knowledgeable, willing parties in an arm’s length transaction).
- I) Fair Value in a Legal Context
  - In a legal setting, fair value determinations for intangible assets are limited. Celebrity goodwill is one area of legal dispute. Personal or professional goodwill of a business is another area.
  - Often used in dissenting stockholder actions and shareholder oppression cases.
  - The definition varies from jurisdiction to jurisdiction as specified in state statutes and developed in the state’s case law precedents.
  - In some jurisdictions, the fair value of a stock interest may exclude valuation discounts that might be appropriate in estimating the FMV of the interest. The exclusion of these discounts may reflect “just” compensation to the party bringing the suit for the oppression of the controlling shareholders rather than the FMV of the interest. As such, this “standard” of value is legal community-based, not economically-based.
- J) Fair Market Value
  - Fair Market Value: Fair market value (FMV) is the most common standard of value used in business appraisals today, particularly for U.S. tax-related appraisals. Two definitions are classically given to this standard:

- The price at which the property would change hands between a willing buyer and a willing seller, when the former is not under any compulsion to buy and the latter is not under any compulsion to sell; both parties having reasonable knowledge of relevant facts. [Revenue Ruling 59-60]
- The price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller acting at arm's-length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts. (Note: In Canada, the term "price" should be replaced with the term "highest price.") [IGBVT]

K) Intrinsic Value and Investment Value

- Intrinsic Value

- (a) The value that a prudent investor considers, on the basis of an evaluation or available facts, to be the "true" or "real" value that will become the market value when other investors reach the same conclusion. [IGBVT]
- (b) What the value should be based on analysis of all the fundamental factors inherent in the business or the investment. Intrinsic value does not consider extreme aspects of market conditions and behavior (such as observed during the peak of the 1998-2001 bubble).
- (c) Does NOT reflect current market but expectation of what the market will eventually realize as value.

L) Investment Value - The value to a particular investor based on individual investment requirements and expectations. [Note: in Canada, the term used is "Value to the Owner."] [IGBVT]

M) Goodwill in Multiple Contexts

- The term Goodwill is defined by different bodies in ways that differ significantly. These vary depending on the defining body and range from a distinct set of undefined intangibles to all intangible assets of a business.
  - (a) ASC 350 – provides a definition of goodwill separate from other intangible assets. It defines goodwill as “the excess of the cost of an acquired entity over the net of the amounts assigned to assets acquired and liabilities assumed. The amount recognized as goodwill includes acquired intangible assets that do not meet the criteria in ASC 805, *Business Combinations*, for recognition as an asset apart from goodwill.”
  - (b) IGBVT – defines goodwill as “that intangible asset arising as a result of name, reputation, customer loyalty, location, products, and similar factors not separately identified.”
  - (c) IRS Glossary to Publication 551 – defines goodwill as “the value of a trade or business based on expected continued customer patronage due to its name, reputation, or any other factor.”

## N) Premise of Value

- Premise of Value – an assumption regarding the most likely set of transactional circumstances that may be applicable to the subject valuation; e.g., going concern, liquidation. [IGBVT]
- There are two basic premises of value:
  - (a) Going concern value and
  - (b) Liquidation value.
- Under each premise of value, there exist certain other assumptions regarding the purpose of the valuation that affect the choice of the standard of value.

## O) Revised Definition of a Business under ASC 2017-01

- On January 5, 2017, the Financial Accounting Standards Board (FASB) issued a new Accounting Standards Update (ASU) No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. The definition of a business affects many areas of accounting (e.g., acquisitions, disposals, goodwill impairment, consolidation).
- There are a number of accounting differences between business combinations and asset acquisitions. These include the recognition of goodwill and in-process research and development (IPR&D) intangible assets in business combinations and the divergent treatment of deferred income taxes, contingencies, transaction costs, among others.
- Impact of the revised guidance is that fewer transactions that were previously classified as acquisitions of a business and accounted for pursuant to ASC 805 will now be considered asset acquisitions. ASU 2017-01 is expected to reduce the number of transaction in the real estate and pharmaceutical and life sciences industries that will qualify as business combinations.
- IFRS is also working on a project to revise the definition of a business. This project was still in process when this module was finalized.
- ASU 2017-01 introduces an initial required screen that, if met, eliminates the need for further assessment. Companies will first consider whether substantially all of the fair value of gross assets acquired is concentrated in a single asset (or a group of similar assets). If so, the assets acquired would not represent a business. If not, then further analysis is required.
- If the first screen is not met, to be considered a business, an acquisition would have to include an input and a substantive process that together significantly contribute to the ability to create outputs
- ASU 2017-01 narrows the definition of “outputs” to be consistent with how it is described in ASC 606, *Revenue from Contracts with Customers*

## P) Revised Definition of a Business under IFRS

- The IASB decided in October 2015 to issue narrow scope amendments aimed at resolving the difficulties that arise when an entity is determining whether it has acquired a business or a group of assets. An exposure draft was published on 28 June 2016 with comments requested by 31 October 2016. Final amendments are expected in H1 2018.
- A business consists of inputs and processes applied to those inputs that have the ability to contribute to creating outputs, while a business need not include all of the inputs or processes that the seller used in operating that business and need not have an output. However, if there is no output, the set is a business only if it includes an organised workforce with the necessary skills, knowledge, or experience to perform an acquired substantive process that is critical to the ability to develop or convert another acquired input into output.
- If substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets, then the set of activities and assets is not a business.
- The exposure draft notes that IFRS 3 is the result of a joint project between the IASB and the FASB and the business combinations requirements under IFRSs and US GAAP are substantially converged. However, even though the FASB (that had received similar feedback) and the IASB have worked together to respond to problems with the definition of a business, the IASB decided to expose amendments to the application guidance of IFRS 3 that are different from the wording exposed by the FASB in November 2015 although the results are expected to be substantially the same.

## Q) Liquidation Value

- Liquidation Value – The net amount that would be realized if the business is terminated and the assets are sold piecemeal. Liquidation can be either "orderly" or "forced." [IGBVT]
- Orderly Liquidation Value – Liquidation value at which the asset or assets are sold over a reasonable period of time to maximize proceeds received. [IGBVT]
- Forced Liquidation Value – Liquidation value, at which the asset or assets are sold as quickly as possible, such as at an auction. [IGBVT]
- The liquidation value and going concern value of specific intangible assets may differ dramatically depending on the characteristics of the intangible asset and the facts and circumstances unique to the business. For a going concern, the liquidation value of an intangible asset would often be significantly reduced (or \$0) as the value of intangibles can often best be recognized as a part of an ongoing business enterprise.

R) Replacement and Reproduction Cost (Cost Approach Definitions)

- Replacement Cost New – the current cost of a similar new property having the nearest equivalent utility to the property being valued [IGBVT]
- Reproduction Cost New – the current cost of an identical new property [IGBVT]

## Chapter 2 – Accounting Overview

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### I Topics

- A) Key Accounting Releases
- B) Financial Statement Impacts
- C) Identification of Intangible Assets
- D) ASC 820 and IFRS 13
- E) Other Issues
- F) FASB Valuation Resource Group
- G) Developments in Financial Reporting
- H) Treatment of Internally-generated Intangible Assets

### I) Accounting Requirements on Fair Value

### II Key Accounting Releases

#### A) Fair Value Measurement

- ASC 820 (formerly FAS 157) and IFRS 13
- Two standards are highly converged – joint presentation by FASB and IASB Valuation Specialists at ASA Fair Value conference in May 2011

#### B) Business Combinations

- ASC 805 (formerly FAS 141R), IFRS 3
- Two standards are highly converged

#### C) Intangible Assets

- ASC 360, *Property, Plant and Equipment*
- IAS 38, *Intangible Assets*

#### D) Goodwill Impairment

- IAS 36, Impairment of Assets (one standard for finite and indefinite lived intangibles)
- ASC 350-20, Intangibles - Goodwill and Other (formerly FAS 142)

## E) Impairment of Finite Lived Assets

- IAS 36, Impairment of Assets
- ASC 360, Property, Plant and Equipment (formerly FAS 144, Accounting for the Impairment and Disposal of Long-Lived Assets)

## F) Reorganizations

- ASC 852-10-45-19, Reorganizations (formerly SOP 90-7, Financial Reporting by Entities in Reorganization Under the Bankruptcy Code)

## III Goals

## A) More relevant financial statements due to shift from historical cost to fair value based statements (see comments in Section 1)

- Financial performance (Income Statement)
- Financial condition (Balance Sheet)

## B) Give investors more information about a company's intangible value

## IV In-Process Research &amp; Development ("IPR&amp;D") Valuation Restatements

## A) Overview

- In-process research & development (IPR&D) is a complex valuation area.
- Limited guidance in the valuation of IPR&D led to disagreements regarding the value of IPR&D and the development of an AICPA Practice Aid and other guidance to assist valuation professionals and accountants in the valuation of IPR&D.
- AICPA Accounting & Valuation Guide entitled *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices, and Pharmaceutical Industries* was issued by the IPR&D Taskforce of the AICPA in 2001 to provide valuation guidance. Updated Final Document issued by AICPA in 2013.
- The Practice Aid was developed by a group including:
  - (a) Accountants
  - (b) Valuation professionals
  - (c) Observers from the SEC and FASB

## B) Background on Accounting Treatment

- IPR&D is development stage technology that meets certain accounting requirements.



- Prior to ASC 805 (FAS 141R in 2007), the fair value of IPR&D was written off at acquisition. Under 141R, value is capitalized. Written off if determined to be without value or amortized when put in use.
  - (a) Write-off of IPR&D reduces the asset base of the buyer.
  - (b) Intangibles value subject to future amortization would be reduced.
  - (c) Results in:
    - Improved future earnings (less amortization expense and reduced risk of future impairment charges), and
    - Increased return on assets (fewer assets on the balance sheet).
- Due to limited valuation guidance and other factors, valuation professionals and management overvalued IPR&D in the past.

#### C) FASB, SEC and AICPA Actions

- Lack of valuation guidance on IPR&D and divergence in practice led to action by the FASB, SEC and AICPA.
- 1998 statement by SEC Chief Accountant Lynn Turner on “excess write-offs of In-process Research and Development costs.”
- Comments by SEC Chairman Arthur Levitt regarding earnings management including IPR&D related charges.
- Various actions were associated with greater scrutiny of IPR&D valuations:
  - (a) In 1998, SEC stated concerns regarding IPR&D valuations and write-offs.
  - (b) In 1999, SEC contacted 150 companies with significant IPR&D write-offs.
  - (c) AICPA cautioned its members on audit risks of improperly recorded IPR&D.

#### D) Comments

- SEC staff “identified circumstances where many of the facts appear at odds with the fair value assigned to that asset as part of the purchase price allocation” (Turner 1998a).
- “. . . Management’s considerations in negotiating the acquisition failed to support, and sometimes directly contradicted, its assertion in the financial statements that the R&D project was the most valuable acquired asset. Presentations made by the target companies and members of management to the Boards of Directors inconsistent with assumptions used to value the IPR&D. In some acquisitions, management had made little effort to investigate the R&D project that it later valued so highly. There appeared to be a complete disconnect between management’s business judgments and the appraisals it was tendering to the independent accountant in support of the accounting.”

- “ . . . Abuses of the valuation of IPR&D also are expected. This trend of larger write-offs could undermine public confidence in financial statements and presents significant challenges for the accounting profession.”

#### E) Changes in Value

- Prior valuations of IPR&D were revised and financial results of the buyer were restated.
- In a study by Dowdell and Press of 98 restatements in 1998 and 1999, the mean change in IPR&D as a result of restatements were as follows:
  - Initial IPR&D of 66% of acquired assets
  - Restated IPR&D of 25% of acquired assets
  - Decrease in value of IPR&D of 62%
- Source: Thomas D. Dowdell, Eric Press, “The impact of SEC scrutiny on financial statement reporting of in-process research and development expense,” *Journal of Accounting and Public Policy*, 2004.

#### F) Balance Sheets Before and After Restatement

- The average balance sheets of the 98 firms are presented below.

<u>Asset</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
<b>IPR&amp;D</b>	<b>66%</b>	<b>25%</b>	<b>(41%)</b>
Goodwill	11%	39%	28%
Other intangibles	13%	27%	14%
Tangible assets	6%	7%	1%
Other assets	3%	1%	(2%)
Total	100%	100%	

Source: Dowdell and Press

- Houlihan Lokey 2014 *Purchase Price Allocation Study* indicated 40 of 536 transactions reported IPR&D. Median allocation to IPR&D was 6%, mean was 26% and high was 100% for transactions with IPR&D recorded.

### V Financial Statement Impact

#### A) A Potentially Material Impact on Financial Results and Stock Price

- Most long-lived intangible assets acquired (excluding goodwill and some trade names as examples) are amortized to the income statement for financial reporting purposes. (Many internally developed intangible assets are generally not capitalized onto balance sheet but outflows are immediately expensed.)

- Amortization expense on acquired intangible assets reported as a component of operating expense.
- Goodwill impairment charges are expensed as SG&A expense.
- Increases in value of intangible assets are:
  - (a) NOT recognized in the income statement, or
  - (b) NOT reflected as increases of asset values on the balance sheet.

#### B) Financial Reporting After a Business Combination

- Determine the total fair value of the purchase price.
  - (a) Focus on fair value of acquired company's equity and debt, (Market Value of Invested Capital, or MVIC).
  - (b) Under ASC 805, purchase price excludes deal-related costs, such as restructuring and transaction costs (these costs are not part of the fair value of the business and, by themselves, do not represent assets (i.e., future economic benefits).
  - (c) Current liabilities added to MVIC of acquired company to arrive at its total asset base.
- Allocate purchase price to identifiable assets and liabilities rigorously:
  - (a) Tangible assets and all liabilities
  - (b) Identifiable intangible assets – finite life (e.g., royalty and license agreements, contracts, patents, etc.)
  - (c) Identifiable intangible assets – indefinite life (e.g., Federal Communication Commission ("FCC") licenses, certain trade names, etc.)
  - (d) Goodwill for the excess
- Net income and EPS typically reduced by the stepped up depreciation of tangible assets and amortization of intangible assets with a defined life (same as before).

#### C) Three Fundamental Questions for Intangible Assets in a ASC 805 (FAS 141) Context

- Unlike most other intangible assets, goodwill is not amortized for financial reporting purposes but is tested for impairment periodically. This important difference leads to several important issues.
- What intangible assets should be recognized apart from goodwill?
  - Primarily an accounting question
- How much value should be ascribed to these?

- (a) A valuation question
- (b) The economic life of an intangible asset is a valuation question.
- Over what period and method should the intangible value be amortized?
  - The amortization (accounting) life is an accounting issue determined by management and audited/reviewed by the auditor.

#### D) Example

- Target Company was acquired for \$100 million by a publicly held firm. For simplicity, assume the buyer did not have any other operations or assets beyond cash used to make the acquisition.
- Assume two different allocations of purchase price and note the differing financial results:
  - (a) Scenario 1 – Allocation with significant amortizable intangibles
  - (b) Scenario 2 – Allocation with reduced value to amortizable intangible and increased allocation to residual goodwill
- The following slides present some of the differing financial statement impacts of the differing allocations between amortizable and non-amortizable intangibles.

#### E) Two Different Allocations

COMPARATIVE INCOME STATEMENTS - DIFFERENT INTANGIBLE ASSET ALLOCATIONS									
(\$ in 000's)									
		Significant Customer Value		Significant Goodwill Value					
	Book Value	Fair Value	Amort Period	Fair Value	Amort Period				
Assets									
Net Working Capital (Excl. Excess Cash)	5,000	5,000	N/A	5,000	N/A				
Fixed Assets	10,000	10,000	5	10,000	5				
Trade Name	-	5,000	Indefinite	5,000	Indefinite				
Existing Customer Relationships	-	50,000	5	20,000	4				
Assembled Workforce	-	3,000	Indefinite	10,000	Indefinite				
Goodwill, Excluding Assembled Workforce	-	27,000	Indefinite	50,000	Indefinite				
Total Purchase Price		100,000		100,000					
Calculation of Annual Amortization Expense									
		Calculated Fair Value		Projected Amortization Expense Each Year					
				1	2	3	4	5	6
Existing Customers - Significant Value		50,000		10,000	10,000	10,000	10,000	10,000	-
Existing Customers - Low Value		20,000		5,000	5,000	5,000	5,000	-	-
Difference		30,000		5,000	5,000	5,000	5,000	10,000	-

## F) Comparative Income Statement Data

COMPARATIVE INCOME STATEMENTS - DIFFERENT INTANGIBLE ASSET ALLOCATIONS							
		Future Projected Fiscal Years					
(\$ in 000s)		1	2	3	4	5	6
<b>EBITDA</b>							
Significant Amortizable Intangibles	(\$)	25,000	27,500	30,250	33,275	36,603	40,263
Significant Allocation to Goodwill	(\$)	25,000	27,500	30,250	33,275	36,603	40,263
<b>Difference</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>EBIT</b>							
Significant Amortizable Intangibles	(\$)	14,000	16,500	19,250	22,275	25,603	39,263
	(%)	14.0%	15.0%	15.9%	16.7%	17.5%	24.4%
Significant Allocation to Goodwill	(\$)	19,000	21,500	24,250	27,275	35,603	39,263
	(%)	19.0%	19.5%	20.0%	20.5%	24.3%	24.4%
<b>Difference</b>		<b>(5,000)</b>	<b>(5,000)</b>	<b>(5,000)</b>	<b>(5,000)</b>	<b>(10,000)</b>	<b>-</b>
<b>NET INCOME</b>							
Significant Amortizable Intangibles	(\$)	5,600	7,225	9,013	10,979	13,142	25,521
	(%)	5.6%	6.6%	7.4%	8.2%	9.0%	15.8%
Significant Allocation to Goodwill	(\$)	10,600	12,225	14,013	15,979	23,142	25,521
	(%)	10.6%	11.1%	11.6%	12.0%	15.8%	15.8%
<b>Difference</b>		<b>(5,000)</b>	<b>(5,000)</b>	<b>(5,000)</b>	<b>(5,000)</b>	<b>(10,000)</b>	<b>-</b>

**Notes:**

(%) represents margin as a percentage of revenues

## G) Future Income Statements – Significant Amortizable Intangibles

**PROJECTED INCOME STATEMENTS - SIGNIFICANT ALLOCATION TO AMORTIZABLE INTANGIBLE ASSETS**  
**Appraisal Format - Depreciation and Amortization Presented Separately**

		December 31					
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenue (1)		\$ 100,000	\$ 110,000	\$ 121,000	\$ 133,100	\$ 146,410	\$ 161,051
Cost of Goods Sold	50.0%	50,000	55,000	60,500	66,550	73,205	80,526
Gross Profit		50,000	55,000	60,500	66,550	73,205	80,526
SG&A Expenses	25.0%	25,000	27,500	30,250	33,275	36,603	40,263
EBITDA		25,000	27,500	30,250	33,275	36,603	40,263
Depreciation		1,000	1,000	1,000	1,000	1,000	1,000
Amortization		10,000	10,000	10,000	10,000	10,000	0
Operating Income (EBIT)		14,000	16,500	19,250	22,275	25,603	39,263
Interest Expense, Net		0	0	0	0	0	0
Income Before Taxes		14,000	16,500	19,250	22,275	25,603	39,263
Tax Expense		8,400	9,275	10,238	11,296	12,461	13,742
Net Income		\$ 5,600	\$ 7,225	\$ 9,013	\$ 10,979	\$ 13,142	\$ 25,521
<b>Net Income Margin</b>		5.6%	6.6%	7.4%	8.2%	9.0%	15.8%

**Notes:**

Tax expenses reflects assumption of a stock acquisition. No tax amortization of acquired intangibles.

Tax expense is based on taxable income rather than reported pretax book income.

Firm continues to make capital expenditures, hence, depreciation stable over years of projection.

**Calculation of Tax Expense:**

EBITDA		25,000	27,500	30,250	33,275	36,603	40,263
Depreciation		1,000	1,000	1,000	1,000	1,000	1,000
Tax Amortization		0	0	0	0	0	0
Taxable Income		24,000	26,500	29,250	32,275	35,603	39,263
Tax Expense at 35%		8,400	9,275	10,238	11,296	12,461	13,742

## H) Future Income Statements – Low Allocation to Amortizable Intangibles

**PROJECTED INCOME STATEMENTS - SIGNIFICANT ALLOCATION TO NON-AMORTIZABLE INTANGIBLE ASSETS**  
**Appraisal Format - Depreciation and Amortization Presented Separately**

		December 31					
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenue (1)		\$ 100,000	\$ 110,000	\$ 121,000	\$ 133,100	\$ 146,410	\$ 161,051
Cost of Goods Sold	50.0%	50,000	55,000	60,500	66,550	73,205	80,526
Gross Profit		50,000	55,000	60,500	66,550	73,205	80,526
SG&A Expenses	25.0%	25,000	27,500	30,250	33,275	36,603	40,263
EBITDA		25,000	27,500	30,250	33,275	36,603	40,263
Depreciation		1,000	1,000	1,000	1,000	1,000	1,000
Amortization		5,000	5,000	5,000	5,000	0	0
Operating Income (EBIT)		19,000	21,500	24,250	27,275	35,603	39,263
Interest Expense, Net		0	0	0	0	0	0
Income Before Taxes		19,000	21,500	24,250	27,275	35,603	39,263
Tax Expense		8,400	9,275	10,238	11,296	12,461	13,742
Net Income		\$ 10,600	\$ 12,225	\$ 14,013	\$ 15,979	\$ 23,142	\$ 25,521
<b>Net Income Margin</b>		10.6%	11.1%	11.6%	12.0%	15.8%	15.8%

**Notes:**

Tax expenses reflects assumption of a stock acquisition. No tax amortization of acquired intangibles.

Tax expense is based on taxable income rather than reported pretax book income.

Firm continues to make capital expenditures, hence, depreciation stable over years of projection.

**Calculation of Tax Expense:**

EBITDA		25,000	27,500	30,250	33,275	36,603	40,263
Depreciation		1,000	1,000	1,000	1,000	1,000	1,000
Tax Amortization		0	0	0	0	0	0
Taxable Income		24,000	26,500	29,250	32,275	35,603	39,263
Tax Expense at 35%		8,400	9,275	10,238	11,296	12,461	13,742

## I) Typical Income Statement Format –Low Allocation to Amortizable Intangibles

**PROJECTED INCOME STATEMENTS - SIGNIFICANT ALLOCATION TO NON-AMORTIZABLE INTANGIBLES**  
**Typical Annual Report Format - Depreciation and Amortization Included in SG&A Expense**

	December 31					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenue	\$100,000	\$110,000	\$121,000	\$133,100	\$146,410	\$161,051
Cost of Goods Sold	50,000	55,000	60,500	66,550	73,205	80,526
Gross Profit	50,000	55,000	60,500	66,550	73,205	80,526
SG&A Expenses	31,000	33,500	36,250	39,275	37,603	41,263
Operating Income (EBIT)	19,000	21,500	24,250	27,275	35,603	39,263
Interest Expense, Net	0	0	0	0	0	0
Income Before Taxes	19,000	21,500	24,250	27,275	35,603	39,263
Tax Expense	8,400	9,275	10,238	11,296	12,461	13,742
Net Income	\$10,600	\$12,225	\$14,013	\$15,979	\$23,142	\$25,521
Net Income Margin	10.6%	11.1%	11.6%	12.0%	15.8%	15.8%

## J) Impact of Different Allocations

- As previously demonstrated, different allocations of purchase price will have differing impacts on future financial results.
- Scenario 1 – Allocation with significant amortizable intangibles
  - Higher amortization expense
  - Lower risk of impairment
  - Less potential earnings volatility
- Scenario 2 – Allocation with reduced value to amortizable intangibles and increased allocation to residual goodwill
  - Lower amortization expense
  - Higher risk of impairment
  - Greater potential earnings volatility

## VI Identification of Intangible Assets

- A) There are many types of intangible assets.
- B) A typical acquisition of a business enterprise and allocation of purchase price may involve half a dozen or more intangibles identified and valued.
- C) Certain intangibles dictated by industry:
- Patents/products in pharmaceutical / life sciences industries

- FCC licenses in broadcast industry
- Core deposits in banking industry
- Web site members valued in Internet industry
- Production processes and patents valued for manufacturing companies

#### D) Definitions and Characteristics of an Asset

- FASB Concepts Statement No. 6, *Elements of Financial Statements*, paragraph 25 defines an asset as follows:
  - Assets are probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events.
- An asset has three essential characteristics:
  - (a) It embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly to future net cash inflows.
  - (b) A particular entity can obtain the benefit and control others' access to it.
  - (c) The transaction or other event giving rise to the entity's right to or control of the benefit has already occurred.
- To identify an asset, ask yourself the following:
  - Is there a future economic benefit? If so, to which entity does it belong? What made it an asset of that entity?

#### E) Recognition of Acquired Intangible Assets

- An intangible asset is identifiable (thus, should be recognized separate from goodwill per ASC 805-20-25) if either:
  - (a) Contractual-legal, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.
  - (b) Separable, that is, capable of being separated or divided from the acquirer and sold, transferred, licensed, rented, or exchanged either individually or together with a related contract, asset, or liability regardless of whether the entity intends to do so.
- Identifiable intangible assets can be measured and recognized.
- Section 2.2.3 of the document entitled *The Valuation of Customer-Related Assets* prepared by a Working Group of The Appraisal Foundation indicates ". . . the Working Group believes the criteria for recognition is intended to be broad."



#### F) Reporting Intangible Assets Separate from Goodwill

- If it arises from Contractual or Legal Rights
  - (a) Contractual
    - Customer contracts
    - Rental contracts
    - Other
  - (b) Legal
    - Patents
    - Trademarks
    - Computer software
- If it can be sold, transferred, licensed, rented or exchanged separately (either individually or in conjunction with other related assets)
  - Technology
  - Customer list
  - Databases
  - Process know-how
  - Not workforce

#### G) Separability Criterion

- An intangible asset is separable, if it is:
  - (a) Capable of being separated or divided from the acquired entity and
  - (b) Capable of being sold, transferred, licensed, rented, or exchanged
  - (c) Even if those exchange transactions are infrequent and regardless of whether the acquiring entity intends to sell, lease or otherwise exchange that asset

#### H) Intangibles Acquired in a Business Combination

- Which criteria are appropriate for the following intangible assets acquired in a business combination? Please fill in the blanks.

	Contractual - Legal	Separable
Trademarks / Trade Names		
Non-competition Agreements		
Customer Lists		
Customer Contracts		
Non-contractual Customer Relationships		
Walk-in customers		
Licensing / Royalty Agreements		
Lease Agreements		
Franchise Agreements		
Broadcast Rights		
Databases		
Workforce (mandated as goodwill)		
Employment Contracts		

#### I) Intangibles Acquired in a Business Combination

- Which criteria relate to determination of the following as intangible assets acquired in a business combination?

	Contractual - Legal	Separable
Trademarks / Trade Names	Y	Y
Non-competition Agreements	Y	—
Customer Lists	—	Y
Customer Contracts	Y	Y
Non-contractual Customer Relationships	—	Y
Walk-in customers	—	—
Licensing / Royalty Agreements	Y	Y
Lease Agreements	Y	—
Franchise Agreements	Y	—
Broadcast Rights	Y	Y
Databases	—	Y
Workforce (mandated as goodwill)	—	—
Employment Contracts	Y	—

#### J) Key Groupings – US GAAP

- Intangible assets are presented in five primary groups see ASC 805, including:
  - Marketing-related
  - Customer-related

- (c) Artistic-related
- (d) Contract-based
- (e) Technology-based

K) Key Groupings – IVSC Guidance Note 4

- Paragraph 3.2 of GN 4 indicates that intangibles may be contractual or non-contractual.
- GN 4 lists four principal classes of intangibles.
  - (a) Marketing-related
  - (b) Customer or supplier-related
  - (c) Technology-related
  - (d) Artistic-related
- US GAAP and IFRS provide more detailed information on types of intangibles.
- ASC 805 and IFRS 3, *Business Combinations*, includes the four groups above plus a fifth grouping – contract-based intangibles.

L) Marketing Related Intangible Assets

- Marketing-related intangible assets are primarily used in the marketing or promotion of products or services. The non-exhaustive listing includes:
  - (a) Trademarks, trade names, service marks, collective marks, certification marks
  - (b) Trade dress (unique color, shape, or package design)
  - (c) Newspaper mastheads
  - (d) Internet domain names
  - (e) Non-competition agreements
    - Source: ASC 805 and IFRS 3 (non-exhaustive list).
    - IVSC, GN 4 paragraph 3.3 and ASC 805 (non-exhaustive list).

M) Customer-Related Intangible Assets

- Customer-related intangible assets related directly to the customer including:
  - (a) Customer lists
  - (b) Order or production backlog

(c) Customer contracts and related customer relationships

(d) Noncontractual customer relationships

- Source: ASC 805 and IFRS 3 (non-exhaustive list).
- See also IVSC GN4, paragraph 3.4

N) Artistic-Related Intangible Assets

- Artistic-related intangible assets are those intangible assets of an artistic nature reflecting the creativity of the creator. These can include such items as:
  - (a) Plays, operas, ballets
  - (b) Books, magazines, newspapers, other literary works
  - (c) Musical works such as compositions, song lyrics, advertising jingles
  - (d) Pictures, photographs
  - (e) Video and audiovisual material, including motion pictures, music videos, television programs
    - Source: ASC 805 and IFRS 3 (non-exhaustive list).
    - IVSC GN 4, paragraph 3.6. provides a similar but abbreviated listing of artistic-related intangibles.

O) Contract-Based Intangible Assets

- Contract-based intangible assets are established by contracts and include:
  - (a) Licensing, royalty, standstill agreements
  - (b) Advertising, construction, management, service or supply contracts
  - (c) Lease agreements
  - (d) Construction permits
  - (e) Franchise agreements
  - (f) Operating and broadcast rights
  - (g) Servicing contracts such as mortgage servicing contracts
  - (h) Employment contracts
  - (i) Use rights such as drilling, water, air, timber cutting, and route authorities
    - Source: ASC 805 and IFRS 3 (non-exhaustive list).

#### P) Technology-Based Intangible Assets

- Technology-based intangible assets protect or support technology and include:
  - Patented technology
  - Computer software and mask works
  - Unpatented technology
  - Databases, including title plants
  - Trade secrets, such as secret formulas, processes, recipes
    - Source: ASC 805 and IFRS 3 (non-exhaustive list).
    - IVSC GN 4, paragraph 3.5. provides a similar listing of technology related intangibles.

#### Q) Examples of Assets that are not Recognized Apart from Goodwill

- A non-exhaustive list of intangible assets subsumed into goodwill includes:
  - (a) Customer service capability
  - (b) Unidentifiable walk-in customers
  - (c) Presence in geographic markets or locations
  - (d) Non-union status or strong labor relations
  - (e) Ongoing training or recruiting programs
  - (f) Outstanding credit ratings
  - (g) Access to capital markets
  - (h) Favorable government relations
  - (i) Assembled workforce

#### R) Consideration of Complementary Assets

- Complementary assets may be grouped into a single asset if:
  - (a) Individual assets are identified as complementary, *and*
  - (b) Individual fair values are not reliably measurable, *and*
  - (c) Assessed useful lives are similar.
- Grouping of assets as complementary may be fairly limited as useful lives may often differ – trademark (indefinite) vs. packaging design (finite).

- “The terms brand and brand name, often used as synonyms for trademarks and other marks, are general marketing terms that typically refer to a group of complementary assets such as a trademark (or service mark) and its related trade name, formulas, recipes, and technological expertise.” ASC 805.

#### S) Customer-Related Intangibles

- Detailed discussion of the identification of customer-related intangibles is beyond the scope of this course.
- ASC 805 / IFRS 3 provide guidance.
- A customer list consists of information about customers such as their name and contact information. A customer list also may be in the form of a database that includes other information about the customers such as their order history and demographic information. A customer list does not generally arise from contractual or other legal rights. (ASC 805)
- ASC 805 and IFRS 3 indicate a customer relationship exists between an entity and its customer if:
  - (a) The entity has information about the customer and has regular contact with the customer, and
  - (b) The customer has the ability to make direct contact with the entity. Relationships may arise from contracts (such as supplier contracts and service contracts).
- Customer relationships may arise through means other than contracts, such as through regular contact by sales or service representatives.

#### T) Criteria and Types of Customer-Related Intangibles – Example

A McDonald's restaurant in a large city has a number of customers who habitually purchase meals.

Is this a recognizable customer relationship?

#### **Customer base**

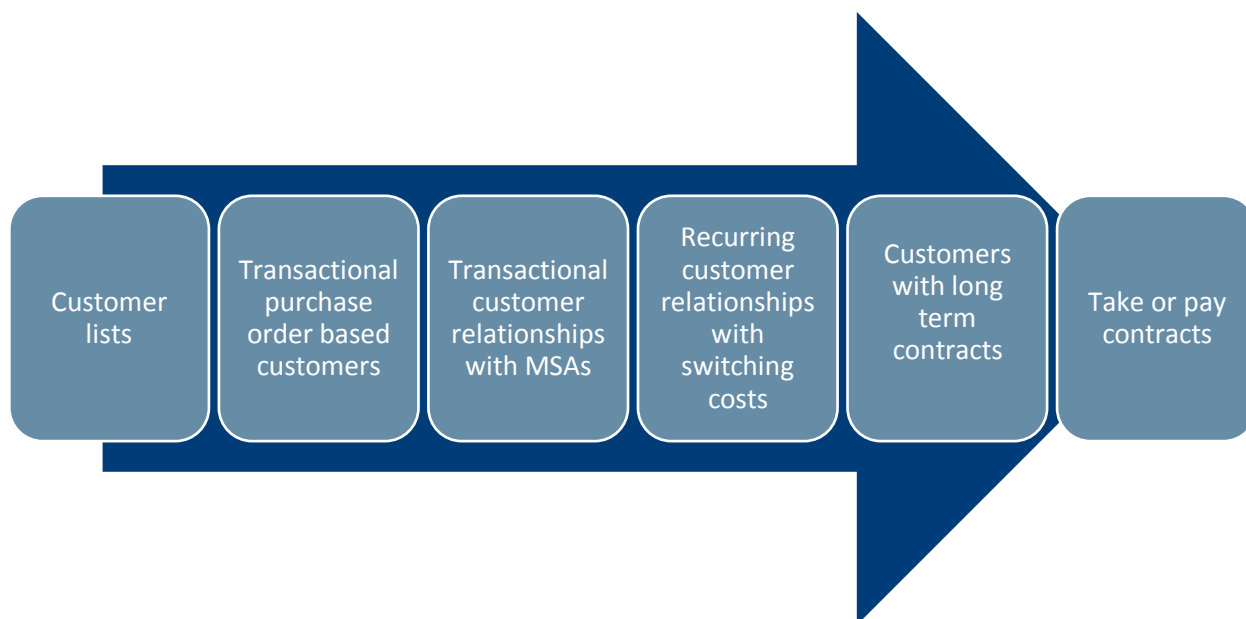
Individual customers not known by entity →  
no communication possible

**Not** an identifiable intangible asset  
according to ASC 805

## U) Types of Customer-Related Intangible Assets

- Order or production backlog:
  - Arises from contracts or specific sales orders
  - Time, volume, price and quality are fixed
  - Meets the contractual-legal criterion for recognition
- Customer contracts and related customer relationships:
  - Time volume, price and quality are stipulated
  - Meets the contractual-legal criterion for recognition
- Non-contractual customer relationships:
  - Absence of legal rights to protect or control the relationship
  - Does it meet the separability criterion? Transactions (acquisition of the business provide evidence of separability)

## V) Types of Customer-Related Intangible Assets



## W) Accuracy of Valuation Requires Diligence by the Valuation Professional

- Understand transaction and its value drivers:
  - (a) Press releases
  - (b) Board presentations
  - (c) Purchase agreement and supporting schedules

- (d) Due diligence reports
- (e) Discussions with management
- (f) Perceived value per acquiring company's management
- (g) Analyst reports
- (h) Offering memorandum / related materials
- (i) Other

#### X) Intangibles Specifically Listed

- FASB and IASB listing of identifiable intangible assets (see ASC 805 and IFRS 3) can be used as a “checklist” when assessing a company's financial statements.
  - (a) Effectively creates a presumption that any “checklist” intangibles at an acquired firm should be separately identified in a purchase price allocation.
  - (b) Registrants should conduct a rigorous process to identify intangibles and document why certain intangibles do not exist in a particular transaction.
  - (c) Maintain sufficient documentation in the event of any auditor and/or SEC challenges.

#### Y) Contingencies

- Contingencies are existing conditions, situations, or a set of circumstances involving uncertainty as to possible gains or losses to an entity that will ultimately be resolved when one or more future events occur or fail to occur. (ASC 805)
- ASC 805 expanded the recognition of contingencies.
- General rules on reporting contingencies follow:
  - (a) Contractual – record at fair value
  - (b) Noncontractual – It must be “more likely than not” that the contingency gives rise to an asset or liability.
- Valuation of contingent purchase price and assets and liabilities is discussed in detail in BV 302, *Special Topics in Valuation of Intangible Assets*.

#### Z) Valuation of Assets the Acquirer Intends Not to Use

- ASC 805 and IFRS 13 provide that an asset should be recorded at its fair value regardless of how (or whether) the acquirer intends to use it. Valuation should reflect market participant perspective.
  - (a) Example 1 – Target is acquired and has a trade name that was used previously. Buyer intends to phase out the name in the near future. Research suggests that



other strategic buyers would also phase out the trade name. In this case, the valuation of the trade name with an assumption of discontinued use would seem appropriate.

- (b) Example 2 – A drug manufacturer acquires a firm with a broad portfolio of FDA approved products. One product competes directly with an existing product of the acquirer. Acquirer does not intend to use this product. Research indicates that buyer and target are the only firms with products in this category. This would suggest the product should be valued without the assumption of a phase-out.

#### AA) Frequently Identified Intangible Assets – 2012 to 2014

Frequently Identified Intangible Assets 2012 – 2014						
	Count, % of Sample			Median % of PC		
	2014	2013	2012	2014	2013	2012
Developed Technology	40%	49%	44%	9%	14%	14%
Change	-9%	5%	-13%	-5%	0%	2%
IPR&D	7%	11%	14%	6%	15%	7%
Change	-3%	-3%	-3%	-8%	8%	2%
Customer-related Assets	58%	61%	57%	14%	11%	14%
Change	-3%	4%	-22%	4%	-3%	-2%
Trademarks and Trade Names	45%	48%	45%	4%	3%	3%
Change	-3%	4%	-14%	1%	0%	0%

## VII ASC 820 and IFRS 13

### A) Introduction

- Both ASC 820 and IFRS 13, *Fair Value Measurement*, establishes a framework for “how” to apply fair value concepts; however, it does not provide further guidance on “what” to fair value or “when.”
- Over 60 FASB pronouncements require or allow FV measurement.
- Many of these deal with financial and assets other than intangible assets which are the focus of this course. Much of IFRS 13 and ASC 820 relate to financial assets rather than intangible assets.
- Prior to ASC 820 / IAS13, there was diversity in practice as to what represents “fair value” for financial reporting purposes.

- (a) Is fair value the same as the transaction price?

(b) Various accounting standards defined “fair value” differently.

#### B) ASC 820 – Definition/Concept of Fair Value

- Fair value is defined in ASC 820 and IFRS 13 as “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (ie an exit price).”
  - (a) Fair value is now an exit price (sell-side), which means the price a company would receive if they were to sell the asset in the marketplace or paid if they were to transfer the liability.
  - (b) Fair value was previously thought to be an *entry price* (buy-side), which is generally what a company would pay to acquire an asset or would receive to assume the liability.
  - (c) The exit price for an asset or liability is conceptually different from its transaction price (an entry price). While exit and entry price may be identical in many situations, the transaction price is no longer presumed to represent the fair value of an asset or liability on its initial recognition.
- It is essential to view fair value from the point of view of market participants rather than a specific entity. Market participants are unrelated parties, knowledgeable of the asset or liability given due diligence, willing and able to transact for the asset/liability, and may be hypothetical.
- The transaction to sell the asset or transfer the liability is a hypothetical transaction as of the measurement date and assume an appropriate period of exposure to the market, such that the transaction is considered orderly.

#### C) Market Participants

- Market participants are buyers and sellers in the principal or most advantageous market for the asset or liability.
- Market participants are:
  - (a) Unrelated (i.e., independent) to the reporting entity
  - (b) Knowledgeable about factors relevant to the asset or liability and the transaction
  - (c) Financial and legal ability to transact
  - (d) Willing to transact without compulsion
- Market participants may be either strategic or financial buyers.

#### D) Key Elements of a Transaction

- Key elements of a transaction:
  - (a) Transaction between unrelated parties

- (b) Transaction is orderly and not carried out under duress
- (c) Does not include transaction costs (not inherent part of an asset)
- (d) Price available in principal (or most advantageous) market
- Principal Market – The market with the greatest volume and level of activity for the asset or liability
- Most Advantageous Market – The market where the highest selling price for an asset or the lowest price to transfer a liability
- Principal and most advantageous market distinction are more relevant for assets (certain financial assets or liabilities as an example) other than intangible assets.

#### E) Highest and Best Use

- Fair value assumes the highest and best use for an asset.
- Highest and Best Use:
  - (a) Maximizes the value of the asset
  - (b) Use must be physically possible and legally and financially feasible
  - (c) Market participant perspective
- Reporting entities to determine if highest and best use for an asset is in-use or in-exchange (valuation basis) regardless of management's intended use for the asset. (Market participant perspective)
- Highest and Best Use is In-Use if:
  - Asset has maximum value in combination with other assets as a group (installed or configured)
  - Typically non-financial assets
- Example: Land that is used as site for a plant. Operating the plant provides a higher return than considering the land for resale after demolition of the plant. Therefore, land is valued on an in-use basis as it is the highest and best use of the land.
- Highest and Best Use is In-Exchange if:
  - Asset has maximum value on a stand-alone basis
  - Typically financial assets
- Assets may be grouped under guidance of ASC 350-30-35-21 through ASC 350-30-35-28.
- Grouping of assets doesn't change pursuant to the guidance in ASC 820.

## F) Exit Price – Overview

- IAS13/ASC 820 indicates that fair value should be based on an exit price for an asset rather than an entry price.
- An exit price is the amount received to sell the asset or paid to transfer a liability.
- An entry price is the amount paid to acquire the asset or received to assume the liability.
- In the context of intangible asset valuations, the implications of this requirement are still being evaluated by practitioners.

## G) Exit Price – Details

- ASC 820-10-35-3 states “The transaction to sell the asset or transfer the liability is a hypothetical transaction at the measurement date, considered from the perspective of a market participant that holds the asset or owes the liability. Therefore, the objective of a fair value measurement is to determine the price that would be received to sell the asset or paid to transfer the liability at the measurement date (an exit price).”
- ASC 820-10-30-2 indicates: “Conceptually, entry prices and exit prices are different. Entities do not necessarily sell assets at the prices paid to acquire them. Similarly, entities do not necessarily transfer liabilities at the prices received to assume them.”
- ASC 820-10-30-3 provides “In many cases, the transaction price will equal the exit price and, therefore, represent the fair value of the asset or liability at initial recognition. In determining whether a transaction price represents the fair value of the asset or liability at initial recognition, the reporting entity shall consider factors specific to the transaction and the asset or liability. For example, a transaction price might not represent the fair value of an asset or liability at initial recognition if:
  - (a) The transaction is between related parties.
  - (b) The transaction occurs under duress or the seller is forced to accept the price in the transaction. For example, that might be the case if the seller is experiencing financial difficulty.”
  - (c) The unit of account represented by the transaction price is different from the unit of account for the asset or liability measured at fair value. For example, that might be the case if the asset or liability measured at fair value is only one of the elements in the transaction, the transaction includes unstated rights and privileges that should be separately measured, or the transaction price includes transaction costs.
  - (d) The market in which the transaction occurs is different from the market in which the reporting entity would sell the asset or transfer the liability, that is, the principal or most advantageous market. For example, those markets might be

different if the reporting entity is a securities dealer that transacts in different markets, depending on whether the counterparty is a retail customer (retail market) or another securities dealer (inter-dealer market).

- The first two recognition factors are of more concern to BV practitioners focusing on ASC 805 and ASC 350 issues.
- Factors C and D are more relevant for financial assets.

#### H) Fair Value Hierarchy

*The “fair value hierarchy” prioritizes the inputs used in valuation and impacts the level of disclosure, but not the valuation techniques themselves (i.e., choose the best approach first, then the highest priority inputs).*

- Level I
  - Quoted prices in active markets for identical assets/liabilities
- Level II
  - Observable prices for similar assets/liabilities
  - Prices for identical assets/liabilities in an inactive market
  - Directly observable inputs for substantially full term of asset/liability
  - Market inputs derived from or corroborated by observable market data
- Level III
  - Unobservable inputs based on the reporting entity’s own assumptions about the assumptions a market participant will use
  - Many of the value inputs used by valuation professionals in ASC 805 and 350 analyses are Level III inputs and would require the highest amount of disclosure. Disclosure increases as model inputs move from Level I to Level III.

#### I) Use of Multiple Valuation Approaches

- ASC 820 and IFRS 13 weighting of multiple valuation approaches is permitted and encouraged where appropriate:
- Techniques that are most representative of fair value
- Inputs that are most readily observed
- When multiple approaches are used considering the reasonableness of the range indicated by those results. A fair value measurement is the point within that range that is most representative of fair value in the circumstances

- ASC 820 and IFRS 13 indicate “Valuation techniques used to measure fair value shall be consistently applied. However, a change in a valuation technique or its application (for example, a change in its weighting when multiple valuation techniques are used) is appropriate if the change results in a measurement that is equally or more representative of fair value . . .”

## VIII Other Issues

### A) Acquisition of a Business vs. Acquisition of Assets

- Purchase accounting will differ depending on whether a business is acquired or a transaction represents an acquisition of a group of assets that do not constitute a business.
- Acquisition of business – potential residual goodwill
- Acquisition of assets that do not constitute a business – no residual goodwill
- EITF 98–3 *Determining Whether a Nonmonetary Transactions Involves Receipt of Productive Assets or of a Business* provides guidance.
- ASC 805 and IFRS 3:
  - Broaden definition of a business and provides additional guidance
  - More transactions will reflect business rather than asset acquisitions
- FASB is currently considering a revision to the definition of a business to reduce the number of transactions that qualify as a business combination.

### B) Impact of Transaction Structure on Fair Value of Assets

- The fair value of acquired assets and liabilities does not differ based on the structure of the acquisition – stock or asset acquisition.
- Value of many assets is a function of cash flows expected plus the value of tax saving benefits from depreciation or amortization (tax amortization benefit or TAB for many intangibles).
- If an asset is acquired directly or in an asset transaction, the assets receive a “stepped up” tax basis equal to fair market value at date of acquisition. Buyer would receive the full cash flow and tax savings from depreciation/amortization of the FMV.
- If a buyer acquires the stock of the target company, the buyer’s tax basis is in the stock (“outside basis”) of target and not the assets of the target company (“inside basis”). Buyers can elect a “tax liquidation” under IRC 338 (h) 10 to obtain a stepped-up basis in the underlying assets (including intangibles). This tax election is infrequent, as there is potential for payment of taxes if there is a taxable gain when asset is marked up from its tax basis to FMV.

- In the tax valuation setting, this concept is similar to the “built-in gains” issue that has been litigated in numerous tax court cases.
- Fair value guidance provides that the value of the asset will not be reduced by the structure of the transaction. ASC 805, *Business Combinations*, and ASC 740, *Income Taxes*, require the recognition of a *deferred tax liability* in the opening balance sheet for identified intangibles recorded for book that have no tax basis or other assets with a greater book basis than tax basis.
- In the tax valuation setting, the tax courts have established that the asset is valued at FMV and a “built-in gain” liability may be considered when the tax basis is lower than the FMV.

IX Appraisal Issues Task Force (AITF) Areas of Concern – February 6, 2006 Draft, Illustrative Valuation Issues

- A) The Appraisal Issues Task Force (AITF) was formed by valuation professionals to address fair value matters. An AITF task force listed 25 issues where there is a divergence in practice including:
- Issue 1 – Contributory Assets
  - Issue 2 – Control Premium in a DCF Enterprise Valuation
  - Issue 3 – “Overlapping Customers”
  - Issue 4 – Economic Rents for Contributory Asset Charges
  - Issue 5 – Discounts for Lack of Control or Liquidity
  - Issue 6 – Asset/Earnings Prioritization Principle
  - Issue 7 – Valuation of Intangible Asset Using “Current Replacement Cost”
  - Issue 8 – Impact of use of marketplace participant assumptions to measure the fair value of an asset that the combined entity does not intend to use or sell
  - Issue 9 – Subsequent application of marketplace participant assumptions to discontinued assets
  - Issue 10 – Premiums and discounts
  - Issue 11 – Small capitalization premiums
  - Issue 12 – ASC 805-20-S30 conclusions on the use of the residual method
  - Issue 13 – Use of stratified rates of return for different classes of assets when using the income method
  - Issue 14 – Non-compete agreements
  - Issue 15 – Active markets

- Issue 16 – Tangible assets
- Issue 17 – Avoided royalty approach
- Issue 18 – Inventory
- Issue 19 – Marketplace participant view
- Issue 20 – Cost approach to value customer relationships
- Issue 21 – Overlapping intangibles
- Issue 22 – Unprofitable technology
- Issue 23 – Customer relationship attrition
- Issue 24 – Reacquired franchise rights
- Issue 25 – Greenfield valuation vs. “excess earnings” approach

#### X SEC Comment Letter Concerns

- A) Management discussion and analysis
- B) Executive compensation
- C) Fair value measurement
- D) Intangible assets and goodwill
- E) Disclosure controls
- F) Segment reporting
- G) Non- GAAP measures
- H) Revenue recognition
- I) Debt, warrants, and equity issues
- J) Related party transactions

- *Source: CFO Magazine, The SEC Has a Few Questions for You, May 2010 (analysis of comment letters in calendar year 2009)*

#### XI FASB Valuation Resource Group

- A) Introduction
  - The FASB established a Valuation Resource Group (VRG) in June 2007 to assist in matters involving valuation for financial reporting purposes.
  - VRG objective is to solicit the views of its constituents on fair value issues.



- Members of the Valuation Resource Group include:
  - (a) Big 4 and non-Big 4 valuation/accounting
  - (b) Valuation firms
  - (c) Professional standard setters
  - (d) Preparers of financial statements
  - (e) Accounting specialists
  - (f) Users of financial statements (CFA Institute, Moody's)
  - (g) Observers (SEC, PCAOB, IASB, AICPA)

#### B) Areas of Discussion

- November 1, 2010 Discussion Topics
  - (a) Fair Value Measurement of Contingent Consideration in a Business Combination
  - (b) Application of the MPEEM and the Greenfield Method in the valuation of intangible assets
  - (c) Consideration of discounts and premiums in fair value measurements
  - (d) A proposed ASU on determining the carrying amount of a reporting unit when performing step 1 of the goodwill impairment test
  - (e) Measurement uncertainty analysis disclosure
- April 12, 2010 Discussion Topics
  - (a) FASB/IASB's Joint Project on Fair Value Measurement and Disclosure
  - (b) Fair value measurement of leased investment properties
  - (c) Measuring reacquired rights in a business combination
  - (d) Fair value measurement of accounts receivable, accounts payable, and other accrued liabilities
- September 22, 2009 Discussion Topics
  - (a) Measurement of Core Deposits
  - (b) Proposed Accounting Standards Update, *Improving Disclosures about Fair Value Measurement*
  - (c) IASB's May 2009 Exposure Draft, *Fair Value Measurement*
  - (d) Fair Value of Debt versus Par Value of Debt when Estimating the Fair Value of an Entity's Equity

- February 5, 2009 Discussion Topics
  - (a) The SEC Study on Mark-to-Market Accounting
  - (b) Proposed FASB Staff Position (FSP) FAS 157-c, *Measuring Liabilities under Statement No. 157*
  - (c) The AICPA Draft Issues Paper, *FASB Statement No. 157 Valuation Considerations for Interests in Alternative Investments*
  - (d) Goodwill Impairment Considerations
- September 23, 2008 Discussion Topics
  - (a) The IASB Expert Advisory Panel White Paper: “Measuring and disclosing the fair value of financial instruments in markets that are no longer active”
  - (b) Fair Value Disclosures
  - (c) Observable vs. Unobservable Inputs
  - (d) Fair Value Measurement of Liabilities under FAS 157
  - (e) Allocation of In-Use Valuation to Individual Unit of Account
  - (f) Identification and Allocation of Market Participant Synergies
  - (g) Fair Value of a Noncontrolling Interest and a Previously Held Equity Interest
- May 8, 2008 Discussion Topics
  - (a) Observable vs. Unobservable Fair Value Measurements in the Current Credit Environment
  - (b) Determining Whether a Discount should be Applied for a Restriction on Sale
  - (c) Employee Benefit Plans
  - (d) Contingent Liabilities
- February 1, 2008 Discussion Topics
  - (a) Accounting for assets that the acquirer does not intend to use or intends to use in a way other than its highest and best use
  - (b) Overlapping customer relationships
  - (c) Valuation of intangible assets using "current replacement cost"
  - (d) Meaning of "legally permissible" in assessing highest and best use
  - (e) Allocation of portfolio based credit adjustments for hedge effectiveness testing
- November 9, 2007 Discussion Topics

- (a) Deferral of the effective date of FASB Statement No. 157, Fair Value Measurement
- (b) Development of market participant assumptions and use of an entity's own data (similar to issue discussed at October 1, 2007 meeting)
- (c) Unit of valuation and exit markets, whether unit of valuation can be more disaggregated than the unit of account (similar to issue discussed at October 1, 2007 meeting)
- (d) Measurement of liabilities
- (e) Applicability of Statement 157 to plan assets of pensions and other postretirement benefit plans (similar to issue discussed at October 1, 2007 meeting)
- (f) Use of NAV to measure investments in fund of fund or certain investments with restrictions (similar to issue discussed at October 1, 2007 meeting)
- (g) Determining the fair value of a liability with a third-party guarantee
- (h) Highest and best use - land example
- (i) Definition of significant in determining the level in the fair value hierarchy
- (j) Accounting for Transaction Costs in Determining the Fair Value of an Investment
- October 1, 2007 Discussion Topics
  - (a) Determining the fair value of an asset in which the entity intends to transform the asset from its current form into a different form upon sale (such as whether to value a mortgage loan in the whole loan market vs. the securitization market)
  - (b) Definition of an active market
  - (c) Determination of the principal market when the majority of an entity's trading activity occurs in a different market than where the majority of market participants' trading occurs
  - (d) Highest and Best Use: Accounting for an asset that an entity does not intend to use or intends to use defensively
  - (e) Determination of market participants (such as assets or entities acquired in an auction)
  - (f) Assets and liabilities without markets
  - (g) Pension plan disclosures
  - (h) Use of net asset value ("NAV") to measure certain investments, such as in private equity

## XII Developments in Financial Reporting – Treatment of Internally Generated Intangibles

- A) Treatment of intangible asset values is inconsistent under current accounting rules – internally developed vs. acquired intangibles
- B) Internally developed intangible asset:
- Expensed if viability uncertain
  - Costs capitalized if future viability is reasonably certain, but these capitalized costs may not be the same as a fair value estimate
- C) Intangible asset acquired separately (individually):
- If a single intangible is acquired, it is booked at its acquisition cost and there is no residual goodwill
- D) Intangible asset acquired as part of the acquisition of a business:
- If an intangible is acquired as a part of a business combination, there may be residual goodwill

## XIII Organizations with Involvement in Fair Value Matters

### A) Accounting Standards Bodies

- International Accounting Standards Board (IASB) – An independent regulatory body, based in the United Kingdom, that aims to develop a single set of global accounting standards. Board members come from nine countries and have a variety of functional backgrounds. The Board is committed to developing, in the public interest, a single set of high-quality, understandable, and enforceable global accounting standards that require transparent and comparable information in general-purpose financial statements.
- Financial Accounting Standards Board (FASB) – A seven-member independent board consisting of accounting professionals who establish and communicate standards of financial accounting and reporting in the United States. FASB standards, known as generally accepted accounting principles (GAAP), govern the preparation of corporate financial reports and are recognized as authoritative by the SEC.

### B) Other Accounting Bodies

- Emerging Issues Task Force (EITF) – An organization formed in 1984 by the FASB to provide assistance with timely financial reporting. The EITF holds public meetings in order to identify and resolve accounting issues occurring in the financial world.

- IFRS Interpretations Committee (IFRIC) - Interpretive body with mandate to review on a timely basis widespread accounting issues that have arisen within the context of current IFRS. Work is aimed at reaching consensus on the appropriate accounting treatment (IFRIC Interpretations) and providing authoritative guidance on those issues.
- Valuation Resource Group of the FASB (VRG) – The FASB established the VRG in June 2007 to assist in matters involving valuation for financial reporting purposes. VRG's objective is to solicit the views of its constituents on fair value issues.

#### C) Regulatory Agencies

- Securities and Exchange Commission (SEC) (United States) ([sec.gov](http://sec.gov)) – The primary federal regulatory agency for the securities industry, whose responsibility is to promote full disclosure and to protect investors against fraudulent and manipulative practices in the securities markets. The SEC is composed of five commissioners appointed by the U.S. President and approved by the Senate. U.S. GAAP, as established by FASB, is officially recognized as authoritative by the SEC. However, the SEC retains the authority to establish accounting standards. The SEC issues authoritative financial reporting guidance including Staff Accounting Bulletins (SABs).
- Financial Services Authority (FSA) (United Kingdom) ([fsa.gov.uk](http://fsa.gov.uk)) – The Financial Services Authority (FSA) is an independent non-governmental body, given statutory powers by the Financial Services and Markets Act 2000. Objectives are to increase market confidence and financial stability, protect consumers and reduce financial crime. The FSA regulates most financial services markets, exchanges and firms. The FSA sets the standards that must be met and can take action against firms if they fail to meet the required standards.

#### D) Other Regulatory Organizations

- Public Company Accounting Oversight Board (PCAOB) - A non-profit organization that regulates auditors of publicly traded companies. The PCAOB was established as a result of the creation of the Sarbanes-Oxley Act of 2002. The board's aim is to protect investors and other stakeholders of a public company by ensuring that the auditor of a company's financial statements has followed a set of strict guidelines.

#### E) Accounting Professional Organizations

- American Institute of Certified Public Accountants (AICPA) – One of the nation's leading not-for-profit professional associations, AICPA has some 350,000 members in public accounting, law, education, and government. The association, which generates nearly half of its revenue from membership dues, promotes public awareness of CPAs; identifies trends in accounting; sets certification, licensing, and professional standards; and provides information and advice to CPAs.

- International Federation of Accountants (IFAC) is the global organization for the accountancy profession. IFAC has 164 members and associates in 124 countries and jurisdictions, representing more than 2.5 million accountants. The organization, through its independent standard-setting boards, establishes international standards on ethics, auditing and assurance, accounting education, and public sector accounting. It also issues guidance to encourage high quality performance by professional accountants in business. Founded in 1977, IFAC celebrated its 30th anniversary in 2007.
- Appraisal Issues Task Force (AITF) – A voluntary group of professional business appraisers who wish to improve the practice of valuation. The AITF is designed to help establish and interpret existing rules. Periodic meetings of the AITF are open to all interested parties.

#### F) International Valuation Standards Council - Introduction

- The International Valuation Standards Council (IVSC) is an independent body that sets global standards for valuation. It also promotes the development of the valuation profession around the world and collaborates and cooperates with other organisations concerned with standards and regulation in the financial markets. The IVSC has three main bodies:
  - (a) an independent Board of Trustees responsible for the strategic direction and funding of the IVSC and for appointments to the Standards Board and Professional Board
  - (b) a Standards Board with autonomy over its agenda and the creation and revision of valuation standards
  - (c) a Professional Board to promote the development of the profession around the world through producing professional and educational material in support of the standards

#### G) The Appraisal Foundation – Introduction

- The Appraisal Foundation, a not-for-profit organization dedicated to the advancement of professional valuation, was established by the appraisal profession in the United States in 1987. Since its inception, the Foundation has worked to foster professionalism in appraising by:
  - (a) establishing, improving, and promoting the *Uniform Standards of Professional Appraisal Practice* (USPAP);
  - (b) establishing educational experience and examination qualification criteria for the licensing, certification and recertification of real property appraisers;
  - (c) establishing educational and experience qualification criteria for other valuation disciplines;
  - (d) disseminating information on USPAP and the Appraiser Qualification Criteria to the appraisal profession, state and federal government agencies, users of

appraisal services, related industries and industry groups, and the general public and;

(e) sponsoring appropriate activities relating to standards, qualifications and issues of importance to appraisers and users of appraisal services.

H) Appraisal Foundation – Appraisal Practices Board (APB)

- Appraisal Foundation recently formed an Appraisal Practice Board (APB) in July 2010.
- APB is responsible for identifying and issuing opinions on Recognized Valuation Methods and Techniques, which may apply to all disciplines within the appraisal profession. The APB will offer voluntary guidance in topic areas that appraisers and users of appraisal services feel are the most pressing.
- APB will use Subject Matter Experts (SMEs), who will be widely recognized individuals with expertise in the specific topic being considered.
- The APB employs a public exposure process and ultimately adopts guidance that may include more than one recognized method or technique on a specific topic.
- From the APB perspective, compliance with guidance issued will be voluntary.
- The APB reflects the judgment of leading valuation professionals and is composed of five to seven members who can serve up to eight years.
- IVSC and Appraisal Foundation are similar in structure in many ways.

XIV IFRS 3 – Business Combinations - Introduction

- A) IFRS 3 - IN1 - The revised International Financial Reporting Standard 3 *Business Combinations* (IFRS 3) is part of a joint effort by the International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB) to improve financial reporting while promoting the international convergence of accounting standards.
- B) IFRS 3 - 2 This IFRS applies to a transaction or other event that meets the definition of a business combination. This IFRS does not apply to:
- the acquisition of an asset or a group of assets that does not constitute a business. In such cases the acquirer shall identify and recognise the individual identifiable assets acquired (including those assets that meet the definition of, and recognition criteria for, intangible assets in IFRS 38 Intangible Assets) and liabilities assumed. The cost of the group shall be allocated to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of purchase. Such a transaction or event does not give rise to goodwill.



## XV IFRS 3 on Contingent Liabilities

- A) IFRS 37 *Provisions, Contingent Liabilities and Contingent Assets*, defines a contingent liability as:
- a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity; or
  - a present obligation that arises from past events but is not recognised because:
    - (a) it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or
    - (b) the amount of the obligation cannot be measured with sufficient reliability.
- B) The requirements in IFRS 37 do not apply in determining which contingent liabilities to recognise as of the acquisition date. Instead, the acquirer shall recognise as of the acquisition date a contingent liability assumed in a business combination if it is a present obligation that arises from past events and its fair value can be measured reliably. Therefore, contrary to IFRS 37, the acquirer recognises a contingent liability assumed in a business combination at the acquisition date even if it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation.

## XVI IFRS 3 - Appendix A - Defined terms

- A) Business - An integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return in the form of dividends, lower costs or other economic benefits directly to investors or other owners, members or participants.
- B) Business combination - A transaction or other event in which an acquirer obtains control of one or more businesses. Transactions sometimes referred to as 'true mergers' or 'mergers of equals' are also business combinations as that term is used in this IFRS.
- C) Contingent consideration - Usually, an obligation of the acquirer to transfer additional assets or equity interests to the former owners of an acquiree as part of the exchange for control of the acquiree if specified future events occur or conditions are met. However, contingent consideration also may give the acquirer the right to the return of previously transferred consideration if specified conditions are met.
- D) Control - The power to govern the financial and operating policies of an entity so as to obtain benefits from its activities.
- E) Fair value - The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.
- F) Goodwill - An asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognised.
- G) Intangible asset - An identifiable non-monetary asset without physical substance.



H) Identifiable - An asset is *identifiable* if it either:

- is separable, ie capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable asset or liability, regardless of whether the entity intends to do so; or
- arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

## XVII IFRS 3 – Detailed Description of a Business

A) IFRS 3 - B7 - A business consists of inputs and processes applied to those inputs that have the ability to create outputs. Although businesses usually have outputs, outputs are not required for an integrated set to qualify as a business. The three elements of a business are defined as follows:

- Input: Any economic resource that creates, or has the ability to create, outputs when one or more processes are applied to it. Examples include non-current assets (including intangible assets or rights to use non-current assets), intellectual property, the ability to obtain access to necessary materials or rights and employees.
- Process: Any system, standard, protocol, convention or rule that when applied to an input or inputs, creates or has the ability to create outputs. Examples include strategic management processes, operational processes and resource management processes. These processes typically are documented, but an organised workforce having the necessary skills and experience following rules and conventions may provide the necessary processes that are capable of being applied to inputs to create outputs. (Accounting, billing, payroll and other administrative systems typically are not processes used to create outputs.)
- Output: The result of inputs and processes applied to those input that provide or have the ability to provide a return in the form of dividends, lower costs or other economic benefits directly to investors or other owners, members or participants.

## XVIII IFRS 13 – Market Participant Perspective

A) IFRS 13 - IN 9 - “. . . fair value is a market-based measurement, not an entity-specific measurement. When measuring fair value, an entity uses the assumptions that market participants would use when pricing the asset or liability under current market conditions, including assumptions about risk. As a result, an entity’s intention to hold an asset or to settle or otherwise fulfill a liability is not relevant when measuring fair value.”

## XIX IFRS 13 – Highest and Best Use

A) 27 A fair value measurement of a non-financial asset takes into account a market participant’s ability to generate economic benefits by using the asset in its highest

and best use or by selling it to another market participant that would use the asset in its highest and best use.

- B) 28 The highest and best use of a non-financial asset takes into account the use of the asset that is physically possible, legally permissible and financially feasible, as follows:
- A use that is physically possible takes into account the physical characteristics of the asset that market participants would take into account when pricing the asset (eg the location or size of a property).
  - A use that is legally permissible takes into account any legal restrictions on the use of the asset that market participants would take into account when pricing the asset (eg the zoning regulations applicable to a property).
  - A use that is financially feasible takes into account whether a use of the asset that is physically possible and legally permissible generates adequate income or cash flows (taking into account the costs of converting the asset to that use) to produce an investment return that market participants would require from an investment in that asset put to that use.

## XX IFRS 13 – Changes in Valuation Technique

- A) IFRS 13 - 65 - Valuation techniques used to measure fair value shall be applied consistently. However, a change in a valuation technique or its application (eg a change in its weighting when multiple valuation techniques are used or a change in an adjustment applied to a valuation technique) is appropriate if the change results in a measurement that is equally or more representative of fair value in the circumstances. That might be the case if, for example, any of the following events take place:

- new markets develop;
- new information becomes available;
- information previously used is no longer available;
- valuation techniques improve; or
- market conditions change.

## XXI IFRS 13 – Defined Terms

- A) Active market - A market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis.
- B) Entry price - The price paid to acquire an asset or received to assume a liability in an exchange transaction.
- C) Exit price - The price that would be received to sell an asset or paid to transfer a liability.

- D) Expected cash flow - The probability-weighted average (ie mean of the distribution) of possible future cash flows.
- E) Unit of account - The level at which an asset or a liability is aggregated or disaggregated in an IFRS for recognition purposes.
- F) Unobservable inputs - Inputs for which market data are not available and that are developed using the best information available about the assumptions that market participants would use when pricing the asset or liability.
- G) Observable inputs - Inputs that are developed using market data, such as publicly available information about actual events or transactions, and that reflect the assumptions that market participants would use when pricing the asset or liability.
- H) Orderly transaction - A transaction that assumes exposure to the market for a period before the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities; it is not a forced transaction (eg a forced liquidation or distress sale).

#### XXII IFRS 13 - Valuation premise for non-financial assets

- A) B3 When measuring the fair value of a non-financial asset used in combination with other assets as a group (as installed or otherwise configured for use) or in combination with other assets and liabilities (eg a business), the effect of the valuation premise depends on the circumstances. For example:
- B) the fair value of the asset might be the same whether the asset is used on a stand-alone basis or in combination with other assets or with other assets and liabilities. That might be the case if the asset is a business that market participants would continue to operate. In that case, the transaction would involve valuing the business in its entirety. The use of the assets as a group in an ongoing business would generate synergies that would be available to market participants (ie market participant synergies that, therefore, should affect the fair value of the asset on either a stand-alone basis or in combination with other assets or with other assets and liabilities).
- C) an asset's use in combination with other assets or with other assets and liabilities might be incorporated into the fair value measurement through adjustments to the value of the asset used on a stand-alone basis. That might be the case if the asset is a machine and the fair value measurement is determined using an observed price for a similar machine (not installed or otherwise configured for use), adjusted for transport and installation costs so that the fair value measurement reflects the current condition and location of the machine (installed and configured for use).

- D) an asset's use in combination with other assets or with other assets and liabilities might be incorporated into the fair value measurement through the market participant assumptions used to measure the fair value of the asset. For example, if the asset is work in progress inventory that is unique and market participants would convert the inventory into finished goods, the fair value of the inventory would assume that market participants have acquired or would acquire any specialised machinery necessary to convert the inventory into finished goods.
- E) an asset's use in combination with other assets or with other assets and liabilities might be incorporated into the valuation technique used to measure the fair value of the asset. That might be the case when using the multi-period excess earnings method to measure the fair value of an intangible asset because that valuation technique specifically takes into account the contribution of any complementary assets and the associated liabilities in the group in which such an intangible asset would be used.
- F) in more limited situations, when an entity uses an asset within a group of assets, the entity might measure the asset at an amount that approximates its fair value when allocating the fair value of the asset group to the individual assets of the group. That might be the case if the valuation involves real property and the fair value of improved property (ie an asset group) is allocated to its component assets (such as land and improvements).

### XXIII IFRS 13 – Preference for Observable Inputs

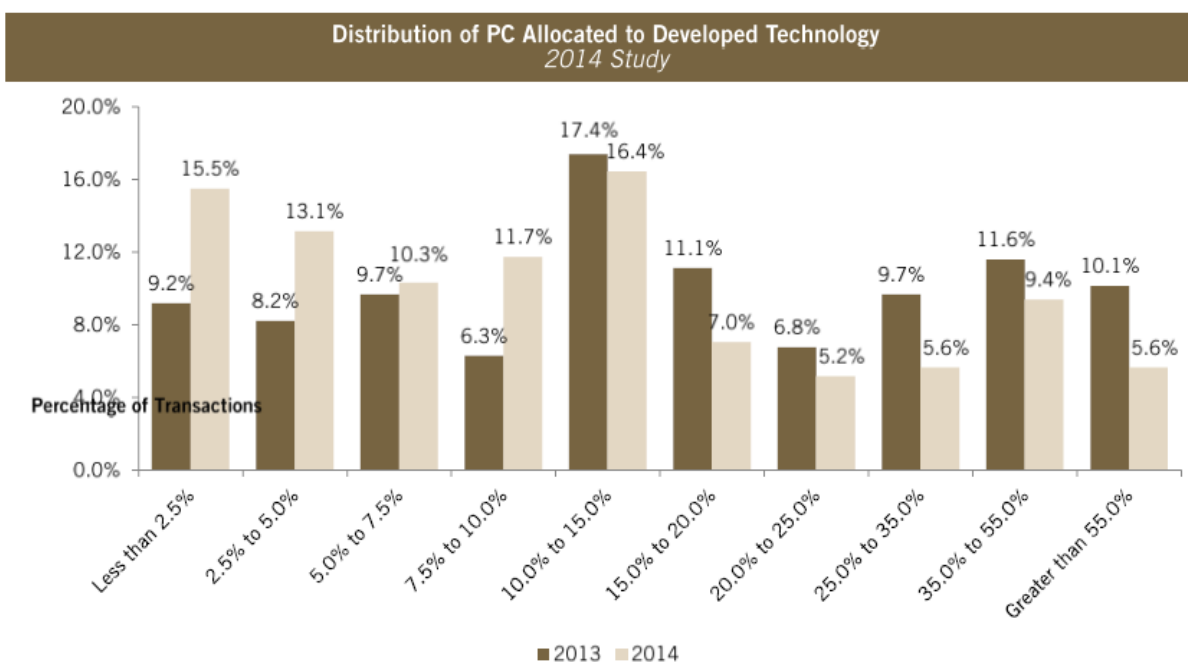
- A) 67 Valuation techniques used to measure fair value shall maximise the use of relevant observable inputs and minimise the use of unobservable inputs.
- B) IFRS 38 – Requirements to Capitalize Development Expenditures
- C) An intangible asset arising from development (or from the development phase of an internal project) shall be recognised if, and only if, an entity can demonstrate all of the following:
- the technical feasibility of completing the intangible asset so that it will be available for use or sale.
  - its intention to complete the intangible asset and use or sell it.
  - its ability to use or sell the intangible asset.
  - how the intangible asset will generate probable future economic benefits. Among other things, the entity can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset.
  - the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset.
  - its ability to measure reliably the expenditure attributable to the intangible asset during its development.

## II APPENDICES

### I Summary PPA Results

### II Summary Information from PPA Studies

### III Allocation to Developed Technology – By Industry



### III Allocation to Developed Technology – 2012 to 2014

Median PC Allocated to Developed Technology <i>Annual Comparison Summary: 2012 - 2014</i>						
	Median Results					
	Developed Technology, % of PC			Goodwill, % of PC		
	2014	2013	2012	2014	2013	2012
All Industries	10%	15%	14%	50%	45%	43%
Aerospace, Defense & Government	6%	2%	NA	47%	29%	NA
Consumer, Food & Retail	6%	8%	8%	46%	30%	40%
Energy	8%	62%	29%	52%	32%	11%
Financial Institutions	3%	11%	15%	36%	32%	33%
Healthcare	13%	19%	25%	46%	36%	40%
Industrials	4%	8%	7%	41%	50%	38%
Infrastructure Services & Materials	8%	4%	8%	43%	34%	29%
Technology	33%	33%	35%	53%	55%	49%
Telecom	4%	49%	30%	92%	33%	62%

## IV Allocation to IPR&amp;D – 2012 to 2014

Median PC Allocated to IPR&D Annual Comparison Summary: 2012 - 2014						
	Median Results					
	IPR&D, % of PC			Goodwill, % of PC		
	2014	2013	2012	2014	2013	2012
All Industries	6%	15%	7%	37%	31%	37%
Aerospace, Defense & Government	NA	NA	NA	NA	NA	NA
Consumer, Food & Retail	NA	5%	13%	NA	36%	52%
Energy	NA	NA	60%	NA	NA	27%
Financial Institutions	NA	NA	NA	NA	NA	NA
Healthcare	34%	44%	28%	30%	31%	31%
Industrials	2%	9%	3%	42%	65%	35%
Infrastructure Services & Materials	NA	NA	NA	NA	NA	NA
Technology	5%	7%	2%	43%	31%	41%
Telecom	NA	NA	1%	NA	NA	70%

## V Allocation to IPR&amp;D – By Industry

Summary of PC Allocated to IPR&D 2013 Study													
\$ in millions	Count			PC		IPR&D, % of PC				Goodwill, % of PC			
	IPR&D	All	%	Median	Mean	Low	High	Median	Mean	Low	High	Median	Mean
All Industries	45	422	11%	\$138	\$724	0%	93%	15%	30%	2%	76%	31%	36%
Aerospace, Defense & Government	0	6	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Consumer, Food & Retail	2	71	3%	1,848	1,848	2%	7%	5%	5%	21%	52%	36%	36%
Energy	0	12	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Financial Institutions	0	55	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Healthcare	24	80	30%	96	830	1%	87%	44%	40%	2%	70%	31%	31%
Industrials	1	62	2%	574	574	9%	9%	9%	9%	65%	65%	65%	65%
Infrastructure Services & Materials	0	18	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Technology	18	111	16%	139	465	0%	93%	7%	19%	3%	76%	31%	40%
Telecom	0	7	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

## VI Allocation to Customer Related Intangibles – 2012 to 2014

**Median PC Allocated to Customer-Related Intangible Assets**  
*Annual Comparison Summary: 2012 - 2014*

	Median Results					
	Customer-Related Assets, % of PC			Goodwill, % of PC		
	2014	2013	2012	2014	2013	2012
All Industries	14%	11%	14%	45%	41%	40%
Aerospace, Defense & Government	18%	11%	19%	52%	33%	45%
Consumer, Food & Retail	12%	13%	11%	NA	NA	NA
Energy	17%	26%	14%	18%	29%	27%
Financial Institutions	12%	16%	14%	45%	20%	33%
Healthcare	17%	7%	14%	47%	50%	42%
Industrials	22%	18%	16%	41%	43%	39%
Infrastructure Services & Materials	7%	9%	9%	29%	27%	27%
Technology	13%	9%	12%	54%	53%	48%
Telecom	20%	28%	19%	29%	32%	27%

## VII Allocation to Trade Names – 2012 to 2014

**Median PC Allocated to Trademarks and Trade Names**  
*Annual Comparison Summary: 2012 - 2014*

	Median Results					
	Trademarks, % of PC			Goodwill, % of PC		
	2014	2013	2012	2014	2013	2012
All Industries	4%	3%	3%	43%	38%	40%
Aerospace, Defense & Government	2%	3%	NA	47%	33%	45%
Consumer, Food & Retail	9%	10%	19%	32%	21%	32%
Energy	5%	1%	1%	28%	32%	28%
Financial Institutions	NA	NA	2%	53%	7%	33%
Healthcare	3%	3%	3%	44%	45%	41%
Industrials	5%	7%	4%	40%	42%	33%
Infrastructure Services & Materials	4%	5%	4%	23%	22%	27%
Technology	2%	1%	2%	52%	54%	50%
Telecom	3%	1%	2%	22%	43%	27%



## Chapter 3 - Overview of the Three Valuation Approaches

### I Intangible Asset Valuation vs. Business Valuation

<u>Analytical Variable</u>	<u>Business Valuation</u>	<u>Intangible Asset Valuation</u>
Income subject to analysis	All operating income of business enterprise	Portion of operating income
Life of income projection	Typically into perpetuity	Usually limited remaining useful life (RUL)
Discount/Cap rates	Usually lower	Usually higher
Effect of obsolescence	Assume business adapts (going concern)	Assume effect on remaining useful life (RUL)
Highest and best use	Usually obvious	Requires analysis
Transaction data	More obvious	Difficult to find
Control	Control or minority value	Control value
Level of value	Various – TIC, equity, minority interest in equity	Total value of asset
Legal rights subject to analysis	Fee simple interest	Numerous possibilities

### II The Three Approaches to Value – ASC 820 and IFRS 13

- A) *The Market Approach*: A valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable (ie similar) assets, liabilities or a group of assets and liabilities, such as a business.
- B) *The Income Approach*: Valuation techniques that convert future amounts (eg cash flows or income and expenses) to a single current (ie discounted) amount. The fair value measurement is determined on the basis of the value indicated by current market expectations about those future amounts.
- C) *The Cost Approach*: A valuation technique that reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost).
  - Under the *Uniform Standards of Professional Appraisal Practice (USPAP)*, all three approaches must be considered (Standards Rule 9-4):
    - “In developing an appraisal of an interest in a business enterprise or intangible asset, an appraiser must collect and analyze all information necessary for credible assignment results. An appraiser must develop value opinion(s) and conclusion(s) by use of one or more approaches that are necessary for credible assignment results.”



- AICPA Business Valuation Standards – *Statement on Standards for Valuation Services* provides further guidance at paragraphs 31–41.
  - Value indications derived through one or more of these approaches are then analyzed in order to formulate an objective opinion as to the fair value of the intangible asset being appraised.
- ASC 820 and IFRS 13 indicate a single valuation technique or multiple techniques may be appropriate depending on the circumstances.

### III Overview of Cost Approach – Definition of Cost Approach per ASC 820 and IFRS 13, *Fair Value Measurement*

- A) B8 The cost approach reflects the amount that currently would be required to replace the service capacity of an asset (often referred to as current replacement cost).
- B) B9 From the perspective of a market participant (seller), the price that would be received for the asset is based on the cost to a market participant (buyer) to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. That is because a market participant would not pay more for an asset than the amount for which it could replace the service capacity of that asset. Obsolescence encompasses physical deterioration, functional (technological) obsolescence and economic (external) obsolescence and is broader than depreciation for financial reporting purposes (an allocation of historical cost) or tax purposes (based on specified service lives). The current replacement cost method is often used to measure the fair value of tangible assets used in combination with other assets or with other assets and liabilities.

#### C) Overview of Cost Approach – Principles Underlying Approach

- Cost Estimated to Replace Asset:
  - (a) Cost approach is based upon the economic principles of substitution and price equilibrium, stressing the utility characteristics of the asset. A prudent investor would pay no more for an asset than the amount necessary to replace it.
  - (b) Adjustments made for obsolescence (i.e., functional, technological, economic).

#### D) Overview of Cost Approach – Key Terms

- Cost is most often defined in terms of either historical cost, reproduction cost, or replacement cost.
  - (a) Historical Cost – considers the actual cost that had been incurred to develop the asset.
  - (b) Reproduction Cost – considers the cost of producing an exact replica of an asset using the same or similar materials at current prices.
  - (c) Replacement Cost – considers the cost of acquiring a substitute asset of comparable utility.
- For fair value projects, replacement cost new is the most meaningful basis of value.

#### E) Overview of Cost Approach – Relationships of Different Cost Estimates

- For fair value projects, replacement cost new is the most meaningful (direct) means of estimating the fair value of an asset.
- If feasible, starting a valuation with a replacement cost new value estimate would be the most direct means of valuation.
- If reproduction cost new is the starting point for a value estimate, adjustments required to bring this to a replacement cost new estimate are appropriate.
- Especially in the valuation of machinery and equipment and other tangible assets, historic costs can be used to develop an estimate of replacement cost new.

#### F) Overview of Cost Approach – Obsolescence

- Once replacement cost new is estimated, obsolescence must be quantified to estimate value. Specifically, all the relevant forms of obsolescence must be identified, quantified, and subtracted from the replacement cost of the intangible asset to estimate its value.
- Forms of obsolescence for intangible assets include:
  - (a) Functional (technological obsolescence is a subset of functional obsolescence)
  - (b) Economic
  - (c) Physical deterioration is another form of obsolescence. It is common for tangible assets, but not for intangibles. Physical deterioration in a tangible asset could impact the value of an intangible asset and the business enterprise.

#### G) Overview of Cost Approach – Types of Obsolescence

- Functional Obsolescence – asset is less able to accomplish the functions for which it was originally developed. For intangible assets, functional obsolescence often arises due to technological factors.
  - As code evolves, a given software does not produce the same utility production as replacement software.
- Economic (or external) Obsolescence – asset's value has declined due to factors (in the marketplace) that are external to itself (effects, events, conditions).
  - Change in legislation regarding the enforcement of non-competes could render such agreements of less value than when initially put in place.

#### H) Overview of Cost Approach – Considerations for Use

- Asset is not directly responsible for the income generation of the business.

- Readily replaceable workforce compared to FDA approval and all related rights on blockbuster drug.
  - Internally-used software.
  - Asset not readily valued using market or income approach.
  - Preferable approach when the asset is readily replaceable.
  - When the cost of reconstructing or replacing an asset with a sufficiently comparable asset can be reasonably determined. (As noted in Section 2, this is Issue #7 of the 25 issues that the AITF identified where there is a divergence in practice.)
- I) Overview of Cost Approach – Comments on Criteria for Selection of Assets to Appraise
- The Cost Approach may be best suited for assets which are not a direct source of economic earnings for the business enterprise.
  - Attributes of assets valued using the Cost Approach may also include:
    - (a) Not an enabling asset which “drives” the business;
    - (b) More easily replaced; and
    - (c) Often less significant value relative to other intangible assets.
- J) Overview of Cost Approach – Types of Assets Appraised
- The Cost Approach is often best suited for the appraisal of the following intangible assets:
    - (a) Assembled workforce
    - (b) Internally developed and used software
    - (c) Engineering drawings
    - (d) Packaging designs
- K) Overview of Cost Approach – Challenges in Application
- Economic factors are difficult to measure:
    - (a) Amount of future economic benefits
    - (b) Timing and duration of future economic benefits
    - (c) Degree of risk with future economic benefits
  - Assumes instantaneous creation of the intangible asset.
  - Economic obsolescence should be considered but is difficult to quantify.

- Adjustments for obsolescence must be separately calculated and may be difficult to quantify.
- Subjectivity in developing cost estimates.
- Divergence in practice in treatment of tax attributes – (1) Use of pretax costs or (2) tax-affect pretax costs and apply amortization benefit factor (to be addressed later).

#### IV Overview of Market Approach – Definition per ASC 820 and IFRS 13

- A) B5 The market approach uses prices and other relevant information generated by market transactions involving identical or comparable (ie similar) assets, liabilities or a group of assets and liabilities, such as a business.
- B) B6 For example, valuation techniques consistent with the market approach often use market multiples derived from a set of comparables. Multiples might be in ranges with a different multiple for each comparable. The selection of the appropriate multiple within the range requires judgement, considering qualitative and quantitative factors specific to the measurement.
- C) B7 Valuation techniques consistent with the market approach include matrix pricing. Matrix pricing is a mathematical technique used principally to value some types of financial instruments, such as debt securities, without relying exclusively on quoted prices for the specific securities, but rather relying on the securities' relationship to other benchmark quoted securities.
- D) Overview of Market Approach – Principles
  - The Market Approach is based upon the related economic principles of competition and equilibrium in the markets.
  - The Market Approach arrives at an indication of value by comparing the intangible assets being appraised to guideline assets that have been recently acquired in an arm's-length transaction.
  - The market data are adjusted for any significant differences, to the extent known, between the guideline assets and the intangible assets being valued.
- E) Overview of Market Approach – Observations
  - To properly conduct a Market Approach, the valuation professional needs to identify arm's-length transactions of guideline assets, disclosure of pricing information, and reasonable knowledge of the relevant facts known to the transacting parties.
  - Publicly available guideline market data are generally not available for most intangible assets.
  - Aside from the use of market royalty rates, the Market Approach is rarely used for valuing intangibles.

- (a) The Market Approach is used to develop royalty rate estimates in many cases.
- (b) When a market-based royalty rate is estimated, the value of the asset is based on the Relief from Royalty Method of the Income Approach

#### F) Overview of Market Approach – Types of Assets Appraised

- Examples where Market Approach may be useful:
  - (a) Valuation of Domain Names
  - (b) Valuation of Operating Rights
    - FCC Licenses
    - Telecom operating spectrums
  - (c) The Relief from Royalty Method within the Income Approach, often used to value trademarks and patents, is viewed by some as a hybrid method within both the Income *and* Market Approaches, although not typically defined as such.

#### G) Overview of Market Approach – Limitations

- Limitations of the Market Approach:
  - (a) Intangible assets are very unique.
  - (b) There is limited guideline transaction data for intangible assets.
  - (c) When intangibles are sold, they are typically sold with other components of a business enterprise.
  - (d) If sold individually, transactions are not often subject to public disclosure.

#### V Overview of Income Approach – Definition of Income Approach per ASC 820 and IFRS 13

A) B10 The income approach uses valuation techniques to convert future amounts (eg cash flows or income and expenses) to a single present (discounted) amount. The fair value measurement is determined on the basis of the value indicated by current market expectations about those future amounts. Those valuation techniques include the following:

- present value techniques
- option pricing models, such as the Black-Scholes-Merton formula (a closed form model) and a binomial model (a lattice model), which incorporate present value techniques and reflect both the time value and the intrinsic value of an option
- the multi-period excess earnings method, which is used to measure the fair value of some intangible assets.

## B) Overview of Income Approach – Basic Steps

- Project future earnings, cash flow or other type of investment return using qualitative and quantitative analysis of:
  - (a) The subject asset,
  - (b) The business enterprise,
  - (c) Industry in which it participates, and
  - (d) Status and outlook for the local/regional/national economic environment.
- Assess the investment risk involved in the projected future returns.
- Derive a risk-adjusted *cost of capital* from the capital marketplace expressed as a *discount rate* (usually applied to equity or invested capital).

## C) Overview of Income Approach – Alternative Methods

- Alternative methods within the Income Approach reflect differences in the quantification of the benefit stream:
  - (a) Multi-Period Excess Earnings Method (MPEEM)
    - Estimate total income for business or business unit.
    - Deduct shares of income associated with other required assets.
    - Calculate present value of remaining income (excess earnings after returns for other required assets) using an appropriate risk-adjusted discount rate.
  - (b) Cost Savings Methods
    - Relief from Royalty Method (RFR)
    - Income Increment / Cost Decrement Method (With and Without)
    - Direct estimate of cost savings
  - (c) Greenfield or Build-Out Methods

## D) Overview of Income Approach – Comments on Criteria for Selection of Assets to Appraise – MPEEM

- The MPEEM is best suited for assets that “drive” surplus cash flow of an enterprise. These assets are referred to as primary or enabling assets.
- Per 3.3.3 of the Customer-Related Assets document, “In our view, a primary asset of a business is an asset which has significant importance to the business relative to other assets and is a key business driver from an economic perspective (e.g., cash flows).” Per 3.3.4, “Depending upon the nature of the business, the primary asset(s) may be tangible assets such as real or personal property; identifiable intangible assets such as customers, technology or brands; or other assets or business

attributes such as workforce, assemblage of assets, other elements of goodwill. In addition, it may also be possible for there to be no clear primary asset(s) in a business. "

- Attributes of assets valued using the MPEEM may include:
  - (a) Direct source of current or near future revenue generation,
  - (b) Enabling asset which “drives” the business,
  - (c) Replacement may be more difficult, and
  - (d) Typically considered the most significant or valuable acquired intangible assets.

E) Overview of Income Approach – Comments on Criteria for Selection of Assets to Appraise – RFR Method

- The RFR Method is often best suited for assets which may be licensed, but instead are owned. As such, value is derived based on the fact that the owner of that asset avoids the cost of licensing that asset.
- Attributes of assets valued using the RFR Method may include:
  - (a) Generally not expected to be a direct source of current or near future revenue generation
  - (b) Generally not an enabling asset which “drives” the business
  - (c) Possibly more readily replaced
  - (d) Less significant portion of cash flows (and value in many cases) relative to primary asset that is valued using the MPEEM)

F) Overview of Income Approach – Limitations

- Determination of appropriate method may be challenging.
- Significant informed judgment is required when assigning cash flows of an acquired enterprise to specific intangible assets.
- Need to properly reflect risk associated with the cash flows in question and determine appropriate discount rate.
- Need to determine the term of the cash flow forecasts.
- Limited observable market data to support many variables.

G) Overview of Income Approach – Cash Flows for Intangible Assets vs. Business Enterprises

- Type of cash flow – control vs. minority:

- (a) In business valuation, methods under the income approach can generate either a *control value* or a *minority value*, depending primarily upon whether control or minority projected investment returns are valued.
- (b) For intangible assets, cash flows are estimated on a control basis.
- Type of cash flow – invested capital vs. equity:
  - (a) In business valuation, cash flows may be estimated to reflect those available to the total business enterprise or to equity shareholders only.
  - (b) For intangible assets, cash flows are estimated only for those attributable to the particular asset being valued.

#### H) Overview of Income Approach – Generation of Cash Flows

- The cash flow stream generated by an intangible asset may include any/all of the following:
  - Increased revenue – due to higher quality or unique features:
    - Premium price per unit, and/or
    - Increased number of units sold.
- Cost savings – lower costs
  - Production
  - Marketing
  - Other
- New profit generation – development of proprietary products, core technology used in a new product, or unrelated in-process research and development separate from the core technology.
- Mix of the above.
- Lack of data, including forecasts, will be covered in Section 6.

#### I) Overview of Income Approach – Discount Rates for Intangible Assets

- Discount rate derivation for the valuation of intangible assets is challenging.
  - (a) Lack of market data
  - (b) Uncertainties associated with level of risk for different intangibles
- Methods exist to help develop reasonable estimates. Also, methods and estimates are evolving as valuation professionals continue to assess these issues.
- Reconciliation of three different discount rates will result in improved discount rate estimates for intangible assets:



- (a) WACC – weighted average cost of capital
- (b) WARA – weighted average return on assets
- (c) IRR – discount rate implicit in a purchase price (rate of return that equates the purchase price to the projected cash flows used by the buyer in making the acquisition)
- Remember three ways to look at discount rate:
  - (a) WACC – return on the capital investment (right side of balance sheet)
  - (b) WARA – return on the assets (left side of balance sheet)
  - (c) IRR – return to the investors (both debt and equity)
- WACC and WARA are derived from market participants, whereas, IRR is particular to the purchase price and cash flow assumptions of the buyer.
- Invested capital cash flow of the business enterprise should be discounted using the WACC.
- WACC represents the return on total invested capital (debt plus equity).
  - (a) WACC relates to the capital – the right-hand side of the balance sheet.
- WARA is calculated based on:
  - (a) Estimated fair value of each asset;
  - (b) Normalized level of operating assets;
  - (c) Discount rate for each asset (i.e., an appropriate risk-adjusted rate of return for each asset class);
  - (d) Proportion of each asset compared to total net assets at fair value of the acquired firm; and
  - (e) Net assets – the left-hand side of the balance sheet (often defined as total assets less current liabilities).
- These topics will be discussed in greater detail in Section 6.

## VI Selection of Valuation Methods - Introduction

### A) Introduction

- After careful assessment of the nature, quality, and quantity of information obtained on a given intangible asset will determine the best approach to apply.
- While often not meaningful in valuing intangibles, application of more than one approach may provide helpful insights.
  - Technology valuation

- Income approach indication \$50,000,000
  - Cost approach indication \$400,000
  - Given the relationship above, would the income approach indication merit further consideration?
  - What additional information would help assess these dramatically different value indications?
- Determination of the appropriate approach(es) and method(s) for the valuation of an intangible asset is an area requiring significant informed judgment.
- The AICPA guide *Valuation of Privately-Held-Stock Issued as Compensation* (“Cheap Stock Practice Aid”) provides guidance to assess the relevance of different methods of valuation.
- Although this guide is focused on business enterprise valuation, the concepts can also be considered in determining appropriate methods for the valuation of certain intangible assets.
- The Cheap Stock Practice Aid provides guidance on appropriate methods of valuation given different stages of development for a business enterprise. This concepts can be considered for intangible asset valuations.
- The following slides provide key insights from the Practice Aid.
- Challenges in the valuation of early stage companies (or their underlying assets) include:
  - (a) High degree of uncertainty on future outcomes
  - (b) Extremely rapid potential growth
  - (c) Potentially long periods until stabilized operations
  - (d) Frequent absence of traditional valuation metrics
    - No or limited revenues
    - Negative or low levels of EBITDA and net income
  - (e) Risks from potential need for additional capital to sustain operations
  - (f) Wide range of potential future outcomes at unknown future dates
    - IPO
    - Acquisition (most frequently by a strategic buyer)
    - Continue to operate as a private firm
    - Bankruptcy

- The Practice Aid includes suggestions for preferred valuation approaches based on the stage of development of a business enterprise. These include:
- 6.04 Stage 1– Embryonic - No product revenue and little expense history
  - (a) Backsolve method (Market Approach – Prior Transactions Method)
  - (b) Asset accumulation method (Cost Approach)
- 6.05 Stage 2 – Early development – Moderate development effort with partial proof of concept
  - (a) Backsolve method
  - (b) Asset accumulation method
  - (c) DCF Method as secondary method
- 6.06 Stage 3 – Later stage development – Product in beta testing
  - (a) Backsolve method
  - (b) DCF Method
- 6.07 Stage 4 – Commercially Feasible – First revenues, operating losses
  - (a) Market and DCF Methods, Backsolve Method
- 6.08 Stage 5 – Financially Feasible - Break through to profitability
  - (a) Market and DCF Methods, Backsolve Method
- 6.09 Stage 6 – Established – Meaningful history of revenues / profits
  - (a) Market and DCF Methods, Backsolve Method

#### B) Selection of Valuation Methods – Valuation Methods and Stage of Development

- The Cheap Stock Practice Aid suggests different valuation approaches for the different stages of development as follows:
  - (a) Cost Approach – Stage 1 and 2 enterprises
  - (b) Market Approach – Stages 4, 5 and 6
  - (c) Income Approach – Stages 3, 4, 5 and 6

#### C) Selection of Valuation Methods – Revenue or Cost Elements

- Significant judgment is required in the determination of the correct method of valuation. Framing the valuation choice for an intangible asset based on its impact on either revenues or expenses or both may assist in appropriate determination of methodology.
- Revenue Elements

(a) Price per Unit

(b) Quantity Sold

- Cost Elements
- How might the income statement impact(s) of an intangible asset influence the valuation method selected?

#### D) Selection of Valuation Methods – Possible Sources of Information for Different Intangible Assets

	Sales/ Marketing	Manufacturing	R&D Engineering	Purchasing	Legal	Administration/ Finance
Trademarks	■	■			■	
Patents	■	■	■		■	■
Proprietary Technology		■	■			
Records and Drawings		■	■	■		■
Software		■	■	■		■
Copyrights	■				■	■
Providing Contracts	■				■	
Receiving Contracts				■	■	
Customer Relationships	■					

#### E) Selection of Valuation Methods – Business Functions and Their Business Impact and Possible Related Intangibles

- Design product / processes – possible impact on revenues or reduced costs
  - Patents, secret processes, technical documentation, government certification
- Purchase Raw Materials – possible cost savings
  - Supply contracts
- Produce product – possible cost savings
  - Patents, secret processes, technical documentation, government certification, contract with outside manufacturer
- Advertise / Sell product – possible impact on revenues or reduced costs
  - Customers, trade name, brand

- Distribute product – possible cost savings
  - Distributor agreements, transportation agreements
- Collect money – possible cost savings
  - Assembled workforce, software, internal procedures
- Management of firm – primarily reduced or avoided costs
  - Assembled workforce, software, internal procedures, training programs

#### F) Selection of Valuation Methods – Types of Patents

- Three categories of patents are granted by the U.S. Patent and Trademark Office:
  - (a) Utility – a utility patent is the most common patent and issued in connection with “any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof” per Section 101 of the U.S. Code. The term is the longer of 17 years from issuance or 20 years from application filing.
  - (b) Design – a design patent is issued in connection with the invention of “any new, original and ornamental design for an article of manufacture” per Section 171 of the U.S. Code. The term is 14 years.
  - (c) Plant – plant patents are a small category of patents which protect certain types of plants, such as flowers, fruits, shrubs, and vines. It is issued in connection with the invention, discovery or reproduction of “any distinct and new variety of plant, including cultivated spores, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state” per Section 161 of the U.S. Code. The term is 20 years from application filing.
- The type of patent may influence the potential method of valuation – excess earnings method vs. cost-savings based valuation method (e.g., RFR Method).
- SOURCE: Smith & Parr, Intellectual Property: Valuation, Exploitation, and Infringement Damages, 2005, pp. 28-29.

#### G) Selection of Valuation Methods – Technology and Types of Feasibility

- The stage of a technology will relate to three different types of feasibility:
  - (a) Technical feasibility – Does the technology work?
  - (b) Commercial feasibility – Is there a market for the technology?
  - (c) Financial feasibility – Is the technology financially viable, i.e., provides a suitable return on investment?

	<u>Existing</u>	<u>In-Process</u>	<u>Future</u>
– Technical feasibility	Yes	Possible	Not known
– Commercial feasibility	Yes	Possible	Not known
– Financial feasibility	Varies	Possible	Not known

- How would the current level of feasibility influence the approach selected and general expectations regarding key assumptions?

#### H) Selection of Valuation Methods – Criteria for Assessing Customer-Related Assets

- Per 3.3.6 of the Customer-Related Assets guide "The following are factors to be considered for the purpose of gaining a qualitative understanding of the relative importance of the customer related intangible assets being valued and subsequently selecting appropriate valuation methodologies. These are grouped into four categories:
  - (a) industry characteristics,
  - (b) company characteristics,
  - (c) product/service characteristics,
  - (d) and asset characteristics."

#### I) Selection of Valuation Methods - Criteria for Assessing Customer-Related Assets – Industry Characteristics

- 3.3.7 Industry Characteristics
  - (a) Concentration of firms – An FDA approved drug essentially represents a "monopoly". Given this, the customer-related intangible has less value
  - (b) Buyer power - Similar to the factor above, evidence of strong buyer power may indicate the relative importance of customer assets. If customers have power, which is usually a function of choice and/or low switching costs, a demonstrated ability by the target to retain these customers suggests they are an important asset. If customers have little power (e.g., less choice and/or high switching costs), the entity's demonstrated ability to retain the customers is likely due to a different asset.
  - (c) Barriers to entry - Industries with high barriers to entry may enjoy excess economic profits. The source of the barriers to entry should be considered. For example, a unique technology might not be easily replicated, which limits competition and customer choice. This in turn limits customer-related asset value—the valuable asset is the technology.

#### J) Selection of Valuation Methods - Criteria for Assessing Customer-Related Assets – Company Characteristics

- 3.3.8 Company Characteristics

- (a) Type of company – Are customers “walk-ins” or subject to long term contract?
  - (b) Relative asset class spend - Relative investments made in different asset classes may indicate the relative importance of those assets,
  - (c) Marketing strategy – Market to customers (source of revenues) or end users (i.e., Coca Cola)
- K) Selection of Valuation Methods - Criteria for Assessing Customer-Related Assets – Product Characteristics
- 3.3.9 Product/Service Characteristics
    - (a) Product differentiation – Highly differentiated products could suggest reduced value in customers. Less differentiated products suggest greater marketing efforts required. (Note – while less differentiated products suggests greater customer value relative to technology, it could also suggest higher attrition. This could suggest potentially lower enterprise value with less value overall in intangibles including customers and goodwill.)
    - (b) Switching costs – What do switching costs relate to – onerous contract cancellation terms may suggest more value in customers.
    - (c) Life cycle stage – For an early stage technology company, more value may be in technology. Company brand and/or customer may increase in value over time.
    - (d) Protective rights
- L) Selection of Valuation Methods - Criteria for Assessing Customer-Related Assets – Asset Characteristics
- 3.3.10 Customer-Related Asset Characteristics
    - (a) Purchase Order vs. Long-Term Contract Based – Are long term contracts driven by customer focused efforts or an underlying technology?
    - (b) Attrition – What are relative importance of the mix of factors that impact customer attrition rates? Is attrition rate low due to strong technical advantages? Could suggest greater value in technology.
    - (c) Depth of knowledge – Greater knowledge of specific customers suggests potential for greater customer value
- M) Selection of Valuation Methods – Example 1
- Buyer Company acquires Target Pharmaceutical Company. One of the assets acquired is a patented drug formulation which is sold throughout the world. This asset has a significant impact on:
    - (a) Units sold – Patent increases units sold

- (b) Price per unit – Patent increases price per unit
- (c) Reduce costs – Patent allows production and acts as a barrier to entry preventing others from producing
- Based on the facts presented, the valuation professional determined that an Excess Earnings Method within the Income Approach would be most appropriate.
- (a) The intangible has a significant impact on the financial performance of the operations including historical and future revenues, expenses and the level of income.

#### N) Selection of Valuation Methods – Example 2

- Buyer Company acquires Target Company. One of the assets acquired is a recognized trade name. The trade name results in lowered advertising expenses.
- With the trade name, the Buyer avoids the cost of licensing that asset.
- Market data is available on royalty charges to license similar trade names.
- This asset may have an impact on:
  - (a) Units sold – Some T/N could increase. For the given facts, no impact.
  - (b) Price per unit – Some T/N could increase. For the given facts, no impact is believed.
  - (c) Reduce costs – Trade name may reduce marketing or other expenditures (extent of warranty, etc.) necessary to sell the product or service. For this trade name, reduced costs is the perceived financial impact.
- Based on facts presented, the valuation professional determined that the Relief from Royalty Method within the Income Approach would be most appropriate.
- (a) The intangible provides name recognition for the entity. Presumably, this would result in marketing cost savings due to recognition of the trade name. The marketing cost savings can be estimated as a royalty rate expressed as a percentage of revenues.

#### O) Selection of Valuation Methods – Example 3

- Buyer Company acquires Target Company. Target operates a large wealth management firm. A covenant not to compete agreement is acquired.
- Given the unique characteristics of this asset, the valuation professional determined that it is not possible to identify information on a meaningfully comparable asset in the market for this agreement.
- This asset impacts:
  - (a) Units sold – Customer relationships could be lost if competition is allowed.



- (b) Price per unit – Competition might result in price reductions to avoid customer losses.
- (c) Reduce costs – Competition might result in increased marketing or other expenditures necessary to sell and/or deliver the services.
- The benefit to the Buyer Company of the non-compete can be estimated based on the comparative cash flows that the business can generate with the covenant in place compared to the value of cash flows if a covenant was not in place.
- Based on the facts presented, the valuation professional determined that comparative (“with and without”) discounted cash flow analyses within the Income Approach would be most appropriate.
- (a) This type of asset can best be valued based on the difference between the value of two alternative scenarios – one with the asset and one without the asset.

#### P) Selection of Valuation Methods – Example 4

- Buyer Company acquires Target Company. Target develops disaster recovery software. One of the assets acquired is its patented technology.
- A technological alternative is not available to a buyer.
- Assets of this nature rarely change hands on the open market; and when they do, no public market data is available.
- The expected impact of the asset on financial performance is:
  - (b) Units sold – Increases units sold due to comparative advantage.
  - (c) Price per unit – Increases price per unit due to comparative advantage.
  - (d) Reduce costs – Reduces marketing, extent of warranty, and possibly other costs relative to competing products.
- Investment risk, profits from commercialization, and earnings growth potential are key elements that must be considered in valuing the technology.
- Selection of Valuation Methods – Example 4 (*cont’d*)
- Based on the facts presented, the valuation professional determined that an Excess Earnings Method within the Income Approach would be most appropriate.
- (a) The asset has a key impact on the financial performance of the entity including historical and future revenue, expense and income levels.

#### Q) Selection of Valuation Methods – Example 5

- Buyer Company acquires Target Company. Target operates a chain of budget motels within the southwestern United States. One of the assets acquired is the assembled workforce.

- Assets of this nature never change hands on the open market.
- The expected impact of this asset on financial performance is:
  - (b) Units sold – Not viewed as differentiator, hence, no impact on volume.
  - (c) Price per unit – Not viewed as a differentiator, hence, no impact on price.
  - (d) Reduce costs – No significant impact on continuing operating costs. Only cost would be the cost to replace the existing workforce.
- Income and/or cash flows cannot be directly attributed to assets of this nature.
- The current costs necessary to create a similar asset (in this case, the costs to recruit, hire, and train a replacement workforce) can be estimated.
- Based on the facts presented, the valuation professional determined that a Replacement Cost Method within the Cost Approach would be most appropriate.
  - (a) Note: Per ASC 805, an assembled workforce is not separable from goodwill and is valued only to develop a contributory asset charge in the application of the MPEEM.

## VII Tax Amortization Benefit (TAB)

### A) Introduction

- The amortization of the cost to acquire intangible assets is typically deductible for tax purposes in certain jurisdictions
- The value of an asset valued using the Income Approach includes two elements:
  - (a) Cash flows generated by the asset
  - (b) Cash flow increase due to tax shield from amortization of the value of the asset. Depreciation or amortization of the tax basis of an asset reduces the taxable income of the asset.
- The impact of tax rules regarding depreciation or amortization of the tax basis of an asset impacts the market value of assets. All other things held equal, an asset with more favorable tax attributes (i.e., shorter tax amortization period) will be worth more than an otherwise identical asset with a more delayed tax basis recovery.
- The estimation of the TAB is jurisdiction-specific and needs to incorporate the tax rates, amortization periods, and any limitations of the specific country in which it is domiciled (more on this in future slides)
- A TAB is “iterative” because its inclusion in the asset value generates more amortization which generates more TAB. Formulas allow for quick calculation of the value of a TAB with requirements for iterative (or circular) calculations.

## B) TAB – The Three Valuation Approaches

- TAB is reflected in different fashions for the three valuation approaches:
  - (a) Market approach – Tax amortization benefit presumably is included in the market price of guideline assets. (Changes in tax rules will often lead to changes in supply and demand and, hence, value of assets.)
  - (b) Cost approach – Depends on valuation of asset.
    - Not included if pretax costs used (preferred methodology).
    - Included if pretax costs are adjusted to an after-tax basis.
  - (c) Income approach – Tax amortization benefit should be included. When intangible assets are valued using after-tax cash flows, this amortization benefit should be included to reflect the incremental value provided by this tax deduction.
  - (d) Tax amortization benefit should only be included for assets where the benefit is appropriate.

## C) Tax Amortization Benefit – Jurisdictional Issues

- The TAB calculation should follow the rules applicable to the jurisdiction where a market participant is expected to domicile the acquired asset
  - (a) Rebuttable presumption being that this would be the same as the actual jurisdiction in which the asset is actually going to be domiciled in the absence of specific plans to change
- Not all IRC Section 197 intangibles are recognized as amortizable intangibles under foreign tax regimes
- The tax rate should reflect the governing tax regime, which may not be where the cash flows are generated (so the tax rate in the TAB may be different than for the asset itself)
- The length and pattern of the intangibles amortizable lives under foreign tax regimes will differ from the U.S. Tax Code
- The Section 338 (g) election has no impact on tax bases in foreign jurisdictions
- Area of complication: Selling an asset from one tax jurisdiction to another – Which countries tax rules should be used in calculating the TAB? The selling country or buying country?

## D) Tax Amortization Benefit – Various International Rules

International Tax Amortization Benefit Rules					
Tax Treatment of Value of Different Intangible Assets in Different Countries					
	Customer				
<u>Country</u>	<u>Relationships</u>	<u>Trademark</u>	<u>Patents</u>	<u>Goodwill</u>	<u>Technology</u>
Australia	No TAB	15 yrs	12 yrs	no TAB	N/A
Canada	15 yrs	15 yrs	15 yrs	15 yrs	N/A
China	max (10 years: RUL)	max (10 years: RUL)	max (10 years: RUL)	max (10 years: RUL)	max (10 years: RUL)
France	No TAB	No TAB	5yrs	No TAB	N/A
Germany					
Hong Kong	no TAB	no TAB	no information available	no information available	N/A
India	25.0% p.a. declining	25.0% p.a. declining	25.0% p.a. declining	no TAB	N/A
Ireland	No TAB	No TAB	17yrs	No TAB	N/A
Japan	5yrs	10yrs	8yrs	5yrs	N/A
Korea	5yrs	5yrs	10yrs	5yrs	N/A
Malaysia	no TAB	No TAB (5 yrs for some)	No TAB (5 yrs for some)	no TAB	N/A
Netherlands	RUL	RUL	rem. priod of legal protect.	10yrs	N/A
New Zealand	no TAB	no TAB	rem. priod of legal protect.	no TAB	N/A
Northern Ireland	min (RUL; 25yrs)	min (RUL; 25yrs)	min (RUL; 25yrs)	no TAB	N/A
South Africa	no TAB	no TAB	20yrs	no TAB	N/A
Spain	20 yrs	20 yrs	20 yrs	20 yrs	20 yrs
Thailand	10yrs	10yrs	10yrs	10yrs	N/A
United Kingdom	min (RUL; 25yrs)	min (RUL; 25yrs)	min (RUL; 25yrs)	no TAB	N/A
USA	15 yrs	15 yrs	15 yrs	15 yrs	15 yrs
Source:	TaxAmortisation.com	Updated April 2016			

## E) Tax Amortization Benefit – Formula

- Value of an asset equals:
  - (a) PV of After Tax Cash Flows plus PV of Tax Amortization Benefit
- Answer would appear to involve circular arguments – need to know amortization benefit to know full value of asset but can't know full value without knowing the value of the tax benefit.
- The formula for the value of an asset including the tax amortization benefit (under U.S. tax law) is:

$$(a) PV_{CF} * (n / n - (AF)(t) - 1)$$

– Where:

$PV_{CF}$  = Present value of cash flows from the asset

$n$  = 15 years (finite amortization period)

$k$  = Discount rate for the intangible asset

$t$  = Tax rate

$$AF = PV(k, n, -1) * (1 + k)^{0.5}$$

AF = Present value of a \$1 annuity over 15 years, at the given discount rate  
(assumes mid-period receipt of benefit)

#### F) Tax Amortization Benefit – Detailed Presentation

**PE Buyer, Inc.** **Exhibit TAB**  
**Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805**  
**Tax Amortization Benefit Calculation**

December 31, 20X0  
 \$ in 000's

Year	Period	Amortization	Tax Rate	Disc. Rate	PV Factor	Tax Benefit
1	0.5	6.7%	40.0%	16.0%	0.93	0.0248
2	1.5	6.7%	40.0%	16.0%	0.80	0.0213
3	2.5	6.7%	40.0%	16.0%	0.69	0.0184
4	3.5	6.7%	40.0%	16.0%	0.59	0.0159
5	4.5	6.7%	40.0%	16.0%	0.51	0.0137
6	5.5	6.7%	40.0%	16.0%	0.44	0.0118
7	6.5	6.7%	40.0%	16.0%	0.38	0.0102
8	7.5	6.7%	40.0%	16.0%	0.33	0.0088
9	8.5	6.7%	40.0%	16.0%	0.28	0.0076
10	9.5	6.7%	40.0%	16.0%	0.24	0.0065
11	10.5	6.7%	40.0%	16.0%	0.21	0.0056
12	11.5	6.7%	40.0%	16.0%	0.18	0.0048
13	12.5	6.7%	40.0%	16.0%	0.16	0.0042
14	13.5	6.7%	40.0%	16.0%	0.13	0.0036
15	14.5	6.7%	40.0%	16.0%	0.12	0.0031
<b>Total:</b>		<b>100.0%</b>				<b>0.1601</b>

Sum of Present Values of Cash Flows	4,492
Plus: Tax Amortization Benefit	856
Indicated Fair Value of Trade Name	5,348

Sum of Present Values of 4,492 / (1 - Tax Benefit Factor of 0.1601) = 5,348  
 TAB = 5,348 - 4,492

#### G) TAB – Impact of Transaction Structure on TAB

- There is some confusion on whether a TAB should be included in asset valuations when acquisitions are made using different transaction structures.
- Acquisitions of the stock of a firm may not lead to a change (frequently a step up) in the tax basis of the underlying assets. A business acquisition structured as a purchase of assets would result in a step up in the tax basis of the underlying assets in many tax jurisdictions.
- For financial reporting purposes, TAB is included irrespective of whether transaction is a stock purchase or asset acquisition. An asset cannot be worth different amounts depending on the tax structure of a transaction.
- 3.1.08 of the CAC document states “The Working Group believes that the fair value of an asset should not differ depending on the tax structure of a particular transaction.”

- “When measuring the fair value of intangible assets, common practice is to include, as part of the intangible asset's fair value, a TAB value for both taxable and nontaxable transactions. However, the TAB value is generally realizable only in taxable transactions.” (IPR&D Practice Aid, paragraph 6.131)
- “When a stock sale occurs without a corresponding change in the bases of assets acquired and liabilities assumed for tax purposes, some have argued that no tax benefit should be included in the valuation of the intangible assets acquired because the buyer will not amortize the intangible assets acquired for income tax purposes.” (IPR&D Practice Aid, paragraph 6.123)
- “The task force believes that the determination of fair value would take into account future income taxes that a market participant purchasing the asset would be expected to pay, without regard to how the transaction is structured for income tax reporting purposes (that is, whether the transaction is structured to result in a change in bases of assets acquired and liabilities assumed for income tax reporting purposes).” (IPR&D Practice Aid, paragraph 6.124)
- Transaction prices paid for stock vs. asset acquisitions should differ due to different tax bases the buyer will receive.
- Financial reporting impact of a stock purchase where the tax basis of an asset is less than its fair value would be captured in a deferred tax liability recorded by the buyer. This would approximate the TAB foregone.

#### H) TAB – Asset vs. Stock Transaction – Example

Comparison of Transaction Economics - Stock vs. Asset Acquisitions				
<b>Assumptions</b>				
Income before Depreciation		3,000,000		
Fair Value of Asset		30,000,000		
Tax Basis - Scenario 1		0		
Tax Basis - Scenario 2		40,000,000		
Depreciation Life (Tax)		20		
<b>Income and Cash Flow Calculation:</b>				
		<b>Asset</b>	<b>Stock Scenario 1</b>	<b>Stock Scenario 2</b>
<b>Income before Depreciation (NOI)</b>		<b>3,000,000</b>	<b>3,000,000</b>	<b>3,000,000</b>
Depreciation (Tax Basis)		1,500,000	-	2,000,000
Taxable Income		1,500,000	3,000,000	1,000,000
Tax Expense (Tax Basis)	40.0%	600,000	1,200,000	400,000
<b>After Tax Income</b>		<b>900,000</b>	<b>1,800,000</b>	<b>600,000</b>
Depreciation (Tax Basis)		1,500,000	-	2,000,000
<b>Cash Flow</b>		<b>2,400,000</b>	<b>1,800,000</b>	<b>2,600,000</b>
<b>Calculation of Tax Depreciation Expense:</b>				
Tax Basis		30,000,000	-	40,000,000
Tax Depreciation Life		20	20	20
Depreciation (Tax Basis)		1,500,000	-	2,000,000
<b>Tax Impact on Corporation (5):</b>				
Proceeds Received		30,000,000	N/A	N/A
Tax Basis		0		
Gain on Sale		30,000,000		
<b>Notes:</b>				
(1) For ease of presentation, assume an office building is owned by a corporation and a buyer wants the building.				
(2) Asset can be acquired from the selling corporation. Tax basis is equal to fair value assume bought at fair value.				
(3) Owner of the corporation can sell the stock of the company which owns the asset. Tax depreciation depends on the tax basis of the corporation. Two scenarios illustrate impact of the actual tax basis to buyer and seller.				
(4) Market indicates building is worth 10X Income before Depreciation (NOI or Net Operating Income).				
(5) If corporation sells asset, it will pay taxes. Calculation reflects scenario 1 - no tax basis in asset.				
If owner sells stock in corporation, there is no tax impact on the corporation's tax basis in the asset.				

## I) Tax Amortization Benefit – Selection of Discount Rate

- As the tax amortization benefit reflects future tax savings (i.e., cash flows), a discount rate estimate is a key element of the calculation.
- There is diversity in practice and a rationale for selecting discount rates in a TAB calculation

Reference Rate	Rationale
Intangible discount rate	Consistency with the risk associated with the underlying asset being valued
Risk free rate	The tax benefit is received from the IRS, a U.S. government agency. Use of risk free rate is rarely observed.
Cost of debt	The uncertainty associated with the utilization of the tax benefit is rooted in the company's ability to generate enough profit to cover its losses (similar to the risk of generating just enough profit to make interest payments on debt)
Overall business risk (WACC or IRR)	The ability to generate future profit and use tax amortization benefits is a risk of the overall business

- Observed practice primarily includes use of return of the overall business (WACC) or using the intangible asset's own rate of return
- Discount rate lower than the WACC may be appropriate if market participant buyer has significant earnings allowing use of the tax benefit (this could be a buyer specific and not market participant assumption).

## VIII APPENDIX

## A) Tax Information - Types of Tax Rates

- Statutory: Corporate income tax rate set by government (whether federal, state, or local)
  - (a) U.S. Federal tax: progressive rate – maximum rate of 21% (effective 2018)
  - (b) U.S. State tax: varies by state from 0% - 12%
- Marginal: The tax rate paid on the next dollar of income earned (often statutory rate)
- Effective: Total taxes / Pre-tax income
  - (a) Can be calculated based on GAAP, tax, management, or cash reporting metrics
  - (b) Focus of most clients
- Value added tax (“VAT”): Seller taxed on the amount of value seller adds to product
  - (a) VAT varies by country ~5-25%
  - (b) U.S. doesn't have a VAT (though being considered with U.S. tax reform)

- Although, in theory, companies should only be concerned with cash taxes, most public companies spend significant time planning around their effective tax rate for reporting purposes



## Chapter 4 – The Cost Approach

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### I Cost Approach Overview

#### A) Definition from ASC 820 and IFRS 13

- “The cost approach is based on the amount that currently would be required to replace the service capacity of an asset (often referred to as current replacement cost). From the perspective of a market participant (seller), the price that would be received for the asset is determined based on the cost to a market participant (buyer) to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. Obsolescence encompasses physical deterioration, functional (technological) obsolescence, and economic (external) obsolescence and is broader than depreciation for financial reporting purposes (an allocation of historical cost) or tax purposes (based on specified service lives).”
- The approach assumes that the fair value would not exceed what it would cost a market participant to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence.

#### B) Cost Approach Overview – Other Definitions

- *Definition of Cost Approach per the International Glossary of Business Valuation Terms, 2001:* “A general way of determining a value indication of a business, business ownership interest, or security by using one or more methods based on the value of the assets of that business net of liabilities.”
  - (a) This definition does not specifically mention intangible assets.
- *Definition of Cost Approach in Real Estate:* In real estate, the Cost Approach is defined as “a set of procedures through which a value indication is derived for the fee simple interest in a property by estimating the current cost to construct a reproduction of, or replacement for, the existing structure plus any profit or incentive [emphasis added]; deducting depreciation from the total cost; and adding the estimated land value. Other adjustments may then be made to the indicated fee simple value of the subject property to reflect the value of the property interest being appraised.”

Source: *The Appraisal of Real Estate*, Appraisal Institute

- *Definition of Cost Approach per the International Valuation Standards (2017)*

60.1. The cost approach provides an indication of value using the economic principle that a buyer will pay no more for an *asset* than the cost to obtain an *asset* of equal utility, whether by purchase or by construction, unless undue time, inconvenience, risk or other factors are involved. The approach provides an indication of value by calculating the current replacement or reproduction cost of an *asset* and making deductions for physical deterioration and all other relevant forms of obsolescence.

### C) Cost Approach Overview – When to Apply

- The International Valuation Standards (2017) include guidance on when to apply the Cost Approach.
  - (a) 60.2. The cost approach *should* be applied and afforded *significant weight* under the following circumstances:
    - *participants* would be able to recreate an *asset* with substantially the same utility as the subject asset, without regulatory or legal restrictions, and the *asset* could be recreated quickly enough that a *participant* would not be willing to pay a *significant* premium for the ability to use the subject *asset* immediately,
    - the *asset* is not directly income-generating and the unique nature of the *asset* makes using an income approach or market approach unfeasible, and/or
    - the basis of value being used is fundamentally based on replacement cost, such as replacement value.
  - (b) 60.3. Although the circumstances in para 60.2 would indicate that the cost approach *should* be applied and afforded *significant weight*, the following are additional circumstances where the cost approach *may* be applied and afforded *significant weight*. When using the cost approach under the following circumstances, a *valuer* *should* consider whether any other approaches can be applied and *weighted* to corroborate the value indication from the cost approach:
    - *participants* might consider recreating an *asset* of similar utility, but there are potential legal or regulatory hurdles or *significant* time involved in recreating the *asset*,
    - when the cost approach is being used as a reasonableness check to other approaches (for example, using the cost approach to confirm whether a business valued as a going-concern might be more valuable on a liquidation basis), and/or
    - the *asset* was recently created, such that there is a high degree of reliability in the assumptions used in the cost approach.

### D) Cost Approach Overview – Key Elements

- The Cost Approach establishes value based on the cost of reproducing or replacing the asset (reproduction cost or replacement cost).
- Based on economic principle of substitution:
  - (a) A prudent investor would pay no more for a fungible (i.e., interchangeable) asset than the cost that would be incurred to replace the asset with a substitute of comparable utility or functionality.
- Replacement cost new typically establishes the maximum amount that a prudent investor would pay for a fungible asset.

- Per section 6.1.2 of the Customer-Related Assets guide “The application of the Cost Approach to value customer-related assets should consider the following items:
  - (a) Direct costs (e.g., materials, labor, advertising, direct selling, etc.);
  - (b) Indirect costs (e.g., general and administrative overhead);
  - (c) Developer’s profit; and
  - (d) Opportunity costs and;
  - (e) Obsolescence.”

#### E) Cost Approach Overview – Contrasting Developers Profit and Opportunity Costs

- Per 6.2.1.d of the CRA final document, “Although developer’s profit and opportunity costs both reflect an element of profit while the customer asset is being constructed, they relate to different elements. From a practical perspective, the developer’s profit is the level of profit required on capital employed in the creation of the customer asset—i.e., the level of profit a third party would require if they were engaged in the activities of creating the customer-related assets. In contrast, opportunity costs reflect the cash flow foregone while the asset is being (re)created.”

#### F) Cost Approach Overview – Developers (Entrepreneurial) Profit

- For real estate assets, a provision for profit or incentive on the costs associated with the development of an asset is regularly included and is a specific element of the description of the valuation approach.
- For intangible assets, many valuation professionals do not include a provision for any profit or incentive on the costs associated with the development of an asset which is valued using the Cost Approach.
- An asset acquired from a third party would presumably reflect their costs associated with creating the asset as well as some form of profit mark-up required to provide a return on investment.
- 6.2.5 *Developer’s Profit* – Developer’s profit reflects the expected return on the investment (direct plus indirect costs). Developer’s profit can be calculated based on a reasonable profit margin on the development activities. This profit margin should be based on market participant data, as available.
- 6.2.6 The developer’s profit can be estimated by reviewing market participant margins on similar activities. For instance, in deriving the developer’s profit on sales and marketing activities a reasonable metric may be to review margins of value added resellers or value added distributors. The actual margins of the subject business may also be reflective of an appropriate margin.

#### G) Cost Approach Overview – Opportunity Costs

- SEC comment on customer valuation suggested the Cost Approach may understate the value of customer-related intangibles. SEC noted that for customer-related

intangibles an opportunity cost (lost profit) may need to be added to the initial cost estimate if a Cost Approach is used.

- This SEC comment related to the inclusion of an opportunity costs in the valuation of customer-related intangibles. As customers are the “source” of revenues and cash flows this would seem to most logically be valued using an Income Approach. However, the inclusion of opportunity costs can be broadened to the valuation of other intangible assets.
- Per the CRA final document “6.2.7 *Opportunity Costs* – Although developer’s profit and opportunity costs both reflect an element of profit while the customer asset is being constructed, they relate to different elements. From a practical perspective, the developer’s profit is the level of profit required on capital employed in the creation of the customer asset—i.e., the level of profit a third party would require if they were engaged in the activities of creating the customer-related assets. In contrast, opportunity costs reflect the cash flow foregone while the asset is being (re)created. utilized while being created. If opportunity costs are significant, application of the cost approach might not be applicable.”

#### H) Cost Approach Overview – Opportunity Costs – SEC Perspective

- SEC Speech on December 10, 2007 by Sandie E. Kim
  - (a) SEC noted “For certain intangible assets, it may be appropriate to use a replacement cost approach. In order to determine the replacement cost of an intangible asset, do not forget to ask the following questions: “Would a market participant pay a premium for the benefit of having the intangible asset available for use today, rather than waiting until the asset is obtained or created?” If the answer is yes, and the premium for immediate use would be material, we believe that an “opportunity cost” should be considered in the fair value of the intangible asset under a replacement cost approach. That opportunity cost represents the foregone cash flows during the period it takes to obtain or create the asset, as compared to the cash flows that would be earned if the intangible asset was on hand today.”
- SEC Speech on December 10, 2007 by Sandie E. Kim
  - (a) Some of the question to keep in mind include, but are not limited to, the following:
    - Is the asset difficult to obtain or create?
    - Is there a long period of time required to obtain or create the asset?
    - Is the asset scarce?
    - Is the asset critical to the business operations?

#### I) Cost Approach Overview – Internally Development Costs vs. Third Party Cost Estimates

- The estimated cost of an asset could differ depending on whether costs are based on internal or third party cost estimates.

- Cost estimates for intangible development from a third party would be expected to include compensation for:
  - (a) Labor,
  - (b) Material,
  - (c) Overhead, and
  - (d) Profit required to compensate the seller for their efforts.
- Historical practice for valuation of internally created intangibles may include differing assumptions regarding these amounts – especially allocation of overhead and inclusion of a profit element.

#### J) Cost Approach Overview – Internal Development Costs vs. Third Party Cost Estimates – Example

##### Sample Comparison of Internal vs. Third Party Cost Estimates

	Internal	Third Party
Base Labor Rate per Hour	\$40.00	\$40.00
Profit Mark Up @ 15% (1)	0% -	15% 6.00
Adjusted Labor Rate	40.00	46.00
Hours Required	5,000	5,000
Base Labor Cost	200,000	230,000
Materials (2)	30,000	50,000
Materials Mark-Up (3)	0% -	15% 7,500
Total Materials with Mark-Up	30,000	57,500
Total Labor and Materials before Overhead	230,000	287,500
Overhead Allocation (4)	10% 23,000	20% 57,500
Fair Value Estimate before Obsolescence Adj.	253,000	345,000
Adjustment for Obsolescence (5)	0% -	0% -
<b>Fair Value Estimate</b>	<b>\$ 253,000</b>	<b>\$ 345,000</b>

##### Note:

- (1) Internal cost estimate may not include profit factor
- (2) Materials may differ due to less accurate tracking
- (3) For internal estimate, inclusion of mark-up on materials is uncertain
- (4) Overhead allocations may differ
- (5) Analysis indicated no adjustments required for any form of obsolescence.

#### K) Cost Approach Overview – Limitations

- The Cost Approach does not incorporate information about the amount of economic benefits associated with the asset (i.e., it does not consider economic obsolescence).
- It does not consider the duration of time over which the economic benefits will be enjoyed.

- The Cost Approach does not capture the risk associated with receiving the expected economic benefits.
- Adjustments that are necessary to reflect the effects of obsolescence must be separately calculated and are often difficult to quantify.

L) Cost Approach Overview – Comments from IPR&D Guide on Use of Cost Approach for IPR&D

- The IPR&D Accounting & Valuation Guide, *Assets Acquired in a Business Combination to be Used in Research and Development Activities*, addresses the application of the Cost Approach in valuing IPR&D.
- Section 1.08 states: ““The task force recognizes that the cost approach is widely used for valuing assets in general. However, it is less commonly used to value IPR&D assets because the goal of R&D is generally to develop commercial products (that is, income-producing assets), which are intended to generate profits (that is, the value derived from those assets is expected to exceed costs incurred in developing those assets). Therefore, for assets to be used in R&D activities, including IPR&D projects, there may be little or no relationship between historical cost expended and fair value. For example, a great invention may cost little, in which case, fair value may far exceed cost. Conversely, an R&D project may last for years without producing a commercially viable product, in which case, the cost approach may overstate the fair value of the technology.”
- “Given that many IPR&D projects are one-of-a-kind, the Cost Approach is likely not to be appropriate for valuing IPR&D projects. That said, costs can be a barrier and influence the rate of return. As such, we should not eliminate consideration of relevant costs.”

M) Cost Approach Overview – Application of Cost Approach for IPR&D

- The IVS include the following language which needs to be considered in assessing the valuation of IPR&D
  - (a) 60.4. The value of a partially completed *asset* will generally reflect the costs incurred to date in the creation of the *asset* (and whether those costs contributed to value) and the expectations of *participants* regarding the value of the property when complete, but consider the costs and time required to complete the *asset* and appropriate adjustments for profit and risk.
- As discussed in the prior course module, the AICPA Cheap Stock Guide also notes difficulties using methods other than the Cost Approach for very early stage business enterprises.

N) Cost Approach Overview – Use for Customer-Related Assets

- The Income Approach is often used to value customer relationships. However, “while an income approach often provides the most appropriate valuation of acquired customer relationship intangible assets, circumstances may certainly indicate that a



different method provides a better estimate of fair value.” (Speech by Joseph B. Ucuzoglu on December 11, 2006)

- Per 6.1.4 of the CRA final document, “The Working Group believes the use of a cost approach to value customer-related assets may be appropriate under certain fact patterns, including but not limited to the following:
  - (a) Customer relationships are not a primary asset of the business;
  - (b) There are very few identified customer relationships;
  - (c) There is limited or no sales history with existing customers;
  - (d) There is limited or poor ability of management to forecast cash flows associated with existing customers;
  - (e) Management’s projection for existing customers suggests negative cash flow for the foreseeable future, but nonetheless customers are viewed as having some value for other reasons;
  - (f) The customer relationships do not convey significant rights or obligations—i.e., they are non-exclusive; and
  - (g) There are no significant barriers to entry or switching costs.

#### O) Cost Approach Overview – Reconciling Cost and Income Approach Value Indications

- A development stage drug requires valuation for ASC 805. Key information developed by the valuation professional includes:
  - (a) Estimated costs incurred of \$10,000,000 at valuation date.
  - (b) Estimated costs to complete of \$100,000,000 with 3 years until expected revenue and income generation (if viable).
  - (c) Valuation professional has estimated a fair value of the IPR&D of \$200,000,000 using a discounted cash flow analysis.
  - (d) What questions does this difference between cost and income indications raise? (E.g., does this difference imply a risk that someone can beat them to market?)

#### P) Cost Approach Overview – Intangible Assets Commonly Valued Using the Cost Approach

- Assembled workforce
- Internally used software
- Database
- Patient records
- Engineering drawings

- Packaging designs
- Certain operating permits (readily obtained)
- Operating manuals

#### Q) Cost Approach Overview – Replacement vs. Reproduction Cost

- Replacement cost vs. reproduction cost:
  - (a) Quantification of incurable functional and technological obsolescence:
    - Replacement cost – The cost to create, at current prices, an asset having equal utility to the subject. However, the replacement asset would be created with modern methods and constructed according to current standards (certain possible deficiencies of the asset will be curable).
    - Reproduction cost – The cost to construct, at current prices, an exact duplicate or replica of the subject asset. Costs encompass all of the deficiencies and obsolescence that exist in the subject asset. Many of these conditions or characteristics are inherent in the subject and are, therefore, incurable.

Reilly & Schweih, pp. 122-124.

#### R) Cost Approach Overview – Flow of Elements of Cost Approach – From Cost to Value – Pre-tax Calculation

Reproduction cost (new)

- Incurable functional (technological) obsolescence
- = Replacement cost (new)
- Physical deterioration
  - Curable functional (technological) obsolescence
  - Economic obsolescence (external)

= **Value of subject asset**

#### S) Cost Approach Overview – Flow of Elements of Cost Approach – From Cost to Value – After-Tax Calculation

Reproduction cost (new)

- Incurable functional (and technological) obsolescence
- = Replacement cost (new)
- Physical deterioration
  - Curable functional (and technological) obsolescence



- Economic obsolescence (external)
- = “Pre-tax” value of asset
- Provision for taxes
- + Tax amortization benefit (TAB)
- = Value of subject asset

#### T) Cost Approach Overview – Use of Historical Costs

- Historical cost is the actual cost (total cost) incurred to develop the asset.
- Historical costs, when adjusted for inflation or comparative cost indexes are applied, result in current reproduction costs. Intangible asset valuation is almost always concerned with replacement and not reproduction cost.
- Often used in machinery and equipment appraisals where costs have already been capitalized.
- Historical costs should be assessed by valuation professionals in the event current replacement costs differ materially from these amounts. The current replacement cost would be expected to be the preferable basis for the valuation estimate.

## II Obsolescence

#### A) Definitions of TYPES Of Obsolescence from *Valuing Machinery and Equipment*, ASA Text

- Economic obsolescence is the loss in value of a property caused by factors external to the property. These may include such things as:
  - (a) The economics of the industry
  - (b) Availability of financing
  - (c) Loss of material and/or labor sources
  - (d) Passage of new legislation
  - (e) Changes in ordinances
  - (f) Increased cost of raw materials, labor, or utilities (without an offsetting increase in product price)
  - (g) Reduced demand for the product
  - (h) Increased competition
  - (i) Inflation or high interest rates, or similar factors

- Functional obsolescence is the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient or less costly replacement property that new technology has developed.
- Symptoms suggesting the presence of functional obsolescence are:
  - (a) Excess operating cost
  - (b) Excess construction (excess capital cost)
  - (c) Overcapacity
  - (d) Inadequacy
  - (e) Lack of utility, or similar conditions
- Physical deterioration is the loss in value or usefulness of a property due to the using up or expiration of its useful life.
- Physical deterioration is caused by:
  - (a) Wear and tear
  - (b) Deterioration
  - (c) Exposure to various elements
  - (d) Physical stresses, and similar factors

Source: *Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets*, Second Edition, American Society of Appraisers, 2005, page 67.

#### B) Obsolescence – Generic Forms

- Forms of obsolescence
  - (a) Physical
    - Due to physical wear and tear resulting from continued use (rarely applicable for intangibles)
  - (b) Functional
    - Inability to perform the function for which it was originally designed
  - (c) Technological
    - Due to improvements in technology
  - (d) Economic (external)
    - Effects, events, or conditions, that are not controlled by the current use or condition of the asset

## C) Obsolescence – Estimation

- For assets where market data is available, the market data would be expected to capture all forms of obsolescence.
- Tangible assets:
  - (a) The values of many types of used tangible assets are reported in pricing guides (used vehicles and similar equipment items as examples) or other sources and can be easily referenced in the valuation process. For these assets, obsolescence considerations are readily captured in the market price.
  - (b) Many tangible assets may be unique and a Market Approach may not be feasible. For these assets, measurement of all forms of obsolescence is more challenging.
- Intangible assets – Given the special use nature of many intangible asset, market data is often not available. This creates challenges in measuring the different forms of obsolescence as a part of developing a fair value estimate.

## D) Obsolescence – Estimation of Age / Life Depreciation

- One means of capturing obsolescence (primarily functional and possibly some economic for an intangible asset) is through depreciation based on the asset's actual age and its expected remaining life.
- Assume the following:

Replacement cost new for asset at valuation date	\$100
Age of asset (years)	6
Total economic life of asset	8

The indicated fair value of the asset would be:

Current RCN	\$100
Less obsolescence adjustment (6 / 8 or 75%)	- 75
Depreciated replacement cost	\$ 25

- For a tangible asset, the age / life adjustment would include a provision for “normal” physical obsolescence (wear and tear). An asset not in “typical” condition would require a further adjustment for physical obsolescence.

## E) Obsolescence – Estimation of Economic Obsolescence

- Economic (external) obsolescence results from conditions external to the asset including industry, general economic or other factors.
- Allocation of economic obsolescence to assets is extremely difficult and reflects specific facts and circumstances.

- Two key drivers of economic obsolescence are:
  - (a) Lower revenues – price and/or quantity sold declines
  - (b) Increased operating costs
- Revenue shortfall – Economic obsolescence may result from an excess of the capacity of an asset relative to market demand. (See *Valuing Machinery and Equipment*, pp. 97–101.)
  - (a) A machine is acquired for \$100 with expected output of 10 units. Weak economic factors indicate demand of only 6 units. An adjustment for economic obsolescence of 40% is indicated. Lower demand might result in dramatically lower profit, so, obsolescence measurement may be more complex.
- Excess operating costs – Costs above those initially anticipated represent another form of economic obsolescence. Excess operating costs might be the result of economic factors which are external to the asset (i.e., dramatic increase in fuel costs).
- These and other approaches of measuring economic obsolescence require consideration of business enterprise level factors, hence, the allocation of obsolescence among various asset remains an issue.
- External factors may impact the value of many assets of a business enterprise (cash and certain assets are not impacted by external obsolescence).
- To measure economic obsolescence at a business enterprise level, compare:
  - (a) Fair value of the total invested capital (TIC) of the business enterprise (appraised as a going concern) to
  - (b) Fair value of total individual estimates for WC, FA and IA (summation of all individual appraised asset values less current liabilities). (Remember TIC is equal to WC plus FA plus IA.)
- If the FV of TIC is less than the total of WC, FA and IA, there is obsolescence that should be allocated to underlying assets of the enterprise. (This statement is predicated on the transaction not being a bargain purchase.)
- If purchase price exceeds appraised asset values after obsolescence adjustments, there is goodwill.
- Question: If economics of business enterprise are poor due to weak management, how does this impact economic obsolescence?

#### F) Obsolescence – Estimation of Economic Obsolescence, Goodwill or Bargain Purchase

- To adjust asset values for economic obsolescence, first confirm that preliminary asset value estimates fully reflect the more readily identifiable forms of obsolescence (physical and/or functional). If the appraised value of TIC (not purchase price) is still

less than the fair value of the WC, FA and IA, then economic obsolescence should be applied.

- In a purchase allocation setting, determination of economic obsolescence is further complicated by the guidance on bargain purchases in ASC 805.
  - (a) Under SFAS 141 (2001), if the FV of the appraised WC, FA and IA exceeded the purchase price (TIC basis in this example), then certain assets values would be adjusted downward so that the appraised value is consistent with the purchase price. (This might possibly reflect the belief that the purchase price is at FV as bargain purchase are exceedingly rare.)
  - (b) Under ASC 805, if a bargain purchase is initially indicated, then management (and the appraiser) should:
    - Reassess the procedure for identification and recognition of assets and liabilities assumed, and
    - Review the procedures used to measure the values of assets and liabilities to reconfirm their reasonableness.
    - If the initial valuations are confirmed and no economic obsolescence is indicated in any specific assets, then the effective amount of the bargain purchase is recognized as a gain in earnings (ASC 805-30-30-4 to ASC 805-30-30-6)
  - (c) Tax rules for purchase price allocation provide for a specific allocation first to higher risk asset categories and then to lower risk asset categories until the economic obsolescence has been eliminated.

#### G) Obsolescence – Economic Obsolescence, Goodwill or Bargain Purchase – Example 1

- ABC Company has no liabilities and is acquired. Value estimates follow:
  - Assets appraised individually and summed \$100
  - Appraised FV of enterprise as going concern \$90
  - Purchase price \$95
- Economic obsolescence calculation:
  - Assets appraised individually and summed \$100
  - Appraised FV of enterprise as going concern \$90
  - Economic obsolescence \$10
- Goodwill / bargain purchase calculation:
  - Purchase price \$95
  - FV of assets after obsolescence adjustment \$90
  - Goodwill \$5

## H) Obsolescence – Economic Obsolescence, Goodwill or Bargain Purchase – Example 2

- ABC Company has no liabilities and is acquired. Value estimates follow:
  - Assets appraised individually and summed \$100
  - Appraised FV of enterprise as going concern \$90
  - Purchase price \$70
- Economic obsolescence calculation:
  - Assets appraised individually and summed \$100
  - Appraised FV of enterprise as going concern \$90
  - Economic obsolescence \$10
- Goodwill / bargain purchase calculation:
  - Purchase price \$70
  - FV of assets after obsolescence adjustment \$90
  - Bargain purchase (“negative goodwill”) \$20

## I) Obsolescence – Estimation of Economic Obsolescence – Example

- The schedule below presents several different alternatives when the purchase price of TIC is less than the initial valuation estimates of the FV of WC, FA and IA.

Economic Obsolescence				
	Initial	Alternative 1	Alternative 2	Alternative 3
Assets	Fair Value	Fair Value	Fair Value	Fair Value
Net Working Capital (Excl. Excess Cash)	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Fixed Assets				
- Land and building	20,000	17,000	20,000	20,000
- Machinery and equipment	15,000	11,000	15,000	15,000
Trade Name	5,000	5,000	2,000	5,000
Existing Customer Relationships	3,000	4,000	2,000	4,000
Assembled Workforce	1,000	1,000	1,000	-
Subtotal, Appraised Assets Except Goodwill	54,000	48,000	50,000	54,000
Goodwill, Excluding Assembled Workforce	(4,000)	2,000	-	-
Total	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
Total Purchase Price	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
Gain Recognized on Income Statement				\$ 4,000
<b>Notes:</b>				
Alternative 1 - Subsequent assessment indicated that machinery and equipment and building were overvalued.				
- Source of overvaluation could have been failure to consider economic obsolescence or other required valuation adjustments.				
- Customer relationships value increased due to reduction in contributory assets charge.				
- Correction of fixed asset values led to indication of residual goodwill value.				
Alternative 2 - Subsequent assessment indicated that trade name and customer values were overstated.				
Alternative 3 - Bargain purchase confirmed due to distress sale by Seller. All value estimates confirmed as reasonable.				
- Under ASC 805 bargain purchase element (negative goodwill) is recognized as gain. Assembled workforce is not recognized as asset separate from goodwill, therefore, not included as asset in calculating gain.				

### III Tangible Asset Reproduction Cost – Estimation

- A) In the appraisal of tangible assets, three methods can be considered to estimate the cost to reproduce an asset:
- Unit Cost (or Cost) Method – Estimate of costs required to reproduce or replace
  - Historical Cost Trending – Adjusts estimated historical cost using a price index.
  - Unit of Production Method – Cost estimate based on units of output of the asset
- B) Appraisal Depreciation – Appraisal depreciation has been referred to by some as a valuation method. It is not a separate method but a component of the calculation of each method.

Source: Smith & Parr, *Intellectual Property: Valuation, Exploitation, and Infringement Damages*, pp. 160-165.

### IV Application of the Cost Approach to Intangible Assets

- A) The Cost Method involves estimating the efforts and costs needed to create a similar asset by considering the following factors:
- Qualified professionals needed to develop the asset
  - Salaries and benefits of those professionals
  - Overhead costs for clerical and technical support, utilities and workspace and outside services
  - Raw materials used in the development process
  - May include an adjustment for an assumed profit rate
- B) The aggregate of all of the expenses from these factors is an indication of the cost to replace the asset.
- C) Application of the Cost Approach to Intangible Assets – Example

Example of Software Valuation by Unit Cost Method					
	Hours	Rate	Direct Labor	Overhead and Profit	Total Cost
Management specification development	230	\$ 70.25	\$ 16,158	125%	\$ 36,354
IT project management	420	43.50	18,270	120%	40,194
Computer operations testing	210	23.75	4,988	90%	9,476
Systems analysis	1,375	33.85	46,544	110%	97,742
Programming & testing	3,350	31.50	105,525	110%	221,603
Documentation	180	32.00	5,760	110%	12,096
	5,765		\$ 197,244		\$ 417,465

Source: Smith & Parr, *Intellectual Property: Valuation, Exploitation, and Infringement Damages*, 2005, p. 162.

## V Tax Adjustments in the Cost Approach - Summary

- A) Per 6.2.11.f of the CRA final document “The costs estimated in this method are investment costs and not period costs, and therefore the conclusion of the cost approach should not be tax affected. Nor should the conclusion be adjusted for the TAB, as a pre-tax conclusion is consistent with an exit price that a market participant would receive for the asset.”
- B) There is some divergence in practice in the application of tax adjustments in the valuation of certain intangible assets using the Cost Approach.
- Not tax-affecting – Value conclusion based on pretax costs with no further adjustments.
  - Tax-affecting – Value conclusion reflects adjustment of pretax costs to an after-tax basis. A tax amortization benefit adjustment is added to after-tax basis to reflect the tax savings associated with amortization of the asset for tax reporting purposes.
- C) Capitalization policy for many assets is consistent with the perspective supporting the use of a pre-tax value indication

## VI Valuation of Assembled Workforce

### A) Overview

- Assembled workforce (AWF) is not recognized as an intangible asset apart from goodwill for purposes of ASC 805. Rather, its value is included in goodwill.
- AWF must be valued as it is an important element when other intangible assets are valued using the Excess Earnings Method. A contributory charge for the role of the AWF in generating the overall profit of the business is deducted to reach the residual income (excess earnings) of the primary intangible asset.
  - (a) In applying the Excess Earnings Method, a charge is taken on assets that contribute to the projected economic income of certain intangibles (e.g., customer-related intangible asset, existing technology, and in-process research and development as examples). Types of contributory assets will vary. They may include fixed assets, working capital, assembled workforce, software, and (for IPR&D only) existing technology.
  - (b) The application of the contributory asset charge will be discussed further in Section 8.
- Assembled workforce has value because firms incur considerable costs to recruit, hire, and train employees. The costs of recruiting, hiring, and training personnel are viewed as investments that must receive similar valuation treatment as other corporate resources.
- The value of the assembled workforce is determined by establishing the cost that is avoided in recruiting, hiring, and training/developing replacement personnel.



- The Cost Approach is frequently the most applicable of the three approaches to value an assembled workforce.
  - (a) Within the Cost Approach, the Replacement Cost Method (RCM) is used to estimate the current costs necessary to create a similar asset.
  - (b) The costs to replace an assembled workforce include the costs to recruit, hire, and train a replacement workforce.

#### B) Valuation of Assembled Workforce – Hiring Costs

- Hiring costs may include the following:
  - (a) Costs for locating employees
  - (b) Executive recruiter costs for high level or other difficult to locate employee classifications
  - (c) Direct advertising
  - (d) Salaries and benefits of employees involved in recruiting replacement employees (i.e., fully loaded FTE hourly rate)
- Salaries and benefits of employees involved in interviewing replacement employees
- Overhead costs related to employees involved in recruiting and hiring the replacement employees
- Other costs such as relocation expenses

#### C) Valuation of Assembled Workforce – Training Costs

- Training costs may include:
  - (a) Direct training costs
  - (b) Productivity costs
- Direct training costs:
  - (a) Salaries and benefits paid to employees as they are being trained, until they become productive
  - (b) Any other direct training expenditures – including formal external training, seminars, etc.
  - (c) Salaries and benefits of employees involved in training replacement employees
- Lost productivity costs:
  - (a) Approximate time period allotted to unproductive time until an employee reaches full productivity

- (b) Considers different learning curve for each classification of employee; Possibly level of initial productivity and time until full productivity
- (c) Overhead costs related to employees involved in training replacement employees

#### D) Valuation of Assembled Workforce – Special Considerations

- Special considerations in valuing an Assembled Workforce (the AWF is a contributory asset and its estimation and integration into the MPEEM should reflect market participant assumptions):
  - (a) If workforce reductions are expected, the **excess** employees should not be included in the assessment.
  - (b) If management is considering the termination of a product line, it may be appropriate to exclude employees who work exclusively on that product.
  - (c) If union contracts are in place, forcing the company to operate with excess employees, the **excess** may not be included as an intangible asset since it decreases profit (unless all market participants inherit these contracts).
  - (d) These are factors especially in an ASC 805 setting where the workforce being valued is one that was obtained as part of an acquisition.

#### E) Valuation of Assembled Workforce – Application of Obsolescence

- While the instruction on the valuation of assets using the Cost Approach clearly includes an adjustment for obsolescence, this factor is rarely employed in the valuation of the assembled workforce.
- One form of depreciation calculation reflects an age/life concept. As an example, if an asset is expected to have a 10-year life and the effective age of the asset at the valuation date is four years, then the asset is 40 percent depreciated.
- Factors suggested for exclusion of this adjustment include:
  - Seasoned employees might be viewed as more likely to stay a longer total employment term with a firm.
- (a) A seasoned work force would likely be more productive and valuable compared to a new workforce. This increased value might offset the reduction in value associated with a possible shorter remaining life.

## (b) Valuation of Assembled Workforce – Tuff Tables Example – Pretax Cost Approach

Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805

Valuation of Assembled Workforce

Position	Replacement Costs Per Worker (Pre-Tax)				Number of Employees	Total Replacement Cost (Pre-Tax)	Employee Details		
	Hiring Costs	Training Costs/Year	Lost Productivity	Total Cost Per Worker			Yr. Burdened Compensation	Starting Productivity	Months to 100% Productivity
Management & Professionals	\$ 10,000	\$ 10,000	\$ 10,417	\$ 30,417	10	\$ 304,167	\$ 125,000	50%	3
Sales Representatives	\$ 5,000	\$ 5,000	\$ 8,750	\$ 18,750	75	1,406,250	\$ 70,000	50%	5
Product Design	\$ 5,000	\$ 5,000	\$ 8,750	\$ 18,750	5	93,750	\$ 60,000	50%	4
Administrative / Clerical	\$ 1,000	\$ 500	\$ 1,250	\$ 2,750	30	82,500	\$ 40,000	75%	2
Semi-skilled	\$ 500	\$ 500	\$ 1,250	\$ 2,250	75	168,750	\$ 40,000	75%	2
Unskilled	\$ 250	\$ 250	\$ 625	\$ 1,125	113	127,125	\$ 30,000	75%	1
Value of Pre-Tax Replacement Cost					308	2,182,542			
Indicated Fair Value of Assembled Workforce, Rounded						\$ 2,180,000			

Note:

Figures based on discussions with and data provided by Management.

## Calculation of Lost Productivity

Management & Professionals	Month	% Effective	Cost of Inefficiencies
	1	50.00%	5,208.3
	2	66.67%	3,472.2
	3	83.33%	1,736.1
	4	100.00%	0.0
Lost Productivity Cost Per Employee:			10,416.7
Sales Representatives	Month	% Effective	Cost of Inefficiencies
	1	50.00%	2,916.7
	2	60.00%	2,333.3
	3	70.00%	1,750.0
	4	80.00%	1,166.7
	5	90.00%	583.3
	6	100.00%	0.0
Lost Productivity Cost Per Employee:			8,750.0
Product Design	Month	% Effective	Cost of Inefficiencies
	1	50.00%	2,916.7
	2	60.00%	2,333.3
	3	70.00%	1,750.0
	4	80.00%	1,166.7
	5	90.00%	583.3
	6	100.00%	0.0
Lost Productivity Cost Per Employee:			8,750.0
Administrative / Clerical	Month	% Effective	Cost of Inefficiencies
	1	75.00%	833.3
	2	87.50%	416.7
	3	100.00%	0.0
Lost Productivity Cost Per Employee:			1,250.0
Semi-skilled	Month	% Effective	Cost of Inefficiencies
	1	75.00%	833.3
	2	87.50%	416.7
	3	100.00%	0.0
Lost Productivity Cost Per Employee:			1,250.0
Unskilled	Month	% Effective	Cost of Inefficiencies
	1	75.00%	625.0
	2	100.00%	0.0
Lost Productivity Cost Per Employee:			625.0

## F) Valuation of Assembled Workforce – Tuff Tables Example – After-Tax Plus Tax Amortization Benefit

Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805

Valuation of Assembled Workforce

Position	Replacement Costs Per Worker (Pre-Tax)				Number of Employees	Total Replacement Cost (Pre-Tax)	Employee Details		
	Hiring Costs	Training Costs/Year	Lost Productivity	Total Cost Per Worker			Yr. Burdened Compensation	Starting Productivity	Months to 100% Productivity
Management & Professionals	\$ 10,000	\$ 10,000	\$ 10,417	\$ 30,417	10	\$ 304,167	\$ 125,000	50%	3
Sales Representatives	\$ 5,000	\$ 5,000	\$ 8,750	\$ 18,750	75	1,406,250	\$ 70,000	50%	5
Product Design	\$ 5,000	\$ 5,000	\$ 8,750	\$ 18,750	5	93,750	\$ 60,000	50%	4
Administrative / Clerical	\$ 1,000	\$ 500	\$ 1,250	\$ 2,750	30	82,500	\$ 40,000	75%	2
Semi-skilled	\$ 500	\$ 500	\$ 1,250	\$ 2,250	75	168,750	\$ 40,000	75%	2
Unskilled	\$ 250	\$ 250	\$ 625	\$ 1,125	113	127,125	\$ 30,000	75%	1
					308	2,182,542			
Less: Provision for Taxes					40.0%	(873,017)			
Value of After-Tax Replacement Cost						1,309,525			
Plus: Tax Amortization Benefit						249,678			
Indicated Fair Value of Assembled Workforce						\$ 1,559,203			
<b>Indicated Fair Value of Assembled Workforce, Rounded</b>						<b>\$ 1,560,000</b>			

## VII Valuation of Software

### A) Overview

- Software is commonly valued using the Income Approach whenever there is an identifiable stream of cash flows or benefits directly associated with the software.
  - (a) Most frequently used when software is revenue generating as it is sold or licensed to third parties.
  - (b) Software can provide cost savings through greater productivity.
- In instances where there is no identifiable stream of economic benefits associated with the software, the Cost Approach is the most applicable way to value the software.
- Value is measured in terms of the cost associated with the replacement of the software.
- There are generally three components to the valuation of software using the Cost Approach:
  - (a) Determination of cost to replace
  - (b) Consider any potential obsolescence adjustment
  - (c) Calculation of the tax amortization benefit, if applicable (note that there is diversity of practice regarding the use of a TAB)

- Information needed to determine the cost to replace in developing software may include:
  - (a) Project description (e.g., functionality, lines of code, language, other)
  - (b) Time required to develop (i.e., project start and end dates)
  - (c) Wages and benefits incurred during development process
  - (d) Any consulting fees
  - (e) Initial purchase costs (if off-the-shelf software with significant modification)
  - (f) Other costs associated with the development of the software

#### B) Valuation of Software – Obsolescence

- Two potential steps involved in determining the obsolescence of software are:
  - (a) Calculate the age of the software based on an observation of the completion dates of all the projects undertaken to complete the software.
  - (b) Assess the historical experience of the firm relative to any prior versions of the software, any planned implementations of future versions, industry norms or alternative software, the design intent of the developers, and expectations of the acquiring firm.
- Software will experience various levels of obsolescence over time due to:
  - (a) Changing functionality of the software in relation to the advancements in successive designs, and
  - (b) Necessity to add new or replace old codes and algorithms.

#### C) Valuation of Software – Reconciling Methods

- Multiple methods can be used to value software. The use of only one method should not be assumed to be sufficient.
  - (a) For example, many valuation professionals will value software using a Relief from Royalty Method, to be introduced in Section 7.
- Significant differences in the indications of value from the various methods should be understood.

#### D) Valuation of Software – Tuff Tables Example – Background Information

- As a part of the allocation of purchase price, the valuation professional identified internal use software that requires valuation. Discussions with Management indicated that they were not aware of any commercially available software at the time of development nor at the present time that would meet their needs. Given the nature of its operations, Tuff Tables did not have available internal resources to develop the

software. As a result, a third party vendor would be required on a “rates and hours” basis. Management indicated development of the software would require management involvement and other resources and provided an overhead estimate to account for this element of the development. Further discussions with management indicated that the software had an initial estimated useful life of six (6) years and the software was developed three (3) years ago.

#### E) Valuation of Software – Tuff Tables Example – Sample Calculation

<b>Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805</b>		
<b>Estimation of the Fair Value of Internal Use Technology</b>		
<b>Cost Approach</b>		
		<b>Fair Value</b>
Estimated Hours to Complete (3rd Party Vendor)		8,000
Estimated Cost Per Hour (1)		\$ 40.00
Indicated Value		320,000
Plus: Overhead Allocation (2)	30.0%	96,000
Indicated Value		416,000
Less: Obsolescence Adjustment (3)	50.0%	208,000
Indicated Value of Existing Technology		\$ 208,000
<b>Indicated Fair Value of Internal Use Technology, Rounded</b>		<b>\$ 208,000</b>
<i>Note:</i>		
<i>(1) Estimated at rate for outsourced coding and development from third-party custom developers. As cost is from a third party, it likely includes overhead allocation and profit element from third party.</i>		
<i>(2) Overhead allocation required as hourly cost is presumably to simply hire third-party consultant.</i>		
<i>(3) Per discussions with Management, existing internal use technology was reportedly one half way through total useful life. (Developed three years ago with estimate useful life of six years.)</i>		

### VIII Valuation of Customer-Related Intangibles

A) Valuation of customer-related intangibles using the Cost Approach is rare. SEC has commented on this in published speeches.

- As customers are the source of revenues of a firm, customer-related intangibles would typically be expected to be valued using an Income Approach.
- In certain cases, technology or products may be more important than customers in the generation of revenues. An example would be a FDA approved blockbuster drug.
- In these cases, there is presently some divergence in practice among practitioners. Complex approaches which value both technology and customers using an Income Approach are being developed. These approaches include complex adjustments to avoid the “double-counting” of revenues and income.

#### B) Valuation of Customer-Related Intangibles – SEC Comments

- According to Statement by SEC Staff: *Remarks Before the 2005 AICPA National Conference on Current SEC and PCAOB Developments*, December 5, 2005, “. . .

the use of a Cost Approach has generally been challenged since, in the staff's experience, the models failed to capture all associated costs that would be necessary to rebuild that customer relationship and the resultant value was not deemed sufficient when compared to values derived by other approaches.”

- At an ASA fair value conference on May 9, 2007, Cheryl Tjon-Hing of the SEC stated that the Cost Approach for the valuation of customer-based intangibles may erroneously exclude opportunity costs (lost profits) associated with not having customer relationships in place.



## Chapter 5 – The Market Approach

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### I Terms and Concepts

#### A) Definitions

- *Definition of Market Approach per IFRS 13 and ASC 820:* “This approach uses observable prices and other relevant information that is generated by market transactions involving identical or comparable assets or liabilities. The fair value measure is based on the value that those transactions indicate.”
- *Definition of Market Approach per IVSC Technical Information Paper 3, paragraph 5.1:* “The market approach provides an indication of value by comparing the subject asset with identical or similar assets for which price information is available.”
- *Definition of Market Approach per the International Glossary of Business Valuation Terms, 2001:* “A general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar (‘guideline’) businesses, business ownership interests, securities, or intangible assets that have been sold.”

#### B) Terms and Concepts – Basis

- The Market Approach is based upon the related economic principles of competition and equilibrium. In a free and unrestricted market, supply and demand (competition) will drive the price of any good to a point of equilibrium.
- The Market Approach arrives at an indication of value by comparing the intangible asset being appraised to guideline assets that have been acquired in an arm’s-length transaction. The market data are adjusted for any significant differences, to the extent known, between the guideline assets and the intangible asset being valued.

#### C) Terms and Concepts – Application and Benefits

- To apply the Market Approach, the valuation professional needs to identify arm’s-length transactions involving guideline assets, disclosure of pricing information, and reasonable knowledge of the relevant facts known to the transacting parties from a comparable market.
- A benefit of the Market Approach is its apparently simple application if a truly comparable transaction is available.
- Conversely, the simplicity of the Market Approach may result in the failure to properly consider all relevant factors with a material impact on value.

#### D) Terms and Concepts – Comparability as per ASA BV Standards

- BVS-V, III addresses what is a “reasonable basis for comparison,” as follows:



- (a) The business, business ownership interest, or security used for comparison must serve as a reasonable basis for such comparison. [Note – no reference to intangible asset.]
- Factors to be considered in judging whether a reasonable basis for comparison exists include:
  - (a) A sufficient similarity of qualitative and quantitative investment characteristics
  - (b) The amount and verifiability of data known about the similar investment
  - (c) Whether or not the price of the similar investment was obtained in an arm's-length transaction, or a forced or distress sale

## II Considerations – Limitations for Intangible Assets

- A) Few transactions – Limited guideline transaction data for intangible assets. (Availability, Timeliness, and Efficiency issues)
- B) Private transactions – Information on sales are typically not subject to public disclosure requirements. (Availability)
- C) Limited disclosure – Where transaction data are available, there may be only limited disclosure. This may be especially true in a public company's disclosure of the results of an allocation of purchase price as required under ASC 805. Overall value conclusions may be listed, but any detail in regard to portfolio depth, quality, quantity and risk is typically not reported in any detail. (Availability and Transparency)
- D) Motivations may be unclear – Where transaction data are available, the motivations of the parties to the transaction may not be fully known. (Transparency and Efficiency)
- E) Uncertain comparability – Intangible assets are often unique and transactions may not exist. (Comparability)
- F) Bundled transactions – Intangibles are often sold bundled with other business assets and it can be difficult to assess the value of a single component of a complex transaction. (Availability and Transparency)
- G) Inactive markets – There are very few transactions over a large period of time. (Timeliness and Efficiency)
- H) Granularity – Intangibles may be valued on a standalone basis or as a basket of IP (i.e. collection of patents, single customer vs. multiple customers). (Efficiency and Availability)

## III Considerations – Some Intangible Assets that May be Valued Using the Market Approach

- A) Operating Rights
  - FCC Licenses
  - Cable franchise rights

- Cellular rights
- B) Domain Names and associated Trademarks
- C) Copyrights
- D) Patents
- E) Carbon Emission Rights
- F) Air Rights/Airport Gates/Air Flight Routes
- G) Franchise Agreements
- H) A 2015 study of 2014 purchase price allocations indicated that many of these intangible assets were assigned indefinite lives including:
  - FCC Licenses
  - Cellular rights
  - Franchise rights
  - Emission rights
  - Cable franchise rights
  - Management contracts
  - Water rights
  - Other assets mentioned on prior slide may also have indefinite lives but were not specifically identified in the study.

Source: Houlihan Lokey, *2014 Purchase Price Allocation Study*, November 2015.

#### IV Application – Sources of Market Based Data

- A) Locating meaningful information for the valuation of an intangible asset, requires a comprehensive search for meaningful market data.
- B) A partial list of sources include:
  - Patent Auctioneers and Brokers
  - Commercial databases
  - Securities and Exchange Commission (SEC) filings
  - Trade journals
  - Industry groups
  - News articles

- Company press releases
- Other specific to the type or industry of the intangible asset

#### V Application – Comparability of Data – Factors to Consider

A) Much like the valuation of a business enterprise, the valuation of an intangible asset using the Market Approach requires the assessment of a broad range of factors such as:

- Profit Level
  - (a) Remaining economic life
- Risk Level
  - (a) New technologies and barriers to entry
  - (b) Industry
  - (c) Market share
  - (d) Legal protection (very difficult to value non-legally protected IP through a market approach).
- Growth Level
- Transaction Activity within the Industry, if ascertainable

#### VI Application – Adjusting Transaction Data

A) Adjusting for rights differences.

- It may be possible to stratify market information by category and identify trends or premiums (i.e., exclusive vs. non-exclusive, territory limits, etc.)
- Other times, data may allow for the calculation of pricing metrics.
  - (a) Population demographics to assess and adjust market information from FCC License auctions or naming rights deals (e.g., price per megahertz or “pop” may be stratified by population density).
  - (b) Statistical analysis may provide a basis for identifying key factors that drive value for creating pricing metrics (e.g., using regression models to calculate linear regression equation to apply).

B) Often, adjustments to market data are not possible. Instead data are analyzed to identify a group of transactions that is most comparable to the subject intangible.

## Chapter 6 – Overview of the Income Approach

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### I Overview

#### A) Appraisal Foundation Working Groups

- The Appraisal Foundation has established several working groups to help enhance practice in certain technical valuation areas. The technical guides include significant discussion of topics pertaining to the Income Approach. The guides include:
  - (a) Working Group 1 – *The Identification of Contributory Assets and the Calculation of Economic Rents*. Final documents issued on May 31, 2010
  - (b) Working Group 2 – *The Valuation of Customer-Related Assets*. Final document issued in June 2016
  - (c) Working Group 3 – *The Measurement and Application of Market Participant Acquisition Premiums*, final document issued September 6, 2017.
  - (d) Working Group 4 – *Valuation of Contingent Consideration* – First Exposure Draft dated February 28, 2017

#### B) Overview – Appraisal Foundation Working Group – Final Document and Toolkit on Contributory Asset Charges

- Not intended as standards. Provide best practices. Per the forward, “This document has no official or authoritative standing for valuation or accounting.” However, given the credentials of the individuals developing the document and the vetting process for the document, insights from the document would like reflect “Best Practices”.
- Elements of Final Document for CAC Working Group
  - (a) Body
  - (b) Comprehensive example
  - (c) Glossary
  - (d) Toolkit with a comprehensive example and a practical expedient example

#### C) Definition of Income Approach IFRS 13 and ASC 820

- B10 The income approach converts future amounts (eg cash flows or income and expenses) to a single current (ie discounted) amount. When the income approach is used, the fair value measurement reflects current market expectations about those future amounts.
- B11 Those valuation techniques include, for example, the following:
  - (a) present value techniques (see paragraphs B12–B30);

- (b) option pricing models, such as the Black-Scholes-Merton formula or a binomial model (ie a lattice model), that incorporate present value techniques and reflect both the time value and the intrinsic value of an option; and
- (c) the multi-period excess earnings method, which is used to measure the fair value of some intangible assets.

#### D) Definition of Income Approach IFRS 13 and ASC 820 - Risk and Uncertainty

- B15 A fair value measurement using present value techniques is made under conditions of uncertainty because the cash flows used are estimates rather than known amounts. In many cases both the amount and timing of the cash flows are uncertain. Even contractually fixed amounts, such as the payments on a loan, are uncertain if there is risk of default.
- B16 Market participants generally seek compensation (ie a risk premium) for bearing the uncertainty inherent in the cash flows of an asset or a liability. A fair value measurement should include a risk premium reflecting the amount that market participants would demand as compensation for the uncertainty inherent in the cash flows. Otherwise, the measurement would not faithfully represent fair value. In some cases determining the appropriate risk premium might be difficult. However, the degree of difficulty alone is not a sufficient reason to exclude a risk premium.

#### E) Overview of the Income Approach – Other Definitions

- *Definition of Income Approach per IVS (2017):* “Valuation methods under the income approach determine the value of an intangible asset by reference to the present value of future income, cash flows or cost saving that could be reasonably expected to be achieved by a market participant owning the asset.”
- *Definition of Income Approach per the International Glossary of Business Valuation Terms, 2001:* “A general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that convert anticipated benefits into a present single amount.”

#### F) IFRS 13 and ASC 350 – Highest and Best Use

- 27 A fair value measurement of a non-financial asset takes into account a market participant’s ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.
- 28 The highest and best use of a non-financial asset takes into account the use of the asset that is physically possible, legally permissible and financially feasible, as follows:
- A use that is physically possible takes into account the physical characteristics of the asset that market participants would take into account when pricing the asset (eg the location or size of a property).

### G) IFRS 13 and ASC 350 – Highest and Best Use

- A use that is legally permissible takes into account any legal restrictions on the use of the asset that market participants would take into account when pricing the asset (eg the zoning regulations applicable to a property).
- A use that is financially feasible takes into account whether a use of the asset that is physically possible and legally permissible generates adequate income or cash flows (taking into account the costs of converting the asset to that use) to produce an investment return that market participants would require from an investment in that asset put to that use.

## II Selecting Methods

### A) Selecting Appropriate Income Approach Method – Single vs. Multiple Scenario Model

- Multiple Scenario Models:
  - (a) Real options and other complex valuation techniques
  - (b) Decision tree analysis
  - (c) Monte Carlo simulation
  - (d) Discounted Cash Flow Method (Multiple scenarios)
- Single or Multiple Scenario Models (Scenarios NOT Periods):
  - (a) Discounted cash flow models
  - (b) Income Increment / Cost Decrement Method
  - (c) Build-Out Method (Greenfield Method)
  - (d) Capitalization of earnings
- Single Scenario Models are more typically used and are the focus of this course.

## B) Selecting Appropriate Income Approach Method – Single Scenario vs. Multiple Scenario Models

• <b>Single Scenario</b>	• <b>Multiple Scenario</b>
— Pros	— Pros
➤ Ease of use and comprehension	➤ Incorporates ranges of expectations
➤ Transparency of data	➤ Reflects strategies in different environment
➤ Widely used	➤ More flexible
— Cons	— Cons
➤ Increased sensitivity to inputs	➤ Requires multiple forecasts with probabilities
➤ Poorly reflects alternative strategies	➤ More difficult to apply and test

## C) Selecting Appropriate Income Approach Method – Single Scenario vs. Multiple Scenario Models

- Valuation methods are becoming more complex given the availability of advanced software, the increasing sophistication of the valuation community, and the heightening demands placed on valuation professionals.
- While many assets might best be modeled and valued using a multiple scenario model, the focus of much current valuation analysis (and this course) is the use of a single scenario model.
- Advantages of a single period method include its greater transparency and ease of comprehension.
- Disadvantage of a single scenario method is its more limited consideration of the financial impact of alternative future events.
- Many of the approaches on the prior slide are multiple scenario valuation models.

## D) Selecting Appropriate Method – Income Approach Methods Frequently Used for Intangible Assets

- The derivation of income estimates is the key difference in the valuation of intangibles using the different methods.
  - (a) Multi-period Excess Earnings Method (MPEEM)
    - Value is based on excess income (“residual” income).
  - (b) Relief-from-Royalty Method (RFR)

- Value is based on avoided third party license payment for right to use an asset (assumes asset is not owned).

(c) Income Increment / Cost Decrement Methods

- Differential cash flows with and without an asset.

(d) Build-Out (Greenfield) Method (Two Approaches)

- Assumes the only asset in place is the appraised asset. All other assets will be acquired and “ramped-up” in the Build-Out Method DCF Model OR
- All of the assets except the appraised asset are in place.

E) Selecting Appropriate Method – Types of Assets Frequently Valued Using Different Methods

- Multi-period Excess Earnings Method (Residual income):
  - (a) Customer related intangibles
  - (b) Key technology (critical to revenue generation)
  - (c) Trade names (enabling brands)
- Relief-from-Royalty Method (Avoided third party payment):
  - (a) Trade names (less important to operations)
  - (b) Some less important technologies (internal use)
- Income Increment / Cost Decrement Methods:
  - (a) Covenant Not-to-Compete
- Build-Out (Greenfield) Method:
  - (a) FCC Licenses
  - (b) Other permits, rights to operate

III Differences between Relevant Methods

A) Differences between methods - Comments on MPEEM

- For the primary income-producing asset of a business enterprise, the MPEEM is most likely the appropriate method to employ.
- The income attributable to the primary asset can be best estimated as a residual concept, or stated alternatively, as the excess return after a fair return to other assets that contribute to the generation of net income. The fair return to other assets is often referred to as a “contributory asset charge.”



- Cash flow of the business operations is allocated to various assets that contribute to the operations. If there is any “excess” (residual) income after the allocation of income to other assets (working capital, fixed assets and/or intangible assets), this excess income is the basis for the value of the primary asset.

#### B) Differences between Relevant Methods – Use of MPEEM for Customers or Technology

- In most situations, customers or technology (or both) are the enabling asset of the entity. This would suggest valuation using the MPEEM. For some firms, brands, licenses or other intangibles could be the enabling asset.
- Customers – If customers are a key asset and firm does not have any key technology, then customer related intangibles would frequently drive revenues.
- Key technology – If marketing and customer acquisition efforts are less important due to technology “driving” revenues, then key technology drives revenue generation:
  - (a) FDA approved drug
  - (b) Other important technology sold to customers
- When technology and customer relationships are both important to revenue generation, multiple MPEEMs may be appropriate.
  - (a) Using multiple MPEEMs involves complex issues:
    - Cross charges
    - Circular arguments
  - (b) Whenever possible, bifurcation of cash flows is best.

#### C) Differences between Relevant Methods – RFR Method and Income Incremental/Cost Decrement Methods

- The RFR Method or Income Increment/Cost Decrement Method are often used to value assets with indirect income benefits (cost savings).
- Examples of indirect income benefits (i.e. do not directly produce revenue):
  - (a) Cost savings to the owner of the intangible asset due to relief from having to pay a third party for the licensing of a similar asset
  - (b) Cost savings leading to increased income – avoiding marketing expenses due to a recognized trade name
  - (c) Protection from competition from a covenant not to compete leading to increased income due to reduced competition for a period of time
  - (d) Other cash flow benefit

- If an asset(s) is valued using a RFR Method, it is likely that another asset (customer or technology related intangible asset) would be valued using the MPEEM.

#### IV Prospective Financial Information

##### A) Introduction

- Prospective financial information (PFI) is a critical component of any valuation of the intangible assets of a business.
  - (a) Value is driven by future cash flows
  - (b) Cost and market approaches may not provide meaningful insights for many intangibles.
- PFI is receiving increased scrutiny given the greater judgment required to project future results and the inherent uncertainty in this endeavor.
- The Mandatory Performance Framework (MPF) provides detailed requirements pertaining to PFI. Given the important of PFI to the valuation process, the following slides discuss key elements of the MPF pertaining to PFI.

##### B) PFI - Definitions

- *Prospective financial statements*—Either financial forecasts or financial projections including the summaries of significant assumptions and accounting policies. Pro forma financial statements and partial presentations are not considered to be prospective financial statements.
- *Financial forecast*—Prospective financial statements that present, to the best of the responsible party's knowledge and belief, an entity's expected financial position, results of operations, and cash flows. A financial forecast is based on the responsible party's assumptions reflecting the conditions it expects to exist and the course of action it expects to take.
- *Financial projection*—Prospective financial statements that present, to the best of the responsible party's knowledge and belief, given one or more hypothetical assumptions, an entity's expected financial position, results of operations, and cash flows. A financial projection is based on the responsible party's assumptions reflecting conditions it expects would exist and the course of action it expects would be taken, given one or more hypothetical assumptions.
- *Hypothetical assumption*—An assumption used in a financial projection to present a condition or course of action that is not necessarily expected to occur, but is consistent with the purpose of the projection.
- *Key factors*—The significant matters on which an entity's future results are expected to depend. Such factors are basic to the entity's operations and thus encompass matters that affect, among other things, the entity's sales, production, service, and financing activities. Key factors serve as a foundation for prospective financial statements and are the bases for the assumptions.

### C) PFI – MPF Comments and Requirements

- *Reasonably Objective Basis*
  - Since PFI represents future expectations, it is, by its very nature, imprecise. Therefore, the assumptions used in preparation of the PFI must be reasonable and supportable.
- *Understanding Management's Approach to Developing the PFI*
  - Valuation professionals should understand and document how the PFI was developed by management. Management may prepare PFI using a “top-down” method or a “bottom-up” method or some combination of the two. A top-down method starts with aggregate assumptions regarding the entity, and allocates those assumptions across the elements of the entity (such as functional groups or reporting units). A bottom-up method generally begins by collecting data at the lowest level of the entity and then coalescing the expectations to arrive at a unified plan for PFI.

### D) PFI – MPF Guidance

- Valuation professionals should be aware of the purpose for which the PFI was prepared. Valuation professionals should strive for objective, reasonable, and supportable PFI relevant for use in the valuation process with the understanding that management bias may exist and, if present, should be properly adjusted to expected cash flows (reflecting market participants' assumptions) in the analysis.
- In order for the valuation professional to assess the quality and reliability of the PFI, the key components of the PFI should be identified. These components commonly include, but are not limited to, the following:
  - (a) Base year metrics
  - (b) Revenue forecasts or revenue growth rates
  - (c) Gross margins
  - (d) EBITDA/EBIT margins
  - (e) Depreciation and amortization (book and tax)
  - (f) Effective tax rate
  - (g) Capital expenditures
  - (h) Debt-free net working capital (DFNWC) requirements
- Part of the valuation professional's responsibility is to evaluate the PFI provided by management for reasonableness in general, as well as in specific areas. Factors and common procedures to consider when performing this assessment may include, but are not limited to, these:

- Comparison of PFI for an underlying asset of subject entity to expected values of the entity cash flows
  - (a) Frequency of preparation
  - (b) Comparison of prior forecasts with actual results
  - (c) Mathematical and logic check
  - (d) Comparison of entity PFI to historical trends
  - (e) Comparison to industry expectations
  - (f) Check for internal consistency

#### E) PFI – MPF Documentation Requirements

- The valuation professional, at a minimum, must document the following in writing within the work file, if applicable:
  - (a) The identification of the party or parties responsible for preparation of the PFI
  - (b) The process used to develop the PFI from the perspective of market participants
  - (c) The explanation of key underlying assumptions used in the PFI such as revenue forecasts, percentage of market share captured by the entity, or how the projected profit margins compare to those of other market participants
  - (d) The steps used in, and results of, testing the PFI for reasonableness, including, but not limited to
    - a comparison of the PFI to expected cash flows,
    - a comparison of the PFI to historical performance,
    - a comparison and evaluation of prior year's PFI against actual historical results (when prior PFIs are available), and
    - an analysis of the forecast relative to economic and industry expectations
  - (e) An analysis of any evidence that contradicts management's assumptions or conclusions used in their PFI
  - (f) The rationale for any adjustments made to management's PFI
  - (g) Evidence that a mathematical and logic check was performed
  - (h) The components of the prospective balance sheet and cash flow statements, if available

## F) PFI – Factors Impacting Uncertainty and Procedures Required

Basis	Less Objective	More Objective
<b>Economy</b>	Subject to uncertainty	Relatively stable
<b>Industry</b>	Emerging or unstable; high rate of business failure	Mature or relatively stable
<b>Entity:</b>		
Operating history	Little or no operating history	Seasoned company; relatively stable operating history
Customer base	Diverse, changing customer group	Relatively stable customer group
Financial condition	Weak financial position; poor operating results	Strong financial position; good operating results
<b>Management's experience with:</b>		
Industry	Inexperienced management	Experienced management
The business and its products	Inexperienced management; high turnover of key personnel	Experienced management

Basis	Less Objective	More Objective
<b>Products or services:</b>		
Market	New or uncertain market	Existing or relatively stable market
Technology	Rapidly changing technology	Relatively stable technology
Experience	New products or expanding product line	Relatively stable products
<b>Competing Assumptions</b>	Wide range of possible outcomes	Relatively narrow range of possible outcomes
<b>Dependency of assumptions on the outcome of the forecasted results</b>	More dependency	Less dependency

## G) Contingent Consideration – Implications for PFI

- Contingent consideration is often used when buyers and sellers differ on purchase price. Differences in purchase price would be expected to tie to different expectations of future cash flows between the buyer and seller.
- IFRS 3 and ASC 805 require the valuation of contingent consideration included in the purchase consideration.

- With a fair value for contingent consideration, IRR calculations and comparison to the WACC can be used to develop / assess PFI.
  - (a) The total transaction consideration can be used in connection with the PFI.
  - (b) By comparing the WACC and IRR, projections for the acquired enterprise can be tested for reasonableness.

#### H) Contingent Consideration – 2016 Results per Houlihan Lokey Purchase Allocation Study

##### Summary of Contingent Consideration 2016 Study

*\$ in millions*

	Count			CC		PC		CC, % of PC			
	CC	All	%	Median	Mean	Median	Mean	Low	High	Median	Mean
All Industries	88	455	19%	\$5	\$31	\$38	\$827	0%	71%	14%	10%
Aerospace, Defense & Government	3	28	12%	3	5	184	155	1%	9%	4%	5%
Consumer, Food & Retail	15	74	20%	5	8	45	272	0%	70%	15%	20%
Energy	2	8	25%	9	9	188	188	4%	9%	7%	7%
Financial Institutions	5	85	8%	18	35	493	488	3%	48%	9%	18%
Healthcare	31	91	34%	13	59	73	1,951	0%	71%	12%	18%
Industrials	8	48	17%	4	39	38	343	2%	33%	12%	15%
Infrastructure Services & Materials	3	20	15%	2	2	8	7	20%	38%	28%	28%
Technology	18	118	18%	3	10	29	38	3%	88%	21%	28%
Telecom	1	7	14%	1	1	2	2	45%	45%	45%	45%

#### V Market Participant vs. Entity-Specific Assumptions

##### A) Introduction

- For all of the valuation approaches, assumptions should reflect those of a market participant rather than those of the acquiring entity.
- While these assumptions may frequently be similar, there can be significant differences.
- Assessing whether assumptions reflect a market participant or are entity specific requires a detailed assessment of the pool of likely buyers for the entity and their similarities/differences with the acquiring entity.

- For an acquisition involving a highly competitive bid with many potential buyers all offering fairly similar prices, it would be likely that the buyer's assumptions may closely map to those of other market participants.
- For an entity acquired in a transaction without any other bidders and where few strategic buyers are present, more of the assumptions of the buyer may reflect an entity specific perspective.
- Entity specific (non-market participant) assumptions that are part of purchase decision become embedded in goodwill.
- Examples of possible market participants:
  - (a) Firms in same industry
  - (b) Actual bidders for the subject entity
  - (c) Firms contacted by the investment banker for the seller
- Assumptions of a financial vs. strategic buyer would likely differ:
  - (a) Strategic buyer may have significant operational efficiencies.
  - (b) Financial buyer would typically have more limited operational efficiencies.
- Per the IPR&D Practice Aid, public filings of market participants would be a key source of information for market participant assumptions.
- Process for normalizing market participant projections:
  - (a) Start with projections of buyer.
  - (b) Extract any elements that relate solely to buyer specific synergies.
  - (c) Include any market participant synergies not included.
- IFRS 13 and ASC 820 state "... unobservable inputs shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk)."
- Further, IFRS 13 and ASC 820 state "... the reporting entity's own data used to develop unobservable inputs shall be adjusted if information is reasonably available without undue cost and effort that indicates that market participants would use different assumptions."
- Comparison of the IRR for a transaction and the WACC for the target company may help identify assumptions that differ from those of a market participant.
  - (a) If IRR exceeds WACC, projections may include buyer specific synergies in excess of those expected by a typical market participant.



## B) Market Participant vs. Entity-Specific Assumptions – Understanding Synergies – Historical Data on Buyer Structures

BUYER STRUCTURE				
Year	Buyer Mix		Financial Buyer Mix <sup>(1)</sup>	
	Strategic	Financial	Platform	Add-On
2005	61%	39%	100%	0%
2006	73%	27%	63%	38%
2007	57%	43%	86%	14%
2008	62%	38%	93%	7%
2009	67%	33%	100%	0%
2010	52%	48%	94%	6%
2011	57%	43%	92%	8%
2012	66%	34%	93%	7%
2013	59%	41%	82%	18%
2014	48%	52%	89%	11%
Last 10 Years	59%	41%	90%	10%

## C) Market Participant vs. Entity-Specific Assumptions – Understanding Synergies

- Synergy Test
  - (a) Understand from management the total synergies expected to be realized on the deal (market participant + entity specific).
    - Tie to deal model if available.
  - (b) Understand the total entity specific synergies paid to the seller based on the negotiated purchase price.
    - Purchase price – BEV = entity specific synergies paid to seller (BEV reflects market participant cash flows and return requirement)

## D) Market Participant vs. Entity-Specific Assumptions – Assessing Prospective Financial Information

- Analyze PFI for overall reasonableness
  - (a) Historical comparison
  - (b) Market comparison
- Significant areas for concern include:



- (a) Intercompany pricing
- (b) Highest and best use
- (c) Fixed and variable costs
- (d) Share based payments
- (e) Management fees / disguised dividends
- (f) Non-recurring, non-operating items
- (g) Non-operating assets and liabilities

E) Market Participant vs. Entity-Specific Assumptions – SEC Perspective

- SEC Comment Letter Excerpt (EnergySolutions 2007)
- *“Please provide us with a detailed synergy analysis related to the goodwill recognized ..... Specifically,*
  - (a) Provide an assessment of what the stand alone value of Envirocare and Duratek is without any consideration of synergies by potential purchasers.*
  - (b) Identify and provide an assessment of what the value of any market participant synergies were expected to be. We assume that these synergies were factored into the cash flows of the identifiable assets being fair valued.*
  - (c) Identity and provide an assessment of the total value of any entity specific synergies on the deal.*
  - (d) Address how much of the entity specific synergies, if any, were given to the seller (after factoring in standalone value + market participant synergies) to “seal the deal”.*

F) Market Participant vs. Entity-Specific Assumptions – SEC Perspective

- SEC Comment Letter Excerpt (EnergySolutions 2007)
- *“Please provide us with a detailed synergy analysis related to the goodwill recognized ..... Specifically,*
  - (a) Provide an assessment of what the stand alone value of Envirocare and Duratek is without any consideration of synergies by potential purchasers. [Value to financial buyer]*
  - (b) Identify and provide an assessment of what the value of any market participant synergies were expected to be. We assume that these synergies were factored into the cash flows of the identifiable assets being fair valued. [Fair value from market participant perspective]*
  - (c) Identity and provide an assessment of the total value of any entity specific synergies on the deal. [Excess price paid. Part of goodwill]*

(d) Address how much of the entity specific synergies, if any, were given to the seller (after factoring in standalone value + market participant synergies) to “seal the deal”. [Purchase price]

G) Market Participant vs. Entity-Specific Assumptions – Possible Types of Synergies

- Revenue
  - (a) Increased revenue from cross selling to customers
  - (b) Increased revenue from product/service bundling
- Cost
  - (a) Selling costs reduction from sales force redundancies
  - (b) Reduced manufacturing costs from production consolidation
  - (c) Reduced distribution costs from consolidation of distribution facilities
- Cost of Capital
  - (a) Combined entity may have better access to capital
  - (b) Reduced customer concentration resulting in lower borrowing rate
- Other

H) Market Participant vs. Entity-Specific Assumptions – Possible Types of Synergies – Revenue

- Per 6.46 of IPR&D Guide – *Example - eliminating entity-specific revenue synergies.*

Company A acquired Company T in a business combination.

Company T's product complements Company A's product.

Upon acquisition, Company A's combined product offering will be unique in the market, and Company A believes that it can derive 10 percent more in revenues from both products than it or market participants could if they were to sell either product on a separate stand-alone basis.

The Prospective Financial Information (PFI) should exclude all revenues attributable to Company A's pre-existing product, and the incremental 10 percent increase in revenues derived from Company T's product, which resulted from having a combined product offering.

I) Market Participant vs. Entity-Specific Assumptions – Possible Types of Synergies – Cost

- Per 6.45 of IPR&D Practice Aid – *Example - eliminating entity-specific cost synergies.*

- (a) Company A acquired Company T in a business combination.
  - (b) Selling costs for Company T are 40 percent of revenues, and the rate representative of performance of market participants is 30 percent of revenues.
  - (c) Due to the unique size and efficiency of its distribution channel, selling costs for Company A are 20 percent (also the rate used by Company A in its PFI alternative that was used to negotiate the final purchase price).
  - (d) Selling costs in the PFI would be adjusted up to 30 percent, the rate representative of market participants, to eliminate a synergy specific to the acquiring company.
- J) Market Participant vs. Entity-Specific Assumptions – Possible Types of Synergies – Cost of Capital
- Proper treatment of cost of capital synergies is especially challenging.
    - (a) A small firm valued on a freestanding basis would likely have an appropriate small stock premium included in the derivation of a cost of capital estimate.
    - (b) Any firm when added to the portfolio of assets of an existing firm may act to reduce the overall risk of the portfolio of assets of the buyer. Should this be captured in the discount rate and valuation model of the buyer? How?
    - (c) If multiple buyers are bidding for a target, it is possible that the rate of return may exclude a small stock premium.
  - Focus on Market Participant
    - (a) Who are acquirers in the marketplace?
    - (b) What is the cost of capital benefit to a market participant buyer?
- K) Market Participant vs. Entity-Specific Assumptions – Possible Types of Synergies – Other
- Per 6.47 of IPR&D Practice Aid – *Example - eliminating entity-specific income tax synergies.*
  - Company A acquired Company T in a business combination. Company A currently does not pay income taxes because of net operating loss carry forwards. Company A does not expect to pay income taxes in the foreseeable future due to the size of the net operating loss carry forwards. In the PFI that Company A provides to the valuation specialist for use in valuing certain assets acquired to be used in R&D activities, management of Company A does not include any expected income tax payments resulting from the cash flows attributable to the acquired assets. In other words, in the PFI prepared by Company A's management, the present value of the expected future cash flows attributed to the acquired assets is the same on a pre-tax basis as on an after-tax basis because no income tax payments are expected.
  - Under IFRS 13 and ASC 820, there is a high hurdle to show a buyer NOL is a market participant synergy.

#### L) Market Participant vs. Entity-Specific Assumptions – Tax Rate Consistency with Market Participant Assumptions

- Tax rate assumptions should be consistent with the market participant principle in a valuation performed for financial reporting purposes
- Buyer-specific tax attributes should not be factored into the valuation in a financial reporting context
- Differences between market participant and buyer specific tax considerations may include:
  - (a) Tax credits not available to other buyers/owners
  - (b) Tax rates that are individually negotiated with local tax authorities
  - (c) Legal entity structure
  - (d) Decisions as to where IP or other assets should be held geographically
  - (e) Transfer pricing policies
  - (f) Limitations on NOL usage

#### M) Market Participant vs. Entity-Specific Assumptions – Example

- Company A acquires Target which has an in-process drug technology. Expected distribution costs for the drug are as follows:
  - (a) Target – 30% of revenues
  - (b) Other industry buyers – 25% of revenues
  - (c) Company A – 20% of revenues
- What is the market participant level of distribution costs?

#### N) Market Participant vs. Entity-Specific Assumptions – Discount Rate Issues

- Discount rate(s) for different synergies should consider the risk associated with achieving the synergies.
- Cost synergies –
  - (a) Discount rate relates to risk of achieving cost savings
- Revenue synergies - Higher risk and discount rate
- Not a hard and fast relationship - always facts and circumstances based

#### O) Projection Assumptions – Selection of Best Estimate

- IFRS 13 and ASC 820 provide insights for using future cash flows as the basis for accounting measurements.

- IFRS 13 and ASC 820 distinguish “the single most-likely amount” from the “expected amount;” the latter is a concept that refers to the sum of probability-weighted amounts in a range of possible estimated amounts.
- The use of an entity’s own assumptions about future cash flows is compatible with an estimate of fair value, as long as there is no contrary data indicating that marketplace participants would use different assumptions.
- If such data exists, the entity must adjust its assumptions to incorporate that market information.

## VI Key Assumptions

### A) Key Assumptions – Estimation of Future Revenues – Forms of Projections

- Per IFRS 13 and ASC 820, there are two types of present value techniques:
  - (a) Traditional
  - (b) Expected present value
- Traditional approach uses a specific set of cash flow projections.
  - (a) Risk of achieving forecast cash flows is captured in discount rate.
  - (b) Discount rate includes risk free rate plus a risk premium.
- Expected cash flow approach uses a composite set of expected cash flow projections which capture probabilities of scenarios. The Expected Present Value Technique, which translates the expected cash flows into a present value indication, is described in ASC 820 and includes two methods.
  - (a) Method 1 of the expected present value technique adjusts the expected cash flows for the systematic (market) risk by subtracting a cash risk premium (risk-adjusted expected cash flows).
  - (b) Method 2 of the expected present value technique adjusts for systematic (market) risk by adding a risk premium to the risk-free interest rate.
- Traditional approach is more typically seen but expected cash flow approach would be theoretically preferable.
- “The Board found the expected cash flow approach to be a more effective measurement tool than the traditional approach in many situations. In developing a measurement, the expected cash flow approach uses all expectations about possible cash flows instead of the single most-likely cash flow.” (paragraph 45, Concepts Statement 7).
- While expected present value technique is technically preferable, as stated at paragraph 51 “Like any accounting measurement, the application of an expected cash flow approach is subject to a cost-benefit constraint.”

### B) Key Assumptions – Estimation of Future Revenues – Forms of Projections – Certainty Equivalent Cash Flows

- In addition to traditional and expected cash flows, the concept of certainty equivalent cash flows merits discussion.
- Certainty equivalent cash flows represent the weighting of all possible cash flow scenarios. In many situations, certainty equivalent cash flows may not be easily developed. In some simple situations, an estimate of certainty equivalent cash flows might be developed.
- As certainty equivalent cash flows represent the average of all possible cash flow scenarios, they incorporate all risk. Therefore, a risk-free rate of return is appropriate as a discount rate for PV calculation. If expected cash flows don't capture all risk, a risk adjustment requires inclusion in the discount rate estimate.
- Certainty equivalent cash flows might be considered a subset of expected cash flow approach where the "expected cash flows" capture all scenarios and, hence, all risk.

### C) Key Assumptions – Estimation of Future Revenues – Forms of Projections – Illustrative Example

#### Comparison of Traditional Vs. Certainty Equivalent Cash Flow Approaches

Certainty Equivalent Cash Flow Approach		Year 1	Year 2	Year 3	
<b>Scenario 1 Cash Flows</b>		25,000	50,000	100,000	
Probability		50.0%	50.0%	50.0%	
Probability Adjusted		12,500	25,000	50,000	
<b>Scenario 2 Cash Flows</b>		-	-	-	
Probability		50.0%	50.0%	50.0%	
Probability Adjusted		-	-	-	
Certainty Equivalent Cash Flows		12,500	25,000	50,000	Total
Discount Rate and PV Factors (2)	5.0%	0.9759	0.9294	0.8852	
Present Value of Cash Flow		12,199	23,236	44,259	80,000
Sum of PV of Cash Flows (rounded)					
Traditional Cash Flow Approach		Year 1	Year 2	Year 3	
Traditional Cash Flow Estimate		25,000	50,000	100,000	
Mid-Year Convention		0.5000	1.5000	2.5000	
Discount Rate and PV Factors (1)	54.0%	0.8058	0.5233	0.3398	
Present Value of Cash Flow		20,146	26,163	33,978	80,000

#### Notes:

- (1) Example assumes only two scenarios exist - receive designated cash flows or receive nothing. Both have equal probability.
- (2) Certain equivalent CF is weighting of two scenarios. Discount rate for certainty equivalent CF reflects risk free rate
- (3) Discount rate for traditional approach includes risk premium. There is only one positive CF scenario.
- (4) Traditional CF represents Scenario 1 estimate. If Scenario 1 CF are used, a risk premium should be included in discount rate.

#### Key Observation:

In this example, the value from the Certainty Equivalent Cash Flow Approach can be used to backsolve for the discount rate required in the Traditional Cash Flow Approach.

This demonstrates the benefit of reflecting certain risks in the cash flows rather than in a discount rate.

## D) Key Assumptions – Selection of Best Estimate

- Example of Expected Present Value Technique

An entity has potential cash inflows of \$500, \$800 and \$900. The probability of the entity receiving them is 15%, 60% and 25%, respectively. Using this information the expected cash flow is:

Possible Cash Flows	Probability	Probability-Weighted Cash Flows
\$500	15%	\$75
\$800	60%	\$480
\$900	25%	\$225
Expected cash flows		<u>\$780</u>

- The result—\$780—takes into account the probability distribution of the expected cash flows. The valuation professional can modify it based on the timing of the cash flows when they occur over several periods, such as over several months. Probability is an essential element in the expected cash flow approach.
- (The three scenarios do not represent all future scenarios; hence, a risk adjustment is added to the risk free rate to estimate the discount rate.)
- Example of Expected Present Value Technique (cont.)
  - “Under Method 1, the expected cash flows are adjusted for systematic (market) risk. In the absence of market data directly indicating the amount of the risk adjustment, such adjustment could be derived from an asset pricing model using the concept of certainty equivalents. For example, the risk adjustment (cash risk premium of \$22) could be determined based on the systematic risk premium of 3 percent ( $\$780 - [\$780 \times (1.05/1.08)]$ ), which results in risk-adjusted expected cash flows of \$758 ( $\$780 - \$22$ ). The \$758 is the certainty equivalent of \$780 and is discounted at the risk-free interest rate (5 percent). The present value (fair value) of the asset is \$722 ( $\$758/1.05$ ).”
  - “Under Method 2, the expected cash flows are not adjusted for systematic (market) risk. Rather, the adjustment for that risk is included in the discount rate. Thus, the expected cash flows are discounted at an expected rate of return of 8 percent (the 5 percent risk-free interest rate plus the 3 percent systematic risk premium). The present value (fair value) of the asset is \$722 ( $\$780/1.08$ ).”
- Method 1 – Expected cash flows adjusted for systematic (market) risk:
  - Risk adjustment (cash risk premium of \$22)
  - Systematic risk premium of 3 percent ( $\$780 - [\$780 \times (1.05/1.08)]$ ),
  - Risk-adjusted expected cash flows of \$758 ( $\$780 - \$22$ ). The \$758 is the certainty equivalent of \$780 and is discounted at the risk-free interest rate (5 percent). The present value (fair value) of the asset is \$722 ( $\$758/1.05$ ).”



- Method 2 - Expected cash flows are not adjusted for systematic (market) risk:
  - (a) Expected cash flows are
  - (b) Discount rate of 8 percent
    - 5 percent risk-free interest rate
    - 3 percent systematic risk premium
    - Present value (fair value) of the asset is \$722 ( $\$780/1.08$ )."

## VII Discount Rate Estimates

### A) Overview

- Estimating discount rates associated with different intangible assets (as well as contributory assets) is one of the more challenging areas of valuation.
- Although there is often limited direct market evidence to estimate discount rates for intangible assets, there are several means of confirming that estimates are within a range of reason.
- The following slides present information pertaining to:
  - (a) Return requirements for different asset classifications
  - (b) Return requirements within the spectrum of intangible assets
  - (c) General methods of confirming the reasonableness of discount rate estimates.

### B) Discount Rate Estimates – Risk and Rate of Return

- Assets of a business have different risk and return characteristics
- Rate of return of a particular asset is commensurate with its risk
- Assets of a business have different liquidity and return characteristics

### C) Discount Rate Estimates – Different Assets - Per 6.94 of IPR&D Guide

- The IPR&D Accounting & Valuation Guide provided high level guidance on discount rates for different assets.
  - (a) Working capital – Short-term lending rates for market participants (for example, working capital lines or short-term revolver rates) and cost of equity for market participants
  - (b) Fixed assets – Financing rate for similar assets for market participants (for example, terms offered by vendor financing), or rates implied by operating leases, capital leases, or both (typically segregated between returns OF [that is, recapture of investment] and returns ON) and cost of equity.



- (c) Assembled workforce – Frequently, the weighted average cost of capital (WACC).
- (d) Enabling technology – Frequently the WACC
- (e) Other intangibles – Rates appropriate to the risk of the subject intangible
- (f) The CAC Best Practices provided significantly expanded discussion of rates of return for contributory assets.

D) Discount Rate Estimates – CAC Final Document – Rate of Return for Contributory Assets

- 4.1.01 “The fundamental premise is that the required rate of return should be commensurate with the relative risk associated with investment in each particular asset. However, there is a paucity of authoritative data on asset-specific returns.
- 4.1.04 “Using relevant market data, valuation specialists can estimate the market participant cost of equity and cost of debt related to financing a particular type of asset. From that the valuation specialist can use market-based debt capacity ratios to develop the required rate on specific classes of assets.”
- 4.2.03 “Contributory real estate owned by a high technology entity might not exhibit risk characteristics specific to the high technology industry, but instead would require equity and debt rates of return specific to real estate investments. Conversely, if the working capital or fixed assets are very risky or very specific to the entity (which may limit the liquidity of the assets due to the lack of a secondary market), the required rate of return may be higher than otherwise indicated . . .”

E) Discount Rate Estimates – CAC Final Document – Rate of Return for Contributory Assets – Working Capital

- 4.2.05 “The required *return on* working capital is typically considered to be at the lower end of returns of most, if not all, other asset classes and is assumed to be equal to the after-tax rate that would be charged to finance working capital. . . The Working Group believes that these approaches could understate the required return since very few companies are able to borrow 100% of the value of working capital assets. The Working Group believes that a best practice, if it creates as significant difference, would be to consider the level of debt and equity financing required to fund working capital. When inventory has a limited specific market or when receivables are in a high default industry it may be appropriate to adjust the various reference rates noted in this paragraph to reflect additional risk.”

## F) Discount Rate Estimates – Asset Based Lenders Advance Rates – 2017 Survey Results

**Table 26. Standard Advance Rate (or LTV ratio) for Assets (%)**

	Typical Loan			Upper Limit		
	1st quartile	Median	3rd quartile	1st quartile	Median	3rd quartile
Marketable securities	70%	100%	100%	70%	100%	100%
Accounts receivable	85%	85%	85%	85%	85%	90%
Inventory - low quality	19%	25%	30%	20%	30%	39%
Inventory - intermediate quality	34%	38%	43%	35%	43%	54%
Inventory - high quality	50%	55%	60%	50%	60%	73%
Equipment	50%	53%	80%	54%	73%	85%
Real estate	50%	65%	75%	65%	70%	80%
Land	5%	23%	46%	5%	5%	45%

Source: Pepperdine Private Capital Markets Project | Private Capital Markets Report – 2017

## G) Discount Rate Estimates – Return on Assets and Cost of Debt

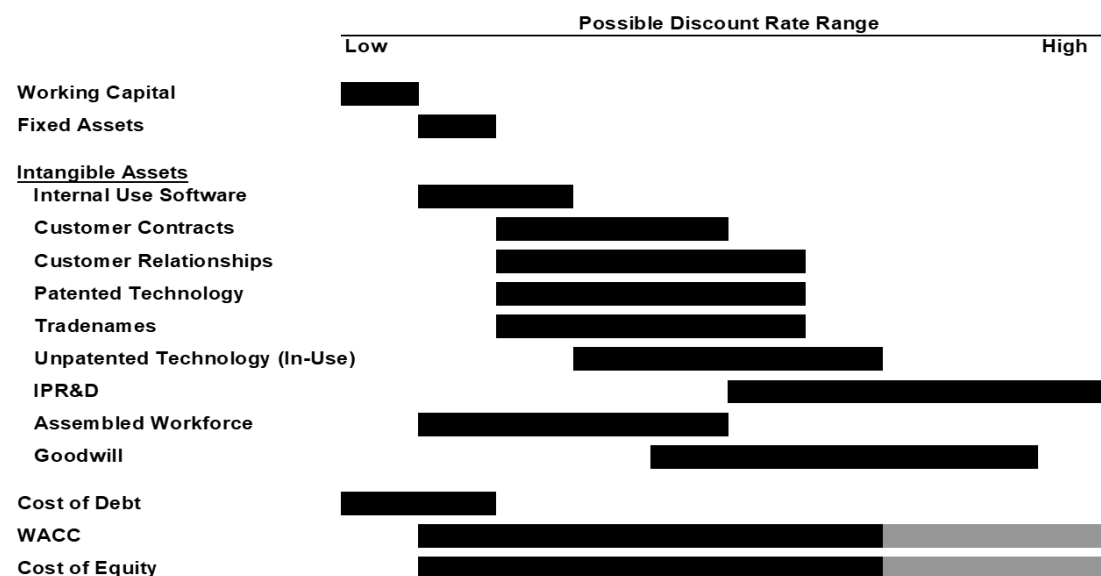
- Cost of debt may vary based on:
  - (a) Risk of asset
  - (b) Duration of financing for each specific asset.
- Table on the following page assumes the same cost of debt for different assets, but a changing mix of debt/equity capital.
- Some appraisers will further adjust the cost of debt on an asset specific basis.
- In many cases, source of cost of debt would be obtained from banks or other financing sources.

## H) Discount Rate Estimates – Returns on Specific Assets – Sample Calculation

PE Buyer, Inc.									
Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805									
Weighted Average Cost of Capital - Specific Assets									
	BEV	Working Capital	Fixed Assets	Trade Name	Customer Relationships	Current Technology	Assembled Workforce	IPR&D	Goodwill
<b>Weighted Average Cost of Capital</b>									
Debt-to-Capital	16.0%	100.0%	70.0%	16.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost of Debt (After-tax)	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
Pro Rata Amount	0.6%	3.9%	2.7%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Equity-to-Capital	84.0%	0.0%	30.0%	84.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of Equity	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%
Asset Specific Risk Premium	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	7.0%
Cost of Equity	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%	16.2%	20.2%	23.2%
Pro Rata Amount	13.6%	0.0%	4.8%	13.6%	16.2%	16.2%	16.2%	20.2%	23.2%
<b>Weighted Average Cost of Capital</b>	<b>14.2%</b>	<b>3.9%</b>	<b>7.6%</b>	<b>14.2%</b>	<b>16.2%</b>	<b>16.2%</b>	<b>16.2%</b>	<b>20.2%</b>	<b>23.2%</b>
<b>Rounded</b>	<b>14.0%</b>	<b>4.0%</b>	<b>8.0%</b>	<b>14.0%</b>	<b>16.0%</b>	<b>16.0%</b>	<b>16.0%</b>	<b>20.0%</b>	<b>23.0%</b>
<b>Notes:</b>									
(a) Estimates of capital type percentages are somewhat judgmental.									
Reconciliation with the WACC and IRR and a detailed understanding of appraised entity									
will assist in making these estimates.									

## I) Discount Rate Estimates – Illustrative Return Ranges for Various Intangibles

- Discount rate should reflect the risk associated with the income attributable to the intangible asset. A general risk spectrum associated with various intangible asset classes follows:



#### J) Discount Rate Estimates – Rates of Return on Intangible Assets

- Rates of return on intangibles, and the methods used to estimate them, will vary depending on the specific facts and circumstances.
- Magnitude of risk:
  - (a) From least to most risky
    - Routine (e.g., assembled workforce)
    - Established products
    - Newly developed products
    - In-process product development (i.e., work-in-progress): more risky
    - Unidentified intangible assets or “goodwill”

#### K) Discount Rate Estimates – Returns on Specific Assets

- Returns on individual assets are selected in light of:
  - (a) Current costs of funds
  - (b) Type of asset and its liquidity
  - (c) Acceptance as collateral for debt-financing purposes
  - (d) Special purpose nature vs. broader use
  - (e) Discussions with asset-based lenders on current trends
- Higher liquidity of an asset corresponds to:
  - (a) Increased marketability
  - (b) Greater acceptance as collateral
  - (c) Less equity required to finance the asset
  - (d) Lower required rate of return

#### L) Discount Rate Estimates – IPR&D Discount Rates – Conditional vs. Expected Cash Flows

- IPR&D has significant risk associated with its completion and successful commercialization and the realization of projected financial returns.
- It is important to understand this risk and whether it is incorporated in PFI or not. The treatment of this risk will have a significant impact on the discount rate used to value the IPR&D.

- Per 6.37 of the IPR&D Guide “In the case of a transaction, the overall purchase price is most often based on unconditional or expected cash flows. If the IPR&D cash flows are *conditional cash flows* or assume commercial success, these cash flows would need to be adjusted for the probability of success or weighted with downside cash flows that reflect potential development failure. Thus, it should be noted that the assumptions used to value the overall entity would not always be identical to the assumptions used to value an IPR&D asset.”
- Per 6.101 “. . . the discount rate used to discount the prospective cash flows should reflect assumptions that are consistent with the risks inherent in the cash flows. Conditional cash flows are discounted using a conditional rate, and expected cash flows are discounted using an expected rate. In theory, the two techniques consider the same risks; the DRAT reflects the risk through adjustments to the discount rate, whereas the EPVT primarily reflects this risk in the expected cash flows.”
- Per 6.110 “. . . the task force observes that for many unique nonfinancial assets, including IPR&D, it may be difficult to identify exact comparables in the marketplace and, thus, in order to apply the DRAT, it may be necessary to derive a discount rate from observable data for similar assets or entities. Although both the DRAT and EPVT involve subjectivity in selecting certain inputs, the EPVT requires the consideration of the various risk factors that may affect cash flows in the future. Some believe that there may be more and better support about the distribution of possible outcomes than there is to support the magnitude of a risk adjustment to the discount rate.”

#### M) Discount Rate Estimates – Various Return Studies

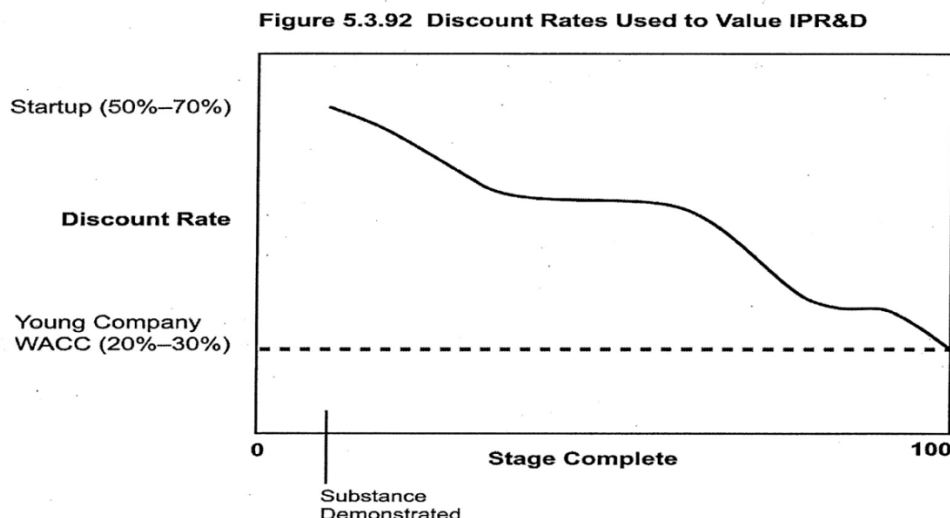
The original 2001 IPR&D Practice Aid identifies two publications (Plummer and Scherlis/Sahlman) that provide guidance on rates of return commanded by venture capital investors at various stages of an entity's development (Table 5.3.88). These and others are listed below:

Stage of Development	Characteristics	Plummer <sup>1</sup>	Scherlis and Sahlman <sup>2</sup>	HVA Study Actual Returns <sup>3</sup>	Babson College Mass <sup>4</sup>	Frei & Leleux <sup>1</sup>	Seiffer Software <sup>2</sup>
Start-up	Pre-prototype	50%-70%	50%-70%	100%-125%	60%-80%	70%-100%	60%-80%
Early – Development	Pre-commercialization	40%-60%	40%-60%	60%	50%	50%-70%	50%-60%
First Stage	Commercialization	[40%-60%]	[40%-60%]	[60%]	[50%]	40%-60%	40%-50%
Expansion	Shipping Product	35%-50%	30%-50%	50%	40%	35%-50%	30%-40%
Mezzanine/IPO	Profitable	25%-35%	20%-35%	30%-40%	25%-30%	25%-40%	25%-30%

These rates are best used as a reasonableness check. They are **NOT** a substitute for independent analysis. A selected rate from this table would presumably be applied to conditional cash flows and NOT expected cash flows.

#### N) Discount Rate Estimates – IPR&D Guide Expected Behavior of Discount Rates Over Life of IPR&D Project

- Per 5.3.92 of the 2001 IPR&D guide, the Task Force's conclusions about the expected behavior of discount rates over the life of an IPR&D project and presumed lower boundary from which discount rates may be selected for young, single-product companies are illustrated in figure 5.3.92.



#### O) Discount Rate Estimates Reconciliation

- The overall discount rate for a business enterprise is reflected by the WACC. The WACC can be compared to the Weighted Average Return on Assets (WARA) (and the Internal Rate of Return (IRR)) to assist in confirming the reasonableness of specific discount rates for assets valued using the Income Approach.
- As previously noted:
  - WACC = Return on Business Enterprise (debt plus equity)
  - WARA = Return on Assets (working capital, fixed assets, intangibles, other)
  - IRR = Implied return implicit in a transaction to the investors (debt and equity)

#### P) Discount Rate Estimates Reconciliation - Weighted Average Cost of Capital

- The Weighted Average Cost of Capital (WACC) is the overall rate of return for an investment in a business enterprise.
- WACC represents the return required for long term debt and equity capital.
- Long term debt and equity capital are conceptually equivalent to net assets.
- A business enterprise is an assemblage of a variety of assets including:
  - Working capital

- (b) Tangible assets
- (c) Identifiable intangible assets
- (d) Goodwill

**Q) Discount Rate Estimates Reconciliation - Weighted Average Return on Assets (WARA)**

- Given this, rates of return can be estimated for the specific assets of a business enterprise. If chosen properly, a Weighted Average Return on Assets (WARA) can be calculated and reconciled to the WACC. This process would provide comfort regarding the estimates for both the WACC and the individual asset returns constituting the WARA.
- The following graphs present:
  - (a) Sample calculations of discount rates for specific assets using a “WACC” approach for each asset type
  - (b) Calculation of the weighted average return on assets for the Subject
  - (c) Comparison of the WARA to the WACC and IRR

**R) Discount Rate Estimates Reconciliation – WARA Calculation**

PE Buyer, Inc. Exhibit WARA  
 Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805  
 Weighted Average Return on Assets

Assets	Fair Value (000s)	After-Tax Rate of Return (1)	Total Return	Return as % Purchase Price	% Purchase Price
Net Working Capital (Excl. Excess Cash)	\$ 5,169	4.0%	\$ 207	0.5%	11.9%
Fixed Assets	6,840	8.0%	547	1.3%	15.7%
Trade Name	12,000	14.0%	1,680	3.9%	27.6%
Existing Customer Relationships	10,200	16.0%	1,632	3.8%	23.4%
Internal Technology	270	16.0%	43	0.1%	0.6%
Assembled Workforce	1,560	16.0%	250	0.6%	3.6%
Goodwill, Excluding Assembled Workforce (2)	7,461	23.0%	1,716	3.9%	17.2%
Total Purchase Price	\$ 43,500		\$ 6,075	14.0%	100.0%
<b>Weighted Average Return on Assets</b>				<b>14.0%</b>	
<b>Weighted Average Cost of Capital (WACC)</b>				<b>14.0%</b>	
<b>Internal Rate of Return (IRR)</b>				<b>14.3%</b>	

Note(s):

(1) Required rates of return based on estimated return requirements per separate schedule.

(2) Return on goodwill reflects a "plug" so that WARA and WACC are equal.

- Transactions may involve excess or shortfall of working capital.
  - (a) Excess working capital represents a non-operating asset.



- (b) Shortfall of working capital suggest buyer would reduce purchase price as working capital would need to be infused upon acquisition.
- (c) In calculating the WARA, working capital balance should reflect normalized level of working capital. This will avoid any overstatement or understatement of the share of the WARA related to working capital.

#### S) Discount Rate Estimates Reconciliation – WARA Analysis Issues

- WARA Analysis Issues
  - (a) Technically, should be WACC based (market participant)
    - IRR factors may factor in entity specific considerations
    - Increased focus on tools to understand significant differences between WACC/IRR
  - (b) Technically, should be based off Enterprise Value (market participant basis) rather than Purchase Price
    - Purchase price may factor in entity specific considerations
- Normalized Balance sheet considerations should be incorporated
- Technically should exclude redundant/excess assets

#### T) Discount Rate Estimates Reconciliation – SEC Perspective

- SEC Comment Letter Excerpt (EnergySolutions 2007)

*“In order to better assess the reasonableness of your purchase price allocations, please provide us with a rate of return reconciliation for each acquisition. This reconciliation should identify the weighted average cost of capital (WACC) used to determine the enterprise value of Envirocare and Duratek as well as the WACC used to determine the fair value of each asset and liability acquired.”*
- SEC interest in confirming rate of return requirements assumed for each asset.

#### U) Discount Rate Estimates Reconciliation – Relationship Between IRR and WACC

- WACC is an objective benchmark based on market data
- IRR is the indicated return required to equate the purchase price and prospective financial information
- IRR can be compared to the WACC to attempt to gain insight into the PFI and purchase price
- Some appraisers adjust (frequently increase) the WACC to equal the IRR by adding an adjustment to the cost of equity component of the WACC



- Unsupported adjustments to the WACC or ROE move it/them away from an objective benchmark
  - (a) Result can be incorrect WACC and other discount rates and erroneous valuations with significant future financial implications
- Application of a risk premium to a discount rate for non-systematic risk is inconsistent with the theory underlying CAPM
- $IRR = WACC$  - Indicates that the Projected Financial Information (“PFI”) may reflect market participant synergies
- $IRR > WACC$  - Indicates that the PFI may include entity-specific synergies and/or may include an optimistic bias
- $IRR < WACC$  - Indicates that the PFI may exclude market participant synergies and/or may include a conservative bias
- The discount rate used to present value PFI varies inversely with the indicated value (i.e., higher discount results in lower values). Conceptually, when PFI includes optimistic assumptions, such as high revenue growth rates, expanding profit margins, etc. (i.e., higher cash flows), a higher IRR is required to reconcile the PFI on a present-value basis to the consideration transferred.

#### V) Discount Rate Estimates – Assessment of Residual Goodwill

- At 4.2.10 of the CAC document, “The rate of return on goodwill depends on the relative values of the other (identified) assets, their respective rates of return, and the nature of the risk inherent in the goodwill itself.”
- Paragraph ASC 805-30-30-1 provides a discussion of components of goodwill at the time of an acquisition but before performing a purchase price allocation. These include:
  - (a) Component 1 – Excess of fair values of net assets over existing book values. This component will go away when the purchase price allocation is performed. This represents part of any gain to the seller.
  - (b) Component 2 – Fair values of other net assets that the acquiree had not previously recognized. The fair value of these assets would be captured in the purchase price allocation.
  - (c) Component 3 – The fair value of the *going-concern* element of the acquiree’s business. The going-concern element represents the ability of the established business to earn a higher rate of return on an assembled collection of net assets than would be expected if those net.
  - (d) Assets had to be acquired separately. That value stems from the synergies of the net assets and other benefits (such as factors related to market imperfections, including the ability to earn monopoly profits and barriers to market entry . . .” This component would represent a part of any goodwill that would be includable after the purchase price allocation.

- (e) Component 4 – The fair value of the expected synergies and other benefits from combining the acquirer's and acquiree's net assets and businesses. The component would represent a component of any goodwill associated with an acquisition.
- (f) Component 5 – Overvaluation of the consideration paid by the acquirer stemming from errors in valuing the consideration tendered. Not an asset but conceptually a measurement error.
- (g) Component 6 – Overpayment or underpayment by the acquirer. Overpayment would theoretically be a loss to the buyer and underpayment would theoretically be a gain. Recognition of a loss would be influenced by factors related to the reporting unit structure of the entity.
- (h) Assessment of residual goodwill may also focus on specific items that don't meet the requirements for recognition. These might include:
  - Expectations of future technologies or future customers
  - Existing items similar to customer-related intangible that do not meet recognition requirements
  - Other
- The implied return on goodwill should be assessed to gain comfort with rate of return estimates for each of the specific assets of the company.
- Given the elements included in goodwill, the implied return on goodwill should be higher than those of other assets. (In rare instances, it might be argued that an IPR&D project might have a higher return requirement than goodwill. This would be expected to be somewhat infrequent.)
- The potential uncertainty associated with the elements included in goodwill could reduce the ability to assess the reasonableness of a residual goodwill rate of return.
- As the amount of residual goodwill declines as a share of the total amount to be allocated, the increased "leverage" could lead to higher implied returns on goodwill for a specific set of ROR assumptions for other assets. Changes in other discount rate assumptions could lead to significant volatility in the return associated with goodwill.

#### W) Discount Rate Estimates – Internal Rate of Return (IRR)

- The Internal Rate of Return (IRR) is the rate of return (discount rate) implicit in a purchase price.
  - (a) The value of a business enterprise is established with future cash flows and a discount rate.
  - (b) If the value of the business enterprise is known (purchase price) and the expected cash flows are known (buyer's expected cash flows), then the IRR can be calculated.

- IRR is the expected return to the investor.
- The IRR provides a third means of understanding the reasonableness of the WACC, WARA and the underlying asset return estimates.

#### X) Discount Rate Estimates – Internal Rate of Return (IRR) – Process

- Develop purchase price.
- Develop cash flow projections for business enterprise.
- Determine discount rate that equates the purchase price for the business with cash flow projections.

#### Y) Discount Rate Estimates – Calculation of IRR

- As a part of your purchase price allocation for Tuff Tables, you calculate the IRR implicit in the acquisition of Tuff Tables.
  - (a) Management indicated that the purchase price for equity was \$43.5 million.
  - (b) Balance sheet at the acquisition date is attached.
  - (c) Transaction costs were estimated at \$750,000.
- What is the effective purchase price for Tuff Tables?

## Z) Discount Rate Estimates – Calculation of IRR – Background Information – Calculation of Purchase Price

### Calculation of Purchase Price (\$ in 000's)

Amount Paid for Equity	\$	43,500
Liabilities Assumed		-
Total Purchase Price (TIC)	\$	43,500
<b>Current Assets</b>		
Cash	\$	402
Account Receivable		3,792
Inventory		1,368
Other		220
Total Current Assets		5,782
Net PP&E		11,656
Other Assets		-
Total Assets	\$	17,438
<b>Current Liabilities</b>		
Accounts Payable	\$	2,184
Accrued Expenses		1,639
Current Portion of Long-term Debt		-
Other		-
Total Current Liabilities		3,823
Total Long-Term Liabilities		-
Total Liabilities		3,823
Shareholders' Equity		13,615
Total Assets and Current Liabilities	\$	17,438
Notes:		
(1) Per ASC 805, transaction costs not included in purchase price.		

AA) Discount Rate Estimates – Calculation of IRR – Background Information – Income Statement

PE Buyer, Inc.		Exhibit EEM					
Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805							
Management Prepared Forecast							
\$ in 000's							
		December 31					
		Year 1	Year 2	Year 3	Year 4	Year 5	Residual
<b>Income Statement Forecast</b>							
Revenue							
Tuff Tables Products							
Tables		\$ 31,470	\$ 32,414	\$ 33,387	\$ 34,388	\$ 35,420	\$ 36,482
Chairs		8,137	8,381	8,632	8,891	9,158	9,433
Other		2,393	2,465	2,539	2,615	2,694	2,774
Total Revenue		42,000	43,260	44,558	45,895	47,271	48,690
Growth		N/A	3.0%	3.0%	3.0%	3.0%	3.0%
Cost of Goods Sold	56.4%	23,700	24,411	25,143	25,898	26,675	27,475
Gross Profit		18,300	18,849	19,414	19,997	20,597	21,215
SG&A Expenses	26.3%	11,058	11,390	11,732	12,084	12,446	12,820
Normalization Adjustment	2.0%	840	865	891	918	945	974
Operating Income		8,082	8,324	8,574	8,831	9,096	9,369
Non-operating Expenses							
Interest Expense (Income)		200	207	214	222	230	238
Other		2	2	2	2	2	2
Pretax Income		7,884	8,119	8,362	8,611	8,868	9,133
Income Taxes	40.0%	3,153	3,248	3,345	3,445	3,547	3,653
After-Tax Earnings		\$ 4,730	\$ 4,871	\$ 5,017	\$ 5,167	\$ 5,321	\$ 5,480

## BB) Discount Rate Estimates – Calculation of IRR – Background Information – Balance Sheet

<b>PE Buyer, Inc.</b>						<b>Exhibit EEM</b>
<b>Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805</b>						
<b>Management Prepared Forecast</b>						
Valuation Date						
\$ in 000's						
	December 31					
	Year 1	Year 2	Year 3	Year 4	Year 5	Residual
<b>Balance Sheet</b>						
<b>Current Assets</b>						
Cash	\$ 420	\$ 433	\$ 446	\$ 459	\$ 473	\$ 487
Account Receivable	5,753	5,926	6,104	6,287	6,476	6,670
Inventory	974	1,003	1,033	1,064	1,096	1,129
Pre-paid Expenses	303	312	321	331	341	351
Other	210	216	223	229	236	243
Total Current Assets	7,660	7,890	8,127	8,371	8,622	8,880
<b>PP&amp;E</b>						
Furniture and Fixtures	840	918	998	1,080	1,165	1,253
Computers and Software	420	459	499	540	583	626
Production Machinery	10,500	11,472	12,474	13,505	14,567	15,662
Warehouse equipment	1,050	1,147	1,247	1,351	1,457	1,566
Other	150	164	178	193	208	224
Total PP&E	12,960	14,160	15,396	16,669	17,980	19,331
Less Accumulated Depreciation	8,400	9,264	10,208	11,234	12,346	13,544
Net PP&E	4,560	4,896	5,188	5,435	5,635	5,787
Other Assets	15	16	15	10	5	5
Total Assets	\$ 12,235	\$ 12,802	\$ 13,330	\$ 13,815	\$ 14,261	\$ 14,672

<b>PE Buyer, Inc.</b>						<b>Exhibit EEM</b>
<b>Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805</b>						
<b>Management Prepared Forecast</b>						
Valuation Date						
\$ in 000's						
	December 31					
	Year 1	Year 2	Year 3	Year 4	Year 5	Residual
<b>Current Liabilities</b>						
Accounts Payable	\$ 1,398	\$ 1,439	\$ 1,483	\$ 1,527	\$ 1,573	\$ 1,620
Accrued Expenses	974	1,003	1,033	1,064	1,096	1,129
Current Portion of Long-term Debt	609	631	653	676	700	724
Other	189	195	201	207	213	219
Total Current Liabilities	3,169	3,268	3,369	3,474	3,582	3,693
<b>Non-current Liabilities</b>						
Notes Receivable	6,088	6,305	6,530	6,761	6,999	7,244
Long-term Deferred Taxes	125	125	125	125	125	125
Total Long-Term Liabilities	6,212	6,430	6,654	6,885	7,123	7,368
Total Liabilities	9,381	9,698	10,024	10,359	10,705	11,061
<b>Shareholders' Equity</b>						
Common Stock	100	100	100	100	100	100
Additional Paid-In Capital	1,000	1,000	1,000	1,000	1,000	1,000
Retained Earnings	1,754	2,004	2,206	2,356	2,456	2,511
	2,854	3,104	3,306	3,456	3,556	3,611
Total Liabilities and Reported Equity	\$ 12,235	\$ 12,802	\$ 13,330	\$ 13,815	\$ 14,261	\$ 14,672

II

## CC) Discount Rate Estimates – Calculation of IRR – Partial Solution

PE Buyer, Inc. Exhibit EEM  
**Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805**  
**Management Prepared Forecast**

Valuation Date  
 \$ in 000's

		December 31					
		Year 1	Year 2	Year 3	Year 4	Year 5	Residual
Earnings Before Interest and Taxes		8,082	8,324	8,574	8,831	9,096	9,369
Income Taxes	40.0%	3,233	3,330	3,430	3,532	3,638	3,748
Invested Capital Net Income		4,849	4,994	5,144	5,299	5,458	5,621
<b>Cash-Flow Adjustments</b>							
Plus Depreciation		864	944	1,026	1,111	1,199	1,289
Plus Amortization (Tax Only) (1)		0	0	0	0	0	0
Less Working Capital Change		(101)	(155)	(160)	(165)	(169)	(175)
Less Capital Expenditures		(1,200)	(1,236)	(1,273)	(1,311)	(1,351)	(1,327)
<b>Net Cash Flow</b>		<b>4,412</b>	<b>4,547</b>	<b>4,738</b>	<b>4,934</b>	<b>5,136</b>	<b>5,408</b>
<b>Capitalized Residual Value (CF / (k - g))</b>							<b>???</b>
Partial Period Factor		1.0	1.0	1.0	1.0	1.0	
Mid-Year Convention	Int. Rate of Return	0.5	1.5	2.5	3.5	4.5	4.5
Present Value Factor	?????	???	???	???	???	???	???
<b>Present Value of Cash Flow</b>		<b>???</b>	<b>???</b>	<b>???</b>	<b>???</b>	<b>???</b>	<b>???</b>
<b>Value of Enterprise, Rounded</b>		<b>???</b>					
<b>Effective Purchase Price</b>		<b>\$ 43,500</b>					

## Notes:

Financials based on Management projections.

- (1) Transaction assumed to be a purchase of stock, hence, no amortization deduction for intangibles for tax reporting purposes. Amortization for financial reporting purposes would not be deductible for tax reporting calculations. For simplicity, book amortization of acquired intangibles was excluded from calculations above. If book amortization of acquired intangibles was included in forecast, elimination of this book amortization from the income statement would yield a more accurate tax expense estimate.

## DD) Discount Rate Estimates – Calculation of IRR – Solution

PE Buyer, Inc. Exhibit EEM  
**Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805**  
**Internal Rate of Return Calculation**

Valuation Date  
 \$ in 000's

		December 31					
		Year 1	Year 2	Year 3	Year 4	Year 5	Residual
Earnings Before Interest and Taxes		8,082	8,324	8,574	8,831	9,096	9,369
Income Taxes	40.0%	3,233	3,330	3,430	3,532	3,638	3,748
Invested Capital Net Income		4,849	4,994	5,144	5,299	5,458	5,621
<b>Cash-Flow Adjustments</b>							
Plus Depreciation		864	944	1,026	1,111	1,199	1,289
Plus Amortization (Tax Only) (1)		0	0	0	0	0	0
Less Working Capital Change		(101)	(155)	(160)	(165)	(169)	(175)
Less Capital Expenditures		(1,200)	(1,236)	(1,273)	(1,311)	(1,351)	(1,327)
<b>Net Cash Flow</b>		<b>4,412</b>	<b>4,547</b>	<b>4,738</b>	<b>4,934</b>	<b>5,136</b>	<b>5,408</b>
<b>Capitalized Residual Value (CF / (k - g))</b>							<b>48,044</b>
Partial Period Factor		1.0	1.0	1.0	1.0	1.0	
Mid-Year Convention	Int. Rate of Return	0.5	1.5	2.5	3.5	4.5	4.5
Present Value Factor	14.3%	0.9355	0.8188	0.7166	0.6272	0.5490	0.5490
<b>Present Value of Cash Flow</b>		<b>4,128</b>	<b>3,723</b>	<b>3,395</b>	<b>3,095</b>	<b>2,820</b>	<b>26,374</b>
<b>Fair Value of Enterprise, Rounded</b>		<b>\$ 43,500</b>					
<b>Effective Purchase Price</b>		<b>\$ 43,500</b>					

Using an iterative process, an IRR estimate of 14.3% results in the projected cash flows closely equating to the purchase price.

## Notes:

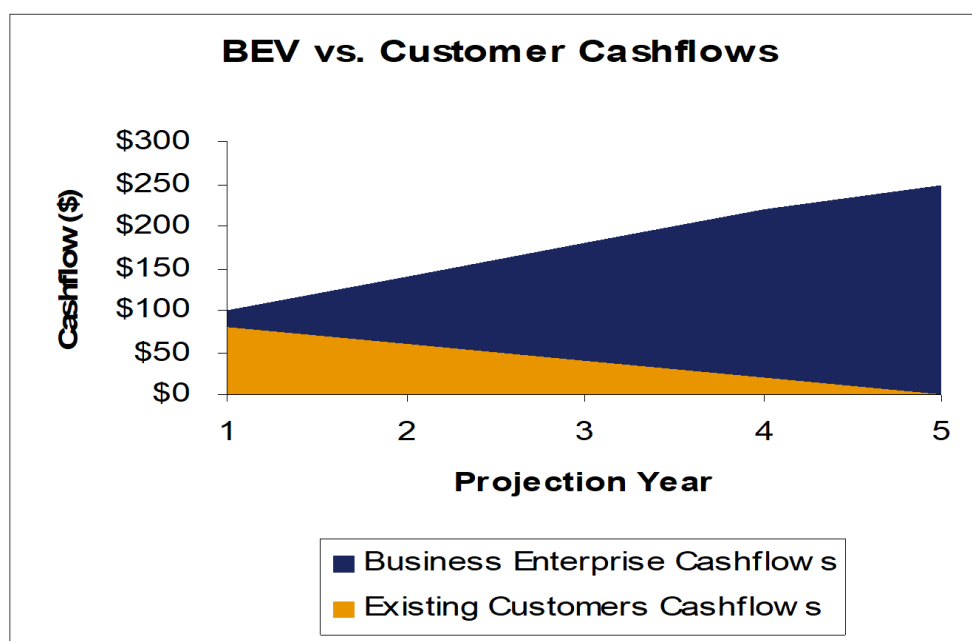
Financials based on Management projections.

- (1) Transaction assumed to be a purchase of stock, hence, no amortization deduction for tax reporting purposes. Amortization for financial reporting purposes would not be deductible for tax reporting calculations. For simplicity, book amortization of acquired intangibles was excluded from calculations above. If book amortization of acquired intangibles was included in forecast, elimination of this book amortization from the income statement would yield a more accurate tax expense estimate.
- (2) Long term growth assumed to be 3 percent into perpetuity.

## a. Discount Rate Estimates – IRR As Basis for Asset Rate of Return - Example

- An IRR of 40% is calculated for an acquisition. The business is currently profitable. The buyer expected significant synergies due to the acquisition. The cash flows for the business enterprise and the existing customer relationships are as set forth below. What concerns might be expected from using an IRR based estimate for the discount rate for the customer relationships?

Year	1	2	3	4	5
Business Enterprise	\$100	\$140	\$180	\$220	\$250
Existing Customers	\$80	\$60	\$40	\$20	\$0



## b. Discount Rate Estimates – Reconciliation Process – Internal Rate of Return (IRR)

- The IRR is calculated based on the total purchase price and a specific set of cash flows.
- IRR's may be less meaningful as a basis for developing discount rates for specific assets if the purchase price includes:
  - Significant buyer specific assumptions or synergies
  - Different expectations of mix of revenues and cash flows from existing assets vs. future assets
  - Duration of cash flows embedded in an IRR may be longer than the duration of cash flows associated with specific intangible assets.



- 4. Excess purchase price will impact the IRR
  - IRR is less meaningful if cash flows do not reflect a market participant perspective
- c. Discount Rate Estimates – WACC vs. IRR as Basis for WARA Reconciliation
  - 4.3.10 “The WACC, WARA and IRR (fully adjusted) all should be calculated and, when applicable, compared and contrasted when using the MPEEM. The Working Group believes that the starting point for an analysis would be the derived market-based WACC for the acquired (or subject) entity. As stated above, this WACC is based on market participant assumptions specific to the entity’s cash flows.”
  - 4.3.11 “When the WACC, WARA and IRR do not easily reconcile, the valuation specialist will need to review the assumptions in the PFI to determine if they reflect market participant assumptions or if they may have acquirer-specific synergies or other assumptions imbedded in the projections. If the PFI is determined to reflect market participant assumptions, and no acquirer-specific synergies are included, and the WACC, WARA and IRR still do not reconcile, the Working Group recommends that the valuation specialist undertake additional procedures. These would include, but are not limited to the performance of sensitivity analyses, the rechecking of inputs to both the PFI and WACC calculations, and the undertaking of a search for qualitative factors that would support the existence of either over-payments or bargain purchase considerations.
  - The Identification of Contributory Assets and the Calculation of Economic Rents: by The Appraisal Foundation dated May 31, 2010
- d. Discount Rate Estimates – Non-Taxable Transactions and WARA Reconciliation
  - 4.3.08 “The Working Group also notes that many transactions are “non-taxable” and management’s PFI may not reflect the tax benefit (of amortization or depreciation) implicit in the fair value of the underlying assets. In a business combination structure as a taxable purchase, the PFI and purchase price are likely to reflect the tax benefits. However, in the case of a deal structured as a non-taxable purchase, the Working Group recommends temporarily adjusting the purchase price for use in the WARA analysis. Because the individual asset values include the tax benefit of amortization and increased depreciation, the entity value must also be increased for comparison purposes. The Working Group believes the most straightforward adjustment technique is to calculate the additional tax benefit as if the deal had been structured as a taxable purchase and add it to the purchase price (see Exhibit A-10 in the Comprehensive Example). This adjustment would be necessary to ensure consistency in the WARA analysis, since the fair values of depreciable/amortizable assets would incorporate a proportional share of the tax benefit regardless of the structure of the deal itself.

## VIII Complexities of Technology Valuations

### A) Complexities - Contrast of Internal and Product (For Sale) Technology

- Internally Used Technology – Focus of Section 7:

- (a) Not sold directly as a product or a component of a product – not a source of revenue to the owner
- (b) Usually used internally to facilitate some business process
- (c) Economic benefit associated with this type of technology tends to be:
  - Royalty savings (RFR Method of the Income Approach), or
  - Avoided cost to replace (Cost Approach)
- Product Technology – Focus of Section 8:
  - (d) For the purpose of this course, we will consider product technology to be a key technology included in items sold directly to customers
  - (e) Key driver of the economic results of the firm
  - (f) Economic benefit may be residual income and asset is valued using the MPEEM

#### B) Complexities of Technology Valuations – Classifications of Product Technology

- Product technology can be complete in certain areas, but under development in others. To determine whether a technology is complete or under development, FASB guidelines (applications of which are discussed primarily in Sections 7 and 8) are reviewed, resulting in one or more of the following technology classifications:
  - (a) Existing Technology – Currently in the marketplace; considered technologically complete because it meets design specifications and is beyond the beta (testing/trial) stage – Focus of Section 8.
  - (b) In-Process Technology (IPR&D) – Still in the development stage; has not reached technological feasibility; a working model of the program is not available; or all the steps of a detailed program design have not been completed.
  - (c) Future Technology – No detailed plan available; considered part of goodwill rather than technology value of business. (Some value potentially captured in valuation of customers.)
- The following table depicts on a very simplified, high level the key stages of technology development and the most likely technology classification that would result from the application of FASB guidelines:

	Technology Classification		
	Existing	IPR&D	Future
<b>Working Model</b>	<b>YES</b>	<b>NO / Maybe</b>	<b>NO</b>
<b>Detailed Program</b>	<b>YES</b>	<b>NO / Maybe</b>	<b>NO</b>
<b>Revenue</b>	<b>YES</b>	<b>NO</b>	<b>NO</b>

- ASC 730, *Research and Development*, clarifies the accounting treatment for assets to be used in R&D activities acquired in a purchase business combination. IAS 38, *Intangible Assets*, requires research expenditures to be expenses. Rules for development expenses may differ between US GAAP and IFRS.
- Application referenced further in Section 8 and discussed in greater detail as part of future course.

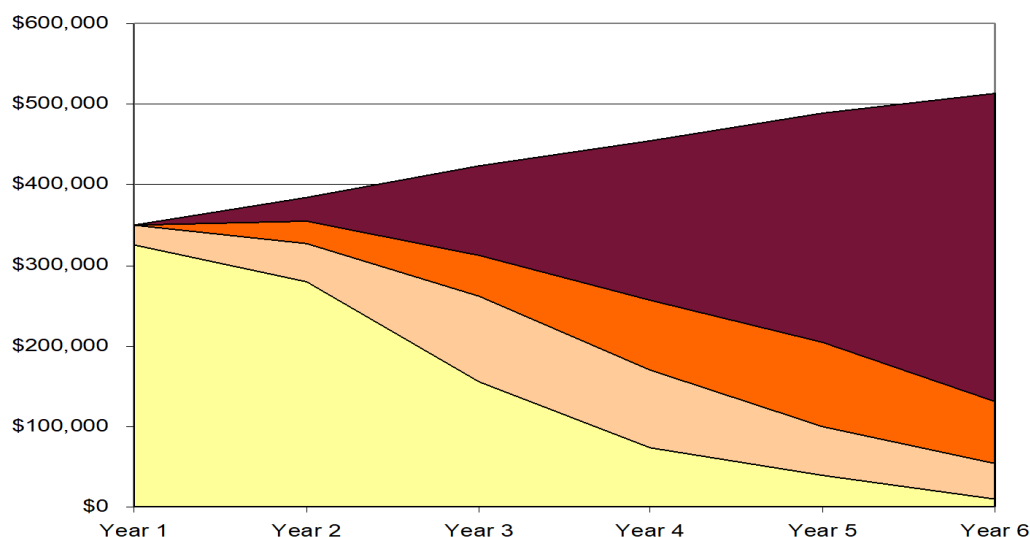
### C) Complexities of Technology and Customer Valuations

- Correct identification and measurement of revenue and income from intangible assets that require reporting separate from goodwill may be an area of variation in valuation practice.
- Revenues are generated from customers. However, in certain cases, technology may be viewed as equally or more important to revenue generation.
- When revenues relate to both technology and customers, it is important to avoid errors leading to incorrect values for either or both of these assets.
- Current and future revenues of an enterprise are driven by:
  - (a) Customers
    - Currently generating revenue
    - Future
  - (b) Technology
    - Currently generating revenue
    - Future

### D) Complexities of Technology and Customer Valuations – Accounting for Technology, Customer Relationships and Goodwill

- Accounted for as identifiable separate from goodwill:

- (a) Existing customers
  - (b) Sales of existing technology
  - (c) Sales of IPR&D and/or future technology (Note – if IPR&D is valued, procedures will need to be applied to avoid double counting of revenues and cash flows in customers and IPR&D)
  - Existing technology sales
    - (d) Sales to existing customers
    - (e) Sales to new customers
  - Part of goodwill:
    - (f) New (Future beyond IPR&D phase) technology sales to new customers
- E) Complexities of Technology and Customer Valuations – Identifiable Technology and Customer vs. Goodwill



F) Complexities of Technology and Customer Valuations – Revenue Map

- A “Revenue Map” summarizes the mix of future revenues for an entity by different technologies and/or products and stages of technology development.
  - (a) Split of revenues by different technologies and/or products
  - (b) Further segregate future revenues based on:
    - Existing
    - In process
    - Future

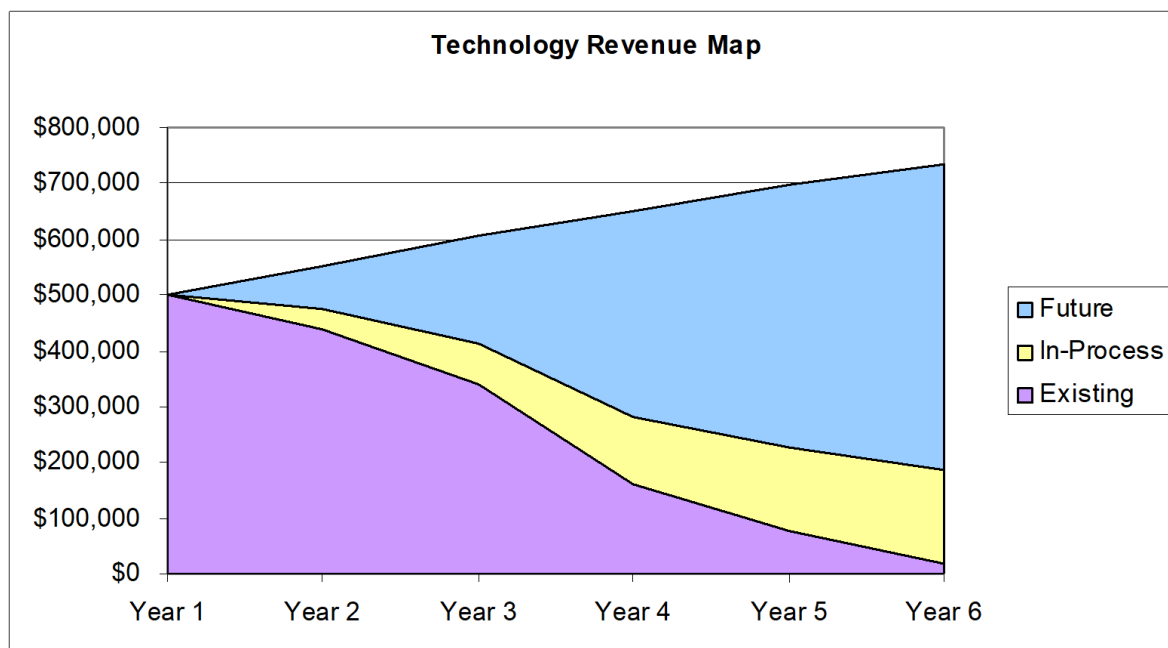
## G) Complexities of Technology and Customer Valuations – Revenue Map – Example

PE Buyer, Inc.  
Valuation of Intangible Assets of Technology, Inc. for ASC 805  
Revenue Map - by Technology and Existing, IPR&D or Future

Total Company Revenue (000's)	\$ 500,000	\$ 550,000	\$ 605,000	\$ 650,000	\$ 699,000	\$ 733,950
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Total Technology Revenue</b>						
Technology Group 1	300,000	340,000	380,000	400,000	380,000	340,000
Growth		13.3%	11.8%	5.3%	-5.0%	-10.5%
Technology Group 2	200,000	210,000	220,000	230,000	240,000	250,000
Growth		5.0%	4.8%	4.5%	4.3%	4.2%
Technology Group 3	0	0	5,000	20,000	79,000	143,950
Growth		#DIV/0!	#DIV/0!	300.0%	295.0%	82.2%
<b>Total Revenue</b>	<b>\$ 500,000</b>	<b>\$ 550,000</b>	<b>\$ 605,000</b>	<b>\$ 650,000</b>	<b>\$ 699,000</b>	<b>\$ 733,950</b>
Growth		10.0%	10.0%	7.4%	7.5%	5.0%
% of Company Revenue	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>% of Total Revenue by Product/Technology</b>						
Technology Group 1	60%	62%	63%	62%	54%	46%
Technology Group 2	40%	38%	36%	35%	34%	34%
Technology Group 3	0%	0%	1%	3%	11%	20%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Existing Products/Technology Revenue</b>						
Technology Group 1	300,000	272,000	228,000	160,000	76,000	17,000
Technology Group 2	200,000	168,000	110,000	0	0	0
Technology Group 3	0	0	0	0	0	0
<b>Total Existing Products/Technology</b>	<b>500,000</b>	<b>440,000</b>	<b>338,000</b>	<b>160,000</b>	<b>76,000</b>	<b>17,000</b>
% of Total Revenue	100.0%	80.0%	55.9%	24.6%	10.9%	2.3%
<b>In-Process Technology</b>						
Technology Group 1	0	34,000	76,000	120,000	152,000	170,000
Technology Group 2	0	0	0	0	0	0
Technology Group 3	0	0	0	0	0	0
<b>Total In-Process Technology Revenue</b>	<b>0</b>	<b>34,000</b>	<b>76,000</b>	<b>120,000</b>	<b>152,000</b>	<b>170,000</b>
% of Total Product/Technology Revenue	0.0%	6.2%	12.6%	18.5%	21.7%	23.2%
<b>Future Technology Revenue</b>						
Technology Group 1	0	34,000	76,000	120,000	152,000	153,000
Technology Group 2	0	42,000	110,000	230,000	240,000	250,000
Technology Group 3	0	0	5,000	20,000	79,000	143,950
<b>Total Future Products Technology Revenue</b>	<b>\$ -</b>	<b>\$ 76,000</b>	<b>\$ 191,000</b>	<b>\$ 370,000</b>	<b>\$ 471,000</b>	<b>\$ 546,950</b>
% of Total Products/Technology Revenue	0.0%	13.8%	31.6%	56.9%	67.4%	74.5%

PE Buyer, Inc.  
Valuation of Intangible Assets of Technology, Inc. for ASC 805  
Revenue Map - by Technology and Existing, IPR&D or Future

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Revenue by Product/Technology</b>						
<b>Technology 1</b>						
Total Revenue	\$ 300,000	\$ 340,000	\$ 380,000	\$ 400,000	\$ 380,000	\$ 340,000
Existing Percentage	100%	80%	60%	40%	20%	5%
In-Process Percentage	0%	10%	20%	30%	40%	50%
Future Percentage	0%	10%	20%	30%	40%	45%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Existing Revenue	300,000	272,000	228,000	160,000	76,000	17,000
In-Process Revenue	0	34,000	76,000	120,000	152,000	170,000
Future Revenue	0	34,000	76,000	120,000	152,000	153,000
<b>Total</b>	<b>300,000</b>	<b>340,000</b>	<b>380,000</b>	<b>400,000</b>	<b>380,000</b>	<b>340,000</b>
<b>Technology 2</b>						
Total Revenue	200,000	210,000	220,000	230,000	240,000	250,000
Existing Percentage	100%	80%	50%	0%	0%	0%
In-Process Percentage	0%	0%	0%	0%	0%	0%
Future Percentage	0%	20%	50%	100%	100%	100%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Existing Revenue	200,000	168,000	110,000	0	0	0
In-Process Revenue	0	0	0	0	0	0
Future Revenue	0	42,000	110,000	230,000	240,000	250,000
<b>Total</b>	<b>200,000</b>	<b>210,000</b>	<b>220,000</b>	<b>230,000</b>	<b>240,000</b>	<b>250,000</b>
<b>Technology 3</b>						
Total Revenue	0	0	5,000	20,000	79,000	143,950
Existing Percentage	0%	0%	0%	0%	0%	0%
In-Process Percentage	0%	0%	0%	0%	0%	0%
Future Percentage	100%	100%	100%	100%	100%	100%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Existing Revenue	0	0	0	0	0	0
In-Process Revenue	0	0	0	0	0	0
Future Revenue	0	0	5,000	20,000	79,000	143,950
<b>Total</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>20,000</b>	<b>79,000</b>	<b>143,950</b>



## IX Lifting of Intangible Assets

### A) Introduction

- In financial reporting, there are two distinct lifting issues.
  - (a) Economic life of an asset – valuation concept. The period over which an asset will generate cash flows (either directly or indirectly).
  - (b) Depreciable or amortization life of an asset – accounting concept. The period over which the value of an asset will be charged to the income statement.
- Role of the valuation professional is to assist management in developing an estimate of the economic life of the asset in order to determine a value for an asset.
- Accounting literature notes concern regarding differences between economic life/attributes and financial reporting amortization and general goal of increasing consistency of these estimates.
- The value of many intangible assets can be materially influenced by the remaining economic life of the asset.
- Lifting issues are extremely complex and there is modest guidance in the financial reporting literature on fair value matters.
- A detailed discussion of lifting considerations will be included in a subsequent course given the complexity of these matters (and the introductory nature of this course). The following slides provide general guidance on factors to consider.

## B) Lifing of Intangible Assets – Conceptual Guidance from IFRS 3 and ASC 350

- Estimation of remaining economic life – general considerations per ASC 350:
  - (a) The highest and best use of the asset by a market participant.
  - (b) The expected useful life of another asset or a group of assets to which the useful life of the intangible asset may relate (market participant basis assumptions).
  - (c) Any legal, regulatory, or contractual provisions that may limit the useful life.
  - (d) The entity's own historical experience in renewing or extending similar relationships (consistent with the intended use of the asset by the entity), regardless of whether those arrangements have specific renewal or extension provisions. In the absence of that experience, the entity shall consider the assumptions that market participants would use about renewal or extension (consistent with the highest and best use of the asset by market participants) adjusted for entity specific factors in this paragraph.
  - (e) The effects of obsolescence, demand, competition, and other economic factors (such as stability of the industry, known technological advances, legislative action that results in an uncertain or changing regulatory environment and expected changes in distribution channels).
  - (f) The level of maintenance expenditures required to obtain the expected future cash flows from the asset (for example, a material level of required maintenance in relation to the carrying amount of the asset may suggest a very limited useful life).

## X Amortization of Intangible Assets for Financial Reporting

- A) Attrition or lifecycle studies may provide important insights in the amortization of intangible assets.
- B) Key issues for amortization decision:
  - Length of amortization period
  - Pattern of amortization
- C) ASC 350 "If an intangible asset has a finite useful life, but the precise length of that life is not known, that intangible asset shall be amortized over the best estimate of its useful life. The method of amortization shall reflect the pattern in which the economic benefits of the intangible asset are consumed or otherwise used up. If that pattern cannot be reliably determined, a straight-line amortization method shall be used."

## Chapter 7 - Income Approach: Relief from Royalty Method

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### I Overview of Relief from Royalty Method

#### A) Introduction

- For an intangible asset to have value, it does not necessarily have to be a direct source of revenue generation for the enterprise.
- The underlying premise of the RFR Method is that by owning an asset an entity or individual does not have to rent or license the asset from a third party. You avoid paying a royalty or rental payment to another for the use of the asset (real life example: own versus rent a house). The savings (through ownership) are the basis of value.
- RFR Method may be viewed as a relatively simple version of the DCF Method.
- Relief from Royalty Method sometimes referred to as cost-savings method (but it is not a form of the Cost Approach).
- The value of an intangible asset equals the present value of the payments to third parties (royalty expense) that are avoided (i.e., saved) through ownership of the asset.
- Royalty rates used in application of RFR Method are typically based on observed royalty rates between unrelated parties for the use of guideline assets viewed as reasonably comparable or the Profit Split Method.
- Determination of royalty rates involves assessment of market licensing transactions. However, the RFR Method is an Income Approach to value.

#### B) Overview of Relief from Royalty Method – Definition from Glossary of CAC Best Practices Guide

- As provided in the Glossary of the Contributory Asset Charges best practices guide, the RFR Method is defined as:  
  
“A valuation method used to value certain intangible assets (for example, trademarks and trade names) based on the premise that the only value a purchaser of the assets receives is the exemption from paying a royalty for its use. Application of this method usually involves estimating the fair market value of an intangible asset by quantifying the present value of the stream of market-derived royalty payments that the owner of the intangible asset is exempted or “relieved” from paying.”



### C) Overview of RFR Method - IPR&D Guide Comments

- 1.22 A relief from royalty method is often appropriate for certain types of intangible assets. For instance, trademarks and trade names, patents, and *developed product technology* are examples of intangible assets that frequently are licensed in exchange for a royalty payment. A critical element of this method is the development of a royalty rate that is comparable to ownership of the specific asset (for example, a rate that equates to worldwide, exclusive rights to use that asset in perpetuity in any manner desired). Therefore, if a properly supportable royalty rate that corresponds to the rights and responsibilities represented by the asset being licensed cannot be obtained due to the nature of the asset, then the relief from royalty method should not be used, and other, more appropriate methodologies should be considered instead.
- 1.23 - Generally, the relief from royalty method is applied in situations in which the importance of the intangible asset to a business or product is similar to that of a comparable, licensed asset (for example, pharmaceutical compounds that are licensed).
  - (a) The intangible asset can be reasonably separated from other assets, and it is practical and possible to license it separately.
  - (b) The rights of ownership can be compared to the rights under a license (for example, similar geographic market coverage, duration, exclusivity, limitation, technology, and type of customer).
  - (c) Royalty rates can be observed, including rates for agreements that confirm comparable economic rights for similar intellectual property.
- 1.24 - Typically, the best source of royalty rate information would be other licensing agreements for comparable technologies made by one of the companies in a transaction. When such information is not available, it may be appropriate to use industry average rates or other broad benchmarks with reasonable justification. Royalty rates would also need to consider the qualitative drivers of comparability. Truly comparable rates may be difficult to find for most IPR&D assets and, therefore, simulated or adjusted royalty rates taking into consideration qualitative value drivers of the subject intangible asset could be used.

### D) Overview of Relief from Royalty Method - Preferred Application of RFR Method

- 2.20 Generally, the relief-from-royalty method is applied in cases where:
  - (a) The importance of the intangible asset to a business or product is similar to that of a comparable, licensed asset (for example, pharmaceutical compounds that are licensed).
  - (b) The intangible asset can be reasonably separated from other assets and it is practical and possible to license it separately.
  - (c) The rights of ownership can be compared to the rights under a license (for example, similar geographic market coverage, duration, exclusivity, limitation, technology, and type of customer).

- (d) Royalty rates can be observed, including rates for agreements that confirm comparable economic rights for similar intellectual property.

*Source: CAC Best Practices Guide*

## II Application of RFR Method

### A) Primary Steps

- Develop projected revenue streams associated with the intangible asset being valued. *(Key issue)*
- Develop royalty rate estimate for the intangible asset. *(Key issue)*
- Multiply projected revenue by the royalty rate estimate for the asset.
- Estimate any expenses (maintenance, administrative, regeneration, other) that might be associated with the asset. *(Key issue)*
- Calculate pretax royalty savings stream and tax effect to determine after tax contribution.
- Develop a discount rate appropriate for the intangible asset. *(Key issue)*
- Apply discount or capitalization rate to after-tax royalty savings stream and total the present value of the future royalty savings, including terminal period.
- Add amortization tax benefit to reach value indication.

*Note: Unlike the EEM, the RFR Method does not include charges for contributory assets.*

### B) Application of RFR Method – Key Assumptions

- While the RFR Method is an apparently simple approach to apply, its simplicity may mask complex assumptions embedded in the data used. Failure to properly address the appropriate selection and use of the method and the development of appropriate estimates for these key assumptions may lead to erroneous valuations.
- Key assumptions in the RFR Method include:
  - Future revenues
  - Royalty rate
  - Possible expenses
  - Discount rate

### C) Application of RFR Method – Challenges of the RFR Method – Financial Impact of the Intangible

- Possible impacts of an asset on an enterprise include:

- (a) Increased revenue
  - Higher price per unit and/or
  - More units sold
- (b) Avoided/reduced expenses
  - Reduced advertising/marketing or other expenses
  - Avoid licensing fee
- (c) If an asset only results in a reduction of expenses, estimation of the value using RFR Method would seem to be more reasonable.
- (d) If an asset (such as a trade name) leads to both higher unit volumes and a lower cost per unit, does the royalty rate account for both of these factors? If not, what method(s) of valuation might be appropriate? Is the RFR Method appropriate for valuing the Coca Cola trademark?

#### D) Application of RFR Method – Revenues

- The selection of the appropriate revenue stream is a critical first step. Key elements of the revenue estimate include:
  - (a) Level of revenues: A royalty rate may be applied to the entire revenue base of a firm. In other cases, a subset of the total revenues may be appropriate.
    - A firm sells both trademarked and private label products. Trademarked product sales would likely be used in the valuation of the trade name, but private label sales would not.
  - (b) Duration: Revenues may be projected into perpetuity or projected over a finite period of time.
- Revenues for the valuation of a trade name would include all future revenues for which the trade name would be expected to be applied and would contribute to the generation of income. Future revenues should consider:
  - (c) Existing customers and/or technology
  - (d) Future customers and/or technology
- As it relates to revenue level selection and duration, there are numerous and complex distinctions between valuing company versus product trade names, which are outside the scope of this course.

#### E) Application of RFR Method – Selection of Revenues

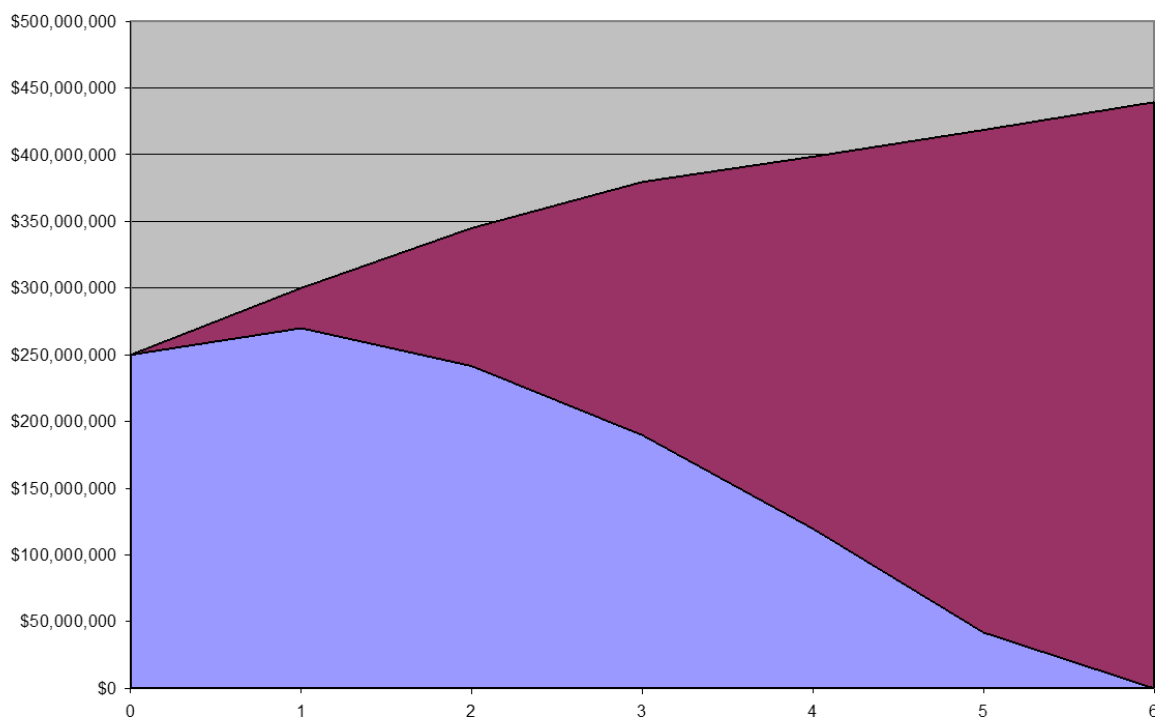
- A trade name is expected to be used on current and all new products.
  - (a) What is the revenue base to apply a royalty rate to?
  - (b) What is the expected remaining economic life of the trade name?

- An internal use technology is only relevant for current products and will not be used in any products under development or future products.

(a) What is the revenue base to which a royalty rate is applied?

(b) What is the economic life of the internal use technology?

**F) Application of RFR Method – Projected Future Revenues of an Acquired Firm – Phase-out of Target's Trade Name**



**G) Application of RFR Method – Selection of Revenues – Uncertainty of Future Revenues**

- In some cases, continued use of an acquired trade name may be uncertain. In these instances, development of probability weighted revenue projections may be an appropriate means for the valuation of the trade name.
- The use of a probability factors captures future uncertainties associated with the trade name in the cash flow estimates. This is consistent with an increasing focus of many appraisers in reflecting risks in the expected cash flows (probability weighted forecast) rather than in a subjective adjustment to a discount rate.

**Sample Calculation of Probability Adjusted Revenue  
Relief from Royalty Method**

Valuation Date

\$ in 000's

		December 31					Residual
		Year 1	Year 2	Year 3	Year 4	Year 5	Year
Revenue		\$50,000	\$52,500	\$54,600	\$56,238	\$57,925	\$59,663
	Growth		5.0%	4.0%	3.0%	3.0%	3.0%
Total Revenue		\$ 50,000	\$ 52,500	\$ 54,600	\$ 56,238	\$ 57,925	\$ 59,663
Probability of Continued Use		100%	100%	90%	90%	90%	90%
Probability of Discontinued Use		0%	0%	10%	10%	10%	10%
Cumulative Probability of Continued Use	100%	100.0%	100.0%	90.0%	81.0%	72.9%	65.6%
Probability Adjusted Revenues		50,000	52,500	49,140	45,553	42,227	39,145

**H) Application of RFR Method – Selection of Revenues — Economic Life of Trademarks and Trade Names**

- Some names are viewed as being used for a long, indeterminate or indefinite (not to be mistaken for infinite) period.
- Studies by Houlihan Lokey indicated the following pertaining to the lives of trademarks and trade names:

**Trademark and Trade Name Lifting Classification  
2012 – 2014**

Trademarks and Trade Names	2014		2013		2012	
	Count	% of Total	Count	% of Total	Count	% of Total
All Indefinite-Lived	53	22%	47	23%	44	21%
All Definite-Lived	188	78%	157	77%	162	78%
Mix of Definite- and Indefinite-Lived	0	0%	0	0%	1	0%
Total	241	100%	204	100%	207	100%

- Other trade names may be phased out over a short to intermediate period of time.
  - In some cases, the acquirer may have a plan to phase-out the target's trade name in favor of its own trade name.
  - In cases of an expected phase out (i.e., acquirer's trade name will replace target's trade name), probability factors may be applied to the base revenue to reach a level of revenues covered by the subject trade name.

- (c) In these cases, the remaining economic life of the trade name can tie to the year in which the phase-out is planned to be completed.
- *Note:* IFRS 13 and ASC 820 requires a market participant perspective to potential phase-out of an acquired intangible. Potential phase-out date in valuation model should reflect market participant assumption and not necessarily the intent of the buyer.
- I) Application of RFR Method – Selection of Revenues - Economic Life vs. Amortization Life
- In many cases, the buyer may plan to use a trade name for an indeterminable (not infinite) period.
  - In some of these cases, specific company, industry risk and other risks may suggest significant uncertainty associated with the ability to use the trade name into perpetuity.
  - In these cases, while the trade name may be reasonably valued essentially into perpetuity, the client may decide to amortize the value of the trade name over a finite period.
- J) Application of RFR Method – Methods for Estimating a Royalty Rate
- There are several different methods for estimating a royalty rate. These include:
    - (a) Transaction Based Royalty Rate – royalty rate based on market transaction
      - Existing licenses of subject
      - Guideline licenses
    - (b) Return on Assets Method – Royalty rate based on a residual income analysis similar to that applied in applying the MPEEM
    - (c) Profit Split Method - Profitability of subject operations relative to competitors – e.g., Chanel perfume compared to private label perfume
  - Estimate of royalty rate from a meaningful market transaction is preferred, if feasible.
  - Application of RFR Method – Royalty Rate Estimate – Market Based vs. Return on Assets vs. Profit Split Method
- K) Application of RFR Method – Expenses
- Expenditures may be required to sustain the asset's current utility over its remaining economic life. This concept somewhat relates to the consideration of gross vs. net royalties which will be discussed later in this module.
  - Examples of potential expenses for an intangible asset may include:
    - (a) Marketing

- (b) Technical
  - Maintenance
  - Routine upgrades
- (c) Administrative
- (d) Legal
- (e) Other
- There is limited discussion and guidance as to whether or not to include expenses related to an intangible that is valued using the RFR Method.
  - (a) Inclusion of any potential expenses related to an amortizable intangible asset would reduce the value of this asset.
  - (b) If maintenance expenses are deducted as an expense in the valuation of an asset using the RFR Method, should these maintenance expenses be added back in the valuation of an asset using the EEM?
  - (c) While deduction of maintenance expenses would seem appropriate, this adjustment needs to be considered in the context of the valuation of all of the assets of the acquired entity.
  - (d) Materiality and consistency may also be possible considerations.

#### L) Application of RFR Method – Maintenance Expense – Trade Name

- For a trade name valued using RFR Method:
  - (a) Inclusion of administrative and/or legal costs would merit consideration.
  - (b) Potential expenses associated with “refreshing” the asset (new marketing campaign to promote existing product and/or service) should be considered for possible inclusion. (Not a clear issue.)
  - (c) Maintenance expenses for a trade name should probably not include expenses associated with efforts to extend the trade name (launch of a completely new flavor of Coke). These would relate to products and/or services not yet in existence at the valuation date. (Not a clear issue.)

#### M) Application of RFR Method – Maintenance Expense – Internal Use Technology

- For internal use technology valued using RFR Method:
  - (a) Include expenses associated with maintaining the utility of the software.
  - (b) Do not include expenses for major upgrades, as this would relate to future technology not in existence at the date of the transaction – It must be remembered that we are valuing the current technology and not its successor versions.

- (c) If maintenance expenses are deducted in the RFR Method calculation for technology, these expenses should probably be added back in the valuation of the primary asset using the EEM.

### III Royalty Rates

#### A) Introduction

- A royalty rate estimate is a critical input in the valuation of certain intangible assets such as technology and trademarks.
- While the assets are valued using the Income Approach (more specifically a Relief from Royalty Method), the estimation of a royalty rate may be based on reliance on royalty rates from market transactions. Given the limited number of market transactions frequently observed, other means of estimating a royalty rate will also be discussed.
- Selection of royalty rates begins with understanding the economic benefits provided by the IP:
  - (a) Increased prices
  - (b) Increased unit sales
  - (c) Decreased costs
  - (d) Combination of any or all of the above

#### B) Royalty Rates – Estimation Techniques

- Licenses of the Subject Asset (Market based)
  - (a) License are frequently not directly comparable (limited scope, time period, geographic area, use, other)
- Market Royalties (Market based)
  - (a) These may not be directly comparable given differences in the underlying intangible. Also, limited rights are often licensed.
- Return on Assets Method (“ROAM”)
  - (a) Similar to key elements of the MPEEM method. Measures the economic contribution of the intangible asset
- Profit Split Method (“PSM”)
  - (a) Can be viewed as a simplified ROAM.
  - (b) May involve rules of thumb (i.e., “25% rule” – see upcoming slides).

(Some royalty rates are set by statute or agreement for certain assets (e.g., music performances). These differ from our topic of discussion.)



### C) Royalty Rates – Employing the RFR Method – Royalty Rate Concerns

- The royalty rate should reflect:
  - (a) market evidence to the extent available,
  - (b) the profitability of products and/or services using the name(s) and
  - (c) the importance of the names in achieving projected sales and profit margin levels.
- Challenge can be in isolating profitability of licensed intellectual property relative to subject intangible – typically, limited disclosure leads to uncertainty regarding comparability.

### D) Royalty Rates – Types of Royalty Rate Payments

- Types of Royalties:
  - (a) Lump sum payment
  - (b) Annual payment (a.k.a., Running Royalties)
    - Revenue
    - Per unit
    - Gross margin
    - Other
- Combination of lump sum payment and running royalty
- *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 166 U.S.P.Q. (BNA) 235 (S.D.N.Y. 1970) established a key precedent for royalty rate selection criteria. (Primarily used for Patents)

### E) Royalty Rates – Factors Influencing Royalty Rates

- Factors influencing royalty rates include:
  - (a) Strength and scope of intellectual property rights
  - (b) Territorial extent of rights
  - (c) Market drivers
  - (d) Royalty stacking
  - (e) Exclusivity of rights
  - (f) Level of innovation
  - (g) Durability of the technology

- (h) Degree of competition / availability of other technologies
- (i) Inherent risk
- (j) Strategic need / portfolio fit
- (k) Stage of development
- (l) Therapeutic field
- (m) Availability of finances
- (n) Deal structure / reward structure

Source: *Royalty Rates: Current Issues and Trends*, Sharon Fitch, Medius Publications, [www.medius-publications.com](http://www.medius-publications.com)

#### F) Royalty Rates – Other Factors for Consideration

- Bases of royalty rates disclosed by third party sources
  - (a) Gross vs. Net (e.g. R&D expenses, advertising expenses)
  - (b) Bundled vs. Unbundled IP
- Duration of the patent or term of license
- Decreasing or increasing royalty rates over licensing period
- Consideration of up-front payments
- Transfer of ownership
- Different products of a business may have different licensing rates (e.g. full software package vs. single component)
- Life cycle and stage of agreement vs. asset being valued (dominant vs. fading)

#### G) Royalty Rates - Factors to Consider for Trade Names / Trademarks

- History/heritage and longevity of trademark/trade name
- Product quality perception and recognition in the marketplace
- Branded products vs. unbranded products
- Extension potential
- Market share trends
- Existing or potential licensing economics
- Ability to limit competition and protect market share
- Pricing premiums received related to brand

- Advertising, marketing, and maintenance of the trademark/trade name
- Gross and pre-tax margins
- Comparative historical and projected growth rates
- Comparative historical and projected EBIT margins

#### H) Royalty Rates – Market Transactions – IVSC Guidance

- IVSC Technical Information Paper 3, *The Valuation of Intangible Assets*, includes guidance on factors to consider in determining a royalty rate.
- 6.21 Any royalty information obtained should be adjusted to reflect the differences between the comparable royalty arrangement and the subject asset. Factors to benchmark when comparing the subject asset and other royalty agreements include:
  - (a) Specific licensor or licensee factors that might impact the royalty rate such as there being related parties,
  - (b) Exclusivity terms,
  - (c) Whether the licensor or licensee has responsibility for certain costs, such as marketing and advertising,
  - (d) License inception date and period of effect,
  - (e) Duration of license, or
  - (f) Differentiating characteristics such as market position, geographical coverage, functionality, whether they are used in connection with business-to-business or business-to-consumer products, etc.

#### I) Royalty Rates – Market Transactions - Challenges

- Establishing a reasonable royalty rate based on market transactions is challenging. A partial list of concerns includes:
  - (a) Limited number of transactions
  - (b) Frequent lack of comparability
    - Profit potential
    - Functions and risks born by licensor and licensee
    - Exclusivity and restrictions in license
    - Territory and field of use
    - Duration
    - Rights to receive updates and modifications
    - Terms of license

- (c) Differences between a partial license vs. full ownership
- (d) Complexities of royalty payment structures can increase challenges in determining an effective royalty rate
- 7.91 “. . . for a trade name, which may be valued using the relief from royalty method, the royalty rate is typically a portion of profit after deducting the maintenance expense. In other words, the royalty rate captures the excess profit from the trade name above and beyond the maintenance cost, and therefore, is assumed to incorporate both the return *on* and *of* that asset. In such cases prospective expenses may also need to be adjusted downward to avoid a duplicate charge for the return *of*.”
- 7.152 “. . . market royalty rates may reflect only limited usage of comparable assets, such as instances where use is restricted to specific geographic locations, applications, or time periods. Other factors that may exist would also need to be considered. A market participant’s use of the asset may differ from this type of limited use, thereby warranting an adjustment to the royalty rate.”

*Source: Contributory Asset Charges, Best Practices document*

- 7.153 The valuation specialist would also evaluate whether the observed rate reflects the all-inclusive rate commensurate to the complete set of rights associated with the subject asset. Often times, a licensor may split the benefits associated with an asset with a licensee for a number of reasons. Truly comparable rates may be difficult to find for most technologies and, therefore, simulated or adjusted royalty rates taking into consideration qualitative value drivers of the subject intangible asset would be used.

*Source: Contributory Asset Charges, Best Practices document*

#### J) Royalty Rates – Market Transactions – Challenges per Nestle Holdings Inc. v. Commissioner

- In tax valuations in the U.S, the meaningfulness of market transaction based royalties has been challenged by the Internal Revenue Service.
- As noted in Nestle Holdings Inc. v. Commissioner of Internal Revenue (152 F3d 83), “A relief from royalty model fails to capture the value of all of the rights of ownership, such as the power to determine when and where a mark may be used, or moving a mark into or out of product lines. It does not even capture the economic benefit in excess of royalty payments that a licensee generally derives from using a mark.”
- The concerns noted above and in the following slides suggest reconciliation to a Return on Assets Method or reliance on the ROAM may be appropriate.

#### K) Royalty Rates – Market Transactions - Different Rights can be Transferred

- The terms of license agreements can be widely variable.
- Complete transfer

(a) Full assignment to third party

- Limited transfer / license
  - Non-exclusive license
  - Exclusive license
    - Field
    - Territory
- No transfer

L) Royalty Rates – Market Transactions - Commercial Databases

- Royalty Source – [www.royaltysource.com](http://www.royaltysource.com)
- RoyaltyStat – [www.royaltystat.com](http://www.royaltystat.com) – full documents, good search capability
- Licensing Executives Society surveys
- Licensing Economic Review (Smith & Parr) – [www.ausinc.com](http://www.ausinc.com)
- Financial Valuation Group – [www.fvginternational.com](http://www.fvginternational.com)
- PLX Systems – [www.pl-x.com](http://www.pl-x.com)
- Consor Intellectual Asset Management (Wes Anson) – [www.consor.com](http://www.consor.com)
- IPRA, Inc. – Intellectual Property Research Associates – [www.ipresearch.com](http://www.ipresearch.com)
- ktMINE – [www.ktmine.com](http://www.ktmine.com)
- Licensing Royalty Rates 2008 Edition, Gregory Battersby, Charles Grimes
- Lexis Nexis – SEC Filings

M) Royalty Rates – Market Transactions – Other Transaction Terms

- 2.09 “. . . royalty rates derived from licensing arrangements. It should be noted, however, that the terms in these transactions may include an upfront lump-sum payment with certain contingent payments or ongoing royalties based on future success and revenue. Difficulty in converting the transaction terms to either a single lump-sum amount, or to a blended effective royalty rate may be an obstacle in benchmarking the value of the subject asset in addition to other issues of comparability.”
- 2.19 A relief-from-royalty method is often appropriate for certain types of intangible assets. For instance, trademarks and trade names, patents, and developed product technology are examples of intangible assets that frequently are licensed in exchange for a royalty payment. A critical element of this method is the development of a royalty rate that is comparable to ownership of the specific asset (for example, a

rate that equates to worldwide, exclusive rights to use that asset in perpetuity in any manner desired).

*Source: Contributory Asset Charges, Best Practices document*

#### N) Royalty Rates – Market Transactions - Gross vs. Net Royalty Rates

- One important consideration in understanding royalty rates relates to the “extent “of the royalty. This can influence the inputs to the RFR valuation model.
- Per 3.5.03, “A royalty rate should be analyzed to determine whether it compensates the licensor for all functions (ownership rights and responsibilities) associated with the asset. Such an analysis would include consideration of expenses recognized by the licensee versus expenses otherwise considered to be the responsibility of the licensor. A royalty rate that is “gross” would consider all functions associated with ownership of a licensed asset to reside with the licensor while a royalty that is “net” would consider some or all of the functions associated with the licensed asset to reside with the licensee.”
- *Source: Contributory Asset Charges, Best Practices document*
- Trademark – Gross vs. net adjustment due to advertising, other
- Technology – Gross vs. net adjustment due to maintenance R&D, other

#### O) Royalty Rates – Gross vs. Net Royalty Example

##### Comparison of Gross v. Net Royalty

		Year 1	Year 2	Year 3	Year 4	Year 5	Residual Year
<b>Calculation Using Gross Royalty:</b>							
Revenues Subject to Royalty		100,000	105,000	110,000	115,000	120,000	125,000
Royalty Rate (Gross)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Pre-Tax Royalties		5,000	5,250	5,500	5,750	6,000	6,250
Plus: Add'l Expenses Incurred by Licensee (1)	0.0%	0	0	0	0	0	0
Pre-Tax Royalties (Gross Basis)	5.0%	5,000	5,250	5,500	5,750	6,000	6,250
<b>Calculation Using Net Royalty:</b>							
Revenues Subject to Royalty		100,000	105,000	110,000	115,000	120,000	125,000
Royalty Rate (Net)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Pre-Tax Royalties		4,000	4,200	4,400	4,600	4,800	5,000
Plus: Add'l Expenses Incurred by Licensee (2)	1.0%	1,000	1,050	1,100	1,150	1,200	1,250
Pro Forma Pre-Tax Royalties (Net Basis)	5.0%	5,000	5,250	5,500	5,750	6,000	6,250

##### Notes:

(1) For a gross royalty, no other expenses are incurred by the licensee.

(2) If market transactions reflect net royalties, the additional expenses to be incurred by the licensee would need to be included to bring the royalty rate to be consistent with a gross royalty.

With proper adjustments, value of the asset would be the same regardless of whether a gross royalty or net royalty approach is used.

#### P) Royalty Rates – Basic Formula

- Royalties are often expressed as a percentage of revenues. They may be expressed in a number of different ways including:
  - (a) Percentage of net revenues
  - (b) Percentage of gross margin
  - (c) Fixed dollar amount per unit
  - (d) Total payment for an assumed number of units
- Arithmetically, royalty rate as % of sales can be calculated as:

$\text{Royalty rate} = \$ \text{Payment to licensor} / \text{Royalty basis (i.e. product sales price)}$

#### Q) Royalty Rates – Market Transactions - Actual Licenses

- Company may license IP in foreign markets or to other industries.
  - (a) Related entities may have licenses for international tax purposes. Are these market transactions?
- The license may not be directly comparable to the overall intangible given market differences, usage differences, or related party.
- Careful comparison is needed to confirm comparability.

#### R) Royalty Rates – Market Transactions - Analysis of Market Royalty Rates

- Using the data sources previously mentioned, identify royalty rates (and royalty agreements when available) in the relevant industry or industries.
- Narrow the identified transactions to those closest to the intellectual property that is being valued.
  - (a) Stratify transaction data into groups to identify important factors:
    - Geographic usage
    - Rights differences
    - Date of transactions
    - Usage
- Gather other supporting data that may be useful:
  - (a) Profitability of public licensees (possibly by segment using IP)
  - (b) Comparable profit margin data
  - (c) Market share of licensee versus other entities in industry

- Adjust transaction data for key differences, if possible.
  - (a) Market data may be used to adjust license for differences.
    - Identify if geographic areas have premiums or discounts.
    - Identify if licensing for use in one type of product has premiums or discounts over other products (clothing versus sunglasses).

#### S) Royalty Rates – Market Transactions – Comparability Issues

- Royalty agreements may be between related parties or entities
  - (a) Royalty to company owner for technology owned outside of company
  - (b) Royalty agreement between parent entity and foreign subsidiary
- Royalty limitations
  - (a) Royalty agreement might be restricted to territory
  - (b) Royalty agreement may not include rights to follow on inventions
  - (c) Royalty agreement may prohibit sublicensing
- Does royalty include portion to reimburse for maintenance or is maintenance outside agreement?
  - (a) Some agreements have a separate advertising commitment
  - (b) R&D expenditures for next generation technologies may be required

#### T) Royalty Rates – Market Transactions - Licensed-Out Royalty Rates as Determined by a Voluntary Survey

	Royalty Rate Category					
	0-2%	2-5%	5-10%	10-15%	15-20%	Over 25%
<b>Primary Industry</b>						
Aerospace		40.0%	55.0%	5.0%		
Automotive	35.0%	45.0%	20.0%			
Chemical	18.0%	57.4%	23.9%	0.5%		0.1%
Computer	42.5%	57.5%				
Electronics		50.0%	45.0%	5.0%		
Energy		50.0%	15.0%	10.0%	25.0%	
Food/Consumer	12.5%	62.5%	25.0%			
<b>General Mfg.</b>	<b>21.3%</b>	<b>51.5%</b>	<b>20.3%</b>	<b>2.6%</b>	<b>0.8%</b>	<b>0.8%</b>
Gov't/University	7.9%	38.9%	36.4%	16.2%	0.4%	0.6%
Health Care Equip.	10.0%	10.0%	80.0%			
Pharmaceuticals	1.3%	20.7%	67.0%	8.7%	1.3%	0.7%
<b>Telecommunications</b>				<b>100.0%</b>		
<b>Other</b>	<b>11.2%</b>	<b>41.2%</b>	<b>28.7%</b>	<b>16.2%</b>	<b>0.9%</b>	<b>0.9%</b>

Source: McGavock, et. al., "Factors Affecting Royalty Rates." *les Nouvelles*, June 1992, p. 107.



#### U) Royalty Rates – Market Transactions - Determining Comparability

- What are the specific rights conveyed in transaction?
- Arm's-length transaction?
- Special financing terms available (*may not have a real effect on value*)
- Economic conditions at the time of transaction
- Inclusion of non-IP assets in the transaction
- Functional characteristics of the guideline IP
- Technological characteristics of the guideline IP (stage of development)
- Economic characteristics of the guideline IP
- Legal characteristics of the guideline IP
- Other factors

#### IV Profit Split Method

##### A) Introduction

- The Profit Split Method (PSM) was used before advent of databases with licensing data – advances in research technology led to a shift away from the PSM.
- PSM may be useful as a reasonableness check or when no better data is available (transfer pricing regulations include a variety of approaches and the PSM is not a preferred method).
- Careful assessment required to confirm the intangible asset merits a material share of profit. In the US, Internal Revenue Code Section 482 transfer pricing requires a detailed assessment (functional analysis) when valuing intangibles using the PSM.
- The PSM is broad and encompasses a Rule of Thumb known as the 25 percent rule ("25% Rule"). While many use the 25% Rule, there appears to be limited empirical market evidence to support the range for the profit split and the resulting royalty rate for an intangible. Use of the 25% Rule was recently rejected in the *Microsoft v. Uniloc* civil court case. Key insights from this case will be presented later in this module.

##### B) Profit Split Method – Functional Analysis

- For transfer pricing projects, a "functional analysis" might be performed to assess which elements of the value chain are driving the profitability. The royalty rate is basically derived by allocating the overall profit of the business amongst the different profit generating business functions.
- In a transfer pricing setting, a functional analysis looks at the functions, risks and assets of the controlled (related) entities. In setting a royalty rate, the functional

analysis would look at the relative contributions of the subject asset and the remaining assets and functions of the entity.

- Depending on the form of calculation performed, a functional analysis can be viewed as a robust form of the Profit Split Method.

#### C) Profit Split Method – Description

- This method suggests that a licensee pay a royalty rate that essentially allocates (splits) the profit between the licensor and the licensee. Most frequently cited profit split range has been 25 to 33 percent of expected operating profits for a product that incorporates intellectual property.
- The Profit Split Method has been used in valuing patents, trademarks, trade secrets, and know-how.
- Studies of profit splits relate to the licenses involving technology related intangibles. Despite limited anecdotal evidence for marketing related intangibles such as trade names and trademarks, the Profit Split Method is occasionally used to estimate a royalty rate for trade names and trademarks.

#### D) Profit Split Method – Determined From Empirical Analysis

- A royalty may be calculated using the price differences between products:
  - (a) A branded product and its generic product equivalents (trade name), or
  - (b) A product incorporating proprietary technology versus a substitute using technology that is general (technology).
- Similarly, a reasonable royalty can be assessed by comparing operating margin differences (typically EBIT) between entities:
  - (a) EBIT % for selling generic products versus branded products, or
  - (b) EBIT % of a manufacturing outsourcer vs. a manufacturer that also owns the technology.
- “Pure plays” for comparison are rare – a manufacturer may also outsource to fill excess capacity. Margins will include both operations.

#### E) Profit Split Method – 25 Percent Rule

- Application is as follows:
  - (a) Estimate the expected operating profits applicable to the IP divided by the net sales over the same time period to derive a profit margin.
  - (b) Multiply that profit margin by 25 to 33 percent to derive a running royalty rate.
  - (c) Adjust up or down for relevant factors.

#### F) Profit Split Method – Origins of 25 Percent Rule

- A 1938 Sixth Circuit Court of Appeals case (*Horvath v. McCord Radiator and Mfg. Co. et al.*, 100F.2d 326, 335 (6<sup>th</sup> Cir. 1938)) noted:

“Ordinarily royalty rights to the inventor should bear a certain portion of the profits made by the manufacturer and that the inventor was entitled to a 'portion ranging from probably ten percent of the net profits to as high as thirty percent,' which should be graduated by the competitive situation.”
- Often attributed to research by Robert Goldscheider in the late 1950s.
  - (a) Based on 18 exclusive licenses for territories around the world by a Swiss subsidiary of a large American company.
  - (b) Each related product was number 1 or 2 in its market. (This may suggest very strong asset that was licensed.)
  - (c) IP rights licensed included a patent portfolio, a continual flow of know-how, trademarks, and copyrighted marketing and product materials.
  - (d) Found royalty rates at approximately 25 percent of EBIT.

#### G) Profit Split Method – 25 Percent Rule – Justifications Cited

- Anecdotal Evidence Supporting the 25 Percent Rule
  - (a) “. . . There is fairly common acceptance of a figure of 25 percent of the profit earned by the licensee as a reasonable royalty to the licensor” –Finnegan, Marcus B. and Herbert H. Mintz, “Determination of a Reasonable Royalty in negotiating a License: Practical Pricing for Successful Technology Transfer,” Licensing Law and Business Report No. 2 (June–July 1978), p. 19.
  - (b) “Overall average royalties equal 25 percent of licensee profits . . .” – Banner, Donald W. “Pricing the Technology” in Domestic & International Licensing of Technology 1980. T. Arnold and J.T. McCarthy, Eds. Practising Law Institute, 1980.
  - (c) “Two respondents . . . Hand established rules of thumb . . . The first indicated that 25 percent of the licensee’s profits were questionable. The second used a benchmark of one-fourth to one-third of the licensee’s profits” – Barlow, Richard, “Matrix Approach to Pricing, “Les Nouvelles” March 1978, p. 11.

#### H) Profit Split Method – 25 Percent Rule – Comments from Licensing and Litigation

- Licensing – Degan and Horton survey of licensing professionals (1997)
  - (a) 25 percent of licensors use the 25 percent rule to start negotiations
  - (b) 50 percent use a profit sharing analysis (variant of the 25 percent rule)
- Litigation

(c) In *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cir. 748 (1999 U.S. Claims LEXIS 11), the court used a two-step approach:

- The First Step involved estimating a "baseline" rate. The Court found that the application of the 25 percent rule to be an appropriate method for determining the base rate.
- The Second Step involved adjusting the baseline upward or downward based on the relative bargaining strength of the two parties with respect to each of the 15 Georgia Pacific factors.

I) Profit Split Method – 25 Percent Rule Observations

- Criticisms:
  - (a) Arbitrary in nature
  - (b) What does it apply to? Patents, trademarks, trade secrets, other?
  - (c) Imprecise in measuring incremental profit contribution
- Attributes:
  - (a) Used as a base line among licensing professionals
  - (b) Some analytical support from Smith and Parr Study
  - (c) Study of Royalty Source database for 15 industries showed median royalty rate as % of licensee operating profit % was 26.7%. Range from 8.5% for semiconductors to 79.7% for the auto industry – range due to differences in actual vs. expected profit levels.

J) Profit Split Method – 25 Percent Rule – Comments on Rules of Thumb

- The ASA Business Valuation Standards include a Glossary of Terms: Rule of Thumb – a mathematical formula developed from the relationship between price and certain variables based on experience, observation, hearsay, or a combination of these; usually industry specific.
- BVS-V, V discusses “Rules of Thumb,” as follows:
  - (a) Rules of thumb may provide insight on the value of a business, business ownership interest, or security. However, value indications derived from the use of rules of thumb should not be given substantial weight unless they are supported by other valuation methods and it can be established that knowledgeable buyers and sellers place substantial reliance on them.
- For business valuation, a RoT is a secondary valuation method and not a primary valuation method, i.e., it can only be used to help assess the reasonableness of a primary valuation method estimate.

K) Profit Split Method – *Uniloc USA, Inc. v. Microsoft Corp.* – Overview and Key Findings

- A 2011 United States civil court case, *Uniloc USA, Inc. and Uniloc Singapore Private Limited v. Microsoft Corporation*, No. 2010-1035 (Fed. Cir. January 4, 2011), provides important insights on the use of the PSM to determine a royalty rate for the valuation of technology using the Relief from Royalty Method.
- Findings of the court case include:
  - (a) Relief from Royalty Method accepted as a reasonable means of valuation of a technology
  - (b) Use of the 25% Rule is a “fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation”
- The following will summarize some of the observations of the court regarding the PSM.

L) Profit Split Method – *Uniloc USA, Inc. v. Microsoft Corp.* – Specific Comments from the Case

- The Federal Circuit panel of judges held that:
  - (a) “the 25 percent rule of thumb is a fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation. Evidence relying on the 25 percent rule of thumb is thus inadmissible under Daubert and the Federal Rules of Evidence, because it fails to tie a reasonable royalty base to the facts of the case at issue.”
  - (b) “. . . there must be a basis in fact to associate the royalty rates used in prior licenses to the particular hypothetical negotiation at issue in the case. The 25 percent rule of thumb as an abstract and largely theoretical construct fails to satisfy this fundamental requirement. The rule does not say anything about a particular hypothetical negotiation or reasonable royalty involving any particular technology, industry, or party. Relying on the 25 percent rule of thumb in a reasonable royalty calculation is far more unreliable and irrelevant than reliance on parties’ unrelated licenses, which we rejected in ResQNet and Lucent Technologies.”
  - (c) (ResQnet and Lucent are cases cited in the Uniloc case decision.)
- “. . . this court has passively tolerated its use where its acceptability has not been the focus of the case, or where the parties disputed only the percentage to be applied (i.e. one-quarter to one-third), but agreed as to the rule’s appropriateness. “ However, the court recognized that it never squarely addressed the use of the rule.
- The Federal Circuit noted that it “has sanctioned the use of the *Georgia-Pacific* factors to frame the reasonable royalty inquiry” and that those “factors properly tie the reasonable royalty calculation to the facts of the hypothetical negotiation at issue.” However, use of the 25% rule as a starting point is not acceptable, because “beginning from a fundamentally flawed premise and adjusting it based on legitimate

- considerations specific to the facts of the case nevertheless results in a fundamentally flawed conclusion.”
- Three areas of challenge for the 25 percent rule:
    - (a) Does not account for the unique relationship between the patent and the product or service. “[The 25 percent rule] takes no account of the importance of the patent to the profits of the product sold, the potential availability of close substitutes or equally non infringing alternatives, or any of the other idiosyncrasies of the patent at issue that would have affected a real-world negotiation. ” . . . fails to “distinguish between monopoly and normal profit. . . . Thus for narrow patents, the rule may be overly generous to the patentee, and for broad patents it may be overly stingy”)
    - (b) Does not account for the unique relationship between the parties. . . . the rule should not be used in isolation because it fails to “account for the different levels of risk assumed by a licensor and licensee”) (“[T]he rule is unlikely to have any basis in the accused infringer’s industry, in the technology involved in either the patent or the accused product or service, or in the claimed invention’s contribution to the infringing product or service.”)
    - (c) The rule is essentially arbitrary and does not fit within the model of the hypothetical negotiation within which it is based. (“[The 25% and the 5%] rules of thumb are best understood as special cases that may be appropriate to a given situation only by chance.”) . . . the 25% rule “shortcut” “is essentially arbitrary. Because it is based on ex post results, it does not necessarily relate to the results of a negotiation that took place prior to the infringement”).
  - “. . . the 25 percent rule of thumb would predict that the same 25%/75% royalty split would begin royalty discussions between, for example, (a) Tinicum and IBM over a strong patent portfolio of twelve patents covering various aspects of a pioneering hard drive, and (b) Kodak and Fuji over a single patent to a tiny improvement in a specialty film emulsion.”
  - “It is of no moment that the 25 percent rule of thumb is offered merely as a starting point to which the Georgia-Pacific factors are then applied to bring the rate up or down. Beginning from a fundamentally flawed premise and adjusting it based on legitimate considerations specific to the facts of the case nevertheless results in a fundamentally flawed conclusion.”
  - “This court’s rejection of the 25 percent rule of thumb is not intended to limit the application of any of the Georgia-Pacific factors. In particular, factors 1 and 2—looking at royalties paid or received in licenses for the patent in suit or in comparable licenses—and factor 12—looking at the portion of profit that may be customarily allowed in the particular business for the use of the invention or similar inventions—remain valid and important factors in the determination of a reasonable royalty rate. However, evidence purporting to apply to these, and any other factors, must be tied to the relevant facts and circumstances of the particular case at issue and the hypothetical negotiations that would have taken place in light of those facts and circumstances at the relevant time.”

## V Return on Assets Method

### A) Introduction

- The Return on Assets Method is similar to performing a common-size multi-period excess earnings model (“MPEEM”). Required returns (contributory asset charges) for a company’s asset base are deducted from the total earnings stream. The remaining income as a percentage of revenue is the basis for the royalty rate.
- Returns on working capital, fixed assets, and workforce are deducted from earnings (EBITA) to determine the excess income available for remaining intangible assets. This represents the “return-on” for all intangible assets.
- Determine the proportion of the residual return allocable to the subject asset. The remaining excess earnings (as a percent of revenue) are those “returns-on” which are attributable specifically to the subject asset.
  - (a) The determination of the residual portion of the return may be challenging if there are several important intangible assets. It is difficult to value multiple intangible assets using residual earnings concepts.
    - Develop EBIT estimate for the business enterprise.
    - Estimate returns for categories of tangible assets including working capital, net fixed assets and any other assets required.
    - Subtract estimated returns for working capital and fixed assets from EBIT.
    - Equals: EBIT allocable to all intangibles.
    - Subtract estimated returns (contributory asset charges) for any intangible assets that are readily valued (assembled work force, internal use software as examples).
    - Estimate share of EBIT margin for the remaining intangibles that is allocable to subject intangible (typically trade name or technology).
    - Multiply share of EBIT margin allocable to intangibles by estimated share for specific intangible asset.



## B) Return on Assets Method – Example

**Valuation of Enabling Brand - Relief from Royalty Method  
Royalty Rate Based on Return on Assets Method**

		Year 1	Year 2	Year 3	Year 4	Residual
Total Revenues		\$ 100,000	\$ 103,000	\$ 106,090	\$ 109,273	\$ 112,551
Growth		N/A	3.0%	3.0%	3.0%	3.0%
Unbranded Revenues	5.0%	5,000	5,150	5,305	5,464	5,628
Revenues Dependent on Brand		95,000	97,850	100,786	103,809	106,923
Royalty Rate (ROA Method - see below)	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Pre-Tax Income Attributable to Brand		8,550	8,807	9,071	9,343	9,623
Income Taxes	40.0%	3,420	3,523	3,628	3,737	3,849
Adjusted After-Tax Royalties		5,130	5,284	5,442	5,606	<b>48,116</b>
Present Value Factor	15.0%	0.9325	0.8109	0.7051	0.6131	0.6131
Present Value of Cash Flow		4,784	4,285	3,837	3,437	29,501
Sum of Present Values of Cash Flows		45,844				
Plus: Tax Amortization Benefit		8,741				
Fair Value of Enabling Brand		54,585				
<b>Fair Value of Brand, Rounded</b>		<b>\$ 55,000</b>				
<b>Calculation of Royalty Rate for Enabling Brand</b>					% of	Total
EBIT Margin (Branded Product Sales)		20.0%			100.0%	
Less: Contributory Asset Charges						
- Working Capital		2.0%			10.0%	
- Fixed Assets		2.0%			10.0%	
- All Intangible Assets (Other than brand)		7.0%			35.0%	
<b>Indicated Royalty Rate for Brand</b>		<b>9.0%</b>			<b>45.0%</b>	

**Note(s):**

(1) - Other models included a provision for possible maintenance / other expense. When using ROA Method, starting point for royalty rate calculation is EBIT. Hence, maintenance expense is already captured.

## VI Royalty Rate Estimation – Example – Key Facts

## A) Overview

- Tuff Tables Inc. (the Company) designs, manufactures and markets premium quality, innovative institutional furniture. The Company's product lines include multipurpose room furniture and healthcare seating. Its line of multipurpose furniture is sold both domestically and internationally in educational, recreational, hotel and hospitality, government, office, healthcare, church and other public assembly markets. Its healthcare seating is sold mainly in the U.S. and Canada in the long-term healthcare market.
- Our example involves only the Tuff Tables trade name.

## B) Example - Royalty Rate Estimation

- Step 1 – Estimate royalty rate for subject name.
  - (a) Inquire whether any licenses or offers for subject name exist.
- Step 2 – Estimate royalty rate based on guideline names.
  - (a) Inquire with management.
  - (b) Search for royalty rates for similar trade names.
- Step 3 – Profit split estimation.



(a) Perform functional analysis to develop basis for profit split.

**C) Example - Royalty Rate Estimation – Step 1 – Existing Licenses of Subject Name**

- Like most firms, Tuff Tables does not license its name for use by third parties (No External Contracts).
- No negotiations with third parties for use of trade name.
- Tuff Tables does have a transfer pricing agreement for use of trade name between international divisions.
  - (a) An internal license might not necessarily be viewed as an arm's-length transaction if it involves units under common control.
  - (b) International license is between Tuff Tables and Tuff Tables Canada (a Canadian Division owned 100% by Tuff Tables).
  - (c) License is for unlimited use of the Tuff Tables' trade names in Canada for a flat royalty rate of 5.0%.

**D) Example - Royalty Rate Estimation – Step 2 – Market Licenses of Similar Names**

- Typically performed using commercial royalty databases or direct search (more time consuming).
- Initial inquiry for institutional furniture yielded no results.
- Expanded search included consumer furniture and related products.

License Year	Licensor	Licensee	Licensed Property	Royalty Rate (% of Sales)	
				Low	High
1990	Hilton Hotels Corp.	Various	The Waldorf-Astoria name for upscale application including home furnishings	7.0%	10.0%
1950's	Lucille Ball and Desi Arnez	unknown	Use of individuals names and likenesses on furniture and related advertising	5.0%	5.0%
1996	PBA Tour Inc.	Keller Manufacturing Company	Use of Insignia of the PGA Tour solely upon and in connection with the manufacture, sale and distribution of a new line of furniture.	5.0%	5.0%
1995	Simmons Company	Louisville Bedding Co.	Exclusive license, without right to sublicense, for use of the BEAUTYREST and BEAUTY SLEEP trademarks on the Products in connection with the manufacture, advertising, marketing, sale and distribution of certain bedding accessories, excluding down products.	6.0%	6.0%
Indicated Royalty Rate Range (averages of lows/highs):				5.8%	6.5%

E) Example - Royalty Rate Estimation – Step 3 – “Basic” Profit Split for Selecting Royalty Rate

<b>Valuation of Trade Name</b>					
<b>Royalty Rate - Profit Split Analysis</b>					
<b>Calculation of Profit Split Allocable to Trade Name</b>					
EBIT Margin		17.3%	17.3%		
Share of intangible return attributable to trade name (1)		<b>25.0%</b>	<b>30.0%</b>		
Remaining profit attributable to tradename		4.3%	5.2%		
Rounded to		4.0%	5.0%		
<b>Note(s):</b>					
(1) Trade name believed to be one of the key assets of the enterprise. Rule of Thumb applied.					
(2) Rule of Thumb has limited consideration of rolls of other assets of the enterprise, i.e., returns for WC, fixed assets and other specific intangibles not considered.					

F) Example - Royalty Rate Estimation – Profit Split Conclusion

- It is important to confirm that trade name is of material importance to firm and profit split is appropriate:
  - (a) Established firm – Duration of firm name and position in industry
  - (b) Quality orientation – Recognized for quality, durability and design further enhancing role of marketing related intangibles to firm success
  - (c) Customer loyalty – Discussions indicated customers relatively loyal.
  - (d) Technology is important but not critical to the business – patents helpful but not viewed as critical to firm success.
  - (e) No other factors viewed as dominant drivers of firm success.
- 25 percent rule is very general starting point which is subject to increasing challenges

## G) Example - Return on Assets Method – Example 1

<b>Valuation of Trade Name</b>			
<b>Royalty Rate Based on Return on Assets Method (Enhanced Profit Split)</b>			
<b>Calculation of Profit Split Allocable to Trade Name</b>			
EBIT Margin		17.3%	
Less required return on working capital		0.8%	
Less required return on fixed assets		2.0%	
Remaining profit attributable to intangibles		14.4%	
Share of intangible return attributable to trade name (1)		<b>35.0%</b>	
Remaining profit attributable to tradename		5.1%	
Rounded to		5.0%	
<b>Estimation of WC and FA Shares of EBIT</b>			
	Working	Fixed	
	Capital	Assets	
After Tax Required Return on Asset (2)	\$ 207	\$ 547	<i>(Actual figures for this example)</i>
Tax Rate Complement (1 - tax rate)	60%	60%	
Adjusted to EBIT Basis	\$ 345	\$ 912	
Revenue Base (2)	\$ 42,000	\$ 44,597	
EBIT as % of Revenues	0.8%	2.0%	
<b>Note:</b>			
(1) Based on functional analysis which suggested trade name is an important intangible asset of the subject			
Functional analysis would consider contribution of all intangible assets WC and FA were considered previously, so they would not require consideration here. Given this, a higher share of EBIT would be expected.			
(2) See other exhibit			
(3) Items may not foot due to rounding			

## H) Example - Return on Assets Method – Revised Example with Larger Returns on WC and FA

<b>Valuation of Trade Name</b>			
<b>Royalty Rate Based on Return on Assets Method (Enhanced Profit Split)</b>			
<b>Revised with Larger Returns on Working Capital and Fixed Assets</b>			
<b>Calculation of Profit Split Allocable to Trade Name</b>			
EBIT Margin		17.3%	
Less required return on working capital		5.0%	
Less required return on fixed assets		8.0%	
Remaining profit attributable to intangibles		4.3%	
Share of intangible return attributable to trade name (1)		35.0%	
Remaining profit attributable to tradename		1.5%	
Rounded to		1.5%	
<b>Estimation of WC and FA Shares of EBIT</b>			
	Working	Fixed	
	Capital	Assets	
After Tax Required Return on Asset (2)	\$ 1,250	\$ 2,150	(Figures revised for this example)
Tax Rate Complement (1 - tax rate)	60%	60%	
Adjusted to EBIT Basis	\$ 2,083	\$ 3,583	
Revenue Base (2)	\$ 42,000	\$ 44,597	
EBIT as % of Revenues	5.0%	8.0%	
<b>Note:</b>			
(1) Based on functional analysis which suggested trade name is an important intangible asset of the subject			
Functional analysis would consider contribution of all intangible assets WC and FA were considered previously,			
so they would not require consideration here. Given this a higher share of EBIT would be expected.			
(2) This example assumes a larger required return on working capital and fixed assets than the previous example.			
(3) Items may not foot due to rounding			

## I) Example - Return on Assets Method with Separate Intangibles

### Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805 Return on Assets Method Example (\$ in 000's)

EBIT	17.3%
Less: Returns on WC and Fixed Assets	
- Working capital	0.8%
- Fixed assets	2.0%
Charges for WC and fixed assets	2.9%
Return available to all intangibles	14.4%
Less: Returns to specific intangible assets	
- Assembled work force	0.9%
- Internal use technology	0.2%
Return to specific intangibles	1.1%
Residual pre tax income	13.3%
<b>Possible Range of Royalty Rates:</b>	
Residual income to remaining intangibles	13.3%
Adjustment Factor	65% 8.7% 75% 10.0%
Adjusted Royalty Rate	4.7% 3.3%

#### Note(s):

Limited guidance on the adjustment factor. Adjustment may be appropriate if there are several remaining intangibles. Preferred practice would be to identify as many specific intangibles as possible and deduct contributory asset charges.

For Tuff Tables, the customer relationships are a very important asset and would be expected to "earn" the majority of the remaining profit available to all intangibles.

Returns on assembled workforce and internal use technology calculated in Section 8

## J) Example - Royalty Rate Estimation Overall Conclusion

Method	Low	High
Guideline Transaction – Subject	5.0%	5.0%
Other Guideline Transactions	5.0%	10.0%
Return on Assets Method	3.3%	4.7%
Profit Split – 25 Percent Rule	4.3%	5.2%
Selected	5.0%	

- Profit split range above reflects 25% to 30% of normalized EBIT margin of 17.3%.
- Selected royalty rate of 5% is 29% of normalized EBIT margin of 17.3%.

## VII Valuation of Trade Name – Tuff Tables Example

- A) Tuff Tables was acquired by a private equity buyer. The trade name is used on most product sales but some sales are of unbranded products. As the buyer is a private equity firm (financial buyer), the expectation of continued use of the trade name is very high. The buyer recognized that although Tuff Tables is a relatively small firm its trade name is well recognized within its niche markets.

**Valuation of Trade Name**  
**Relief from Royalty Method**

		Year 1	Year 2	Year 3	Year 4	Year 5	Residual
Revenue		\$42,000	\$43,260	\$44,558	\$45,895	\$47,271	\$48,690
Growth			3.0%	3.0%	3.0%	3.0%	3.0%
Total Revenue		\$42,000	\$43,260	\$44,558	\$45,895	\$47,271	\$48,690
Less: Unbranded Product Revenue:	15.0%	6,300	6,489	6,684	6,884	7,091	7,303
Revenues Subject to Royalty		35,700	36,771	37,874	39,010	40,181	41,386
Royalty Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Pre-Tax Royalties		1,785	1,839	1,894	1,951	2,009	2,069
Less: Maintenance Expense		100	100	100	100	100	100
Pre-Tax Royalties after Maintenance Expense		1,685	1,739	1,794	1,851	1,909	1,969
Income Taxes	40.0%	674	695	717	740	764	788
After-Tax Royalties		1,011	1,043	1,076	1,110	1,145	1,182
Capitalized Residual Value (CF / (k - g))							10,742
Partial Period Factor		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Mid-Year Convention	Discount Rate	0.5000	1.5000	2.5000	3.5000	4.5000	4.5000
Present Value Factor	14.0%	0.9366	0.8216	0.7207	0.6322	0.5545	0.5545
<b>Present Value of Cash Flow</b>		<b>947</b>	<b>857</b>	<b>776</b>	<b>702</b>	<b>635</b>	<b>5,957</b>
Sum of Present Values of Cash Flows		9,873					
Plus: Tax Amortization Benefit		2,093					
Indicated Fair Value of Trade Name		11,966					
<b>Indicated Fair Value of Trade Name, Rounded</b>		<b>\$12,000</b>					

## VIII Valuation of Internal Technology

### A) Application of RFR Method

- Avoided royalty payments to hypothetical third party = economic benefit to owner = basis for value (same concept as in trade name valuations).
- Develop revenue projection:
  - (a) Identification of functions impacted by the technology
  - (b) Estimate of revenue dependent on the technology (often overall company for single business unit entities)
  - (c) Remaining economic life usually tied to turnover of underlying technology – remaining useful life analysis required.
  - (d) Long lives would seem much less frequent for technology than for trade names.
- Research royalty rate from transactions involving the licensing of technology that is functionally similar.
- Consider any expenses associated with basic maintenance of the asset.
- $[(\text{Revenue} \times \text{Royalty Rate}) - \text{Maintenance Expenses}] - \text{Taxes} = \text{Incremental after-tax savings.}$

### B) Valuation of Internal Technology – Application of RFR Method and Reconciliation to Cost Approach

- Financial reporting guidance notes that appraisers should consider the application of multiple approaches.
- Reconciliation of the value from an RFR Method to the indicated value for the asset from a Cost Approach may help provide insights regarding:
  - (a) Relevance of each of the two approaches for a specific asset, and
  - (b) Reasonableness of assumptions included in the valuation.
- One possible advantage of RFR Method when valuing an intangible asset with a finite life relative to the Cost Approach would likely relate to the measurement of obsolescence.
  - (a) RFR Method might better capture:
    - Economic and functional obsolescence
    - Remaining useful life of an asset
- If Cost Approach estimate exceeds RFR Method estimate, this suggests:
  - (a) Economic obsolescence in asset and/or

- (b) Functional obsolescence
- If RFR Method exceeds Cost Approach, this may suggest:
  - (a) Value creation in the intangible asset above cost incurred – synergies, market factors, other
  - (b) If asset is readily replaced, use of RFR Method indication should be considered with care.

### C) Valuation of Internal Technology – Tuff Tables Example

- In performing the purchase price allocation for the acquisition of Tuff Tables, the valuation professional identifies internally developed, internal use technology at the Company. A comparable technology is available for a license fee of 1 percent of revenues. The technology is only needed for a certain products with a finite life.

#### Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805

#### Valuation of Internal Use Technology

#### Relief from Royalty Method

		Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue (Company)		\$ 100,000	\$ 103,000	\$ 106,090	\$ 109,273	\$ 112,551
Growth		N/A	3.0%	3.0%	3.0%	3.0%
Revenue Dependent on Technology (1)		\$ 10,000	\$ 12,000	\$ 15,000	\$ 10,000	\$ 5,000
Royalty Rate (2)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Pre-Tax Royalties		100	120	150	100	50
Less: Maintenance Expense	0.0%	0	0	0	0	0
Adjusted Pre-tax Royalties		100	120	150	100	50
Income Taxes	40.0%	40	48	60	40	20
Adjusted After-Tax Royalties		60	72	90	60	30
Present Value Factor	16.0%	0.9285	0.8004	0.6900	0.5948	0.5128
<b>Present Value of Cash Flow</b>		<b>56</b>	<b>58</b>	<b>62</b>	<b>36</b>	<b>15</b>
Sum of Present Values of Cash Flows		227				
Plus: Tax Amortization Benefit		43				
Fair Value of Internal Use Technology		270				
<b>Fair Value of Technology, Rounded</b>		<b>\$ 270</b>				

#### Note(s):

(1) Estimated based on costs savings from use of patented production process on internal production process.

## VIII APPENDICES

### I – Factor Model

### II – Georgia Pacific Factors

### III – IP Exchanges

**A) APPENDIX I****Factor Model****Royalty Rates - Rating/Ranking Method of Technology Valuation and Pricing**

- 1) Sometimes called “factor analysis”
- 2) Rating with respect to a benchmark reference
- 3) 5 elements that comprise the rating/ranking method:
  - (a) Scoring criteria
  - (b) Scoring system
  - (c) Scoring scale
  - (d) Weighting factors
  - (e) Decision table
- 4) Scoring Criteria
  - (a) Market size, specifically the target market
  - (b) Product margins
  - (c) IP strength
  - (d) IP breadth
  - (e) Stage of development
  - (f) External environment trends
  - (g) Other
- 5) Scoring System
  - (a) Variety of scoring systems have been developed
  - (b) 1 to 5 point system where 5=best, 1=worst, and 3=equivalence to the reference or standard
  - (c) Others include Likkert scale 1-7
  - (d) 3. Scoring Scales
    - Subjective and objective
    - Subjective - experts or expert panels - consensus or voting



- Objective - numerical scales derived from numerical examples - derived scales called “influence coefficients”

## 6) Weighting Factors

- Means of assigning a higher importance to some criteria and a lower importance to some criteria to others
- Danger of counting same criteria multiple times: e.g. market size, projected sales, likelihood of use in other applications, likelihood of sales in other countries  
- this is tantamount to counting market size 4 times

## 7) Decision Table

Criteria	Score (1-5)	Weight (1-3)	Weighted Score
1. Market size	3	2	6
2. Product margins	5	3	15
3. IP strength	4	2	8
4. IP breadth	3	3	9
5. Stage of development	2	3	6
6. External environment	3	1	3

### (a) Calculation

- Weighted score sum= 47
- Had all the scores been 3 (reference), the total would have been 42
- Subject opportunity is perceived to be  $47/42=1.12$  or 12% better than the comparable

## B) APPENDIX II

### Georgia Pacific Factors

- The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty
- The rates paid by the licensee for the use of other patents comparable to the patent in suit
- The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold
- The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly

- 5) The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter
- 6) The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales
- 7) The duration of the patent and the term of the license
- 8) The established profitability of the product made under the patent; its commercial success; and its current popularity
- 9) The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results
- 10) The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention
- 11) The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use
- 12) The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions
- 13) The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer
- 14) The opinion testimony of qualified experts
- 15) The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee – who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention – would have been willing to pay as a royalty and yet be able to make a profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license

Source: *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F.Supp 1116, 6 USPQ 235 (SD NY 1970).

### C) APPENDIX III

#### IP Exchanges

##### 1) Royalty Rates – Intellectual Property Exchanges

- 2) The following is a partial listing of intellectual property exchanges. These may provide transaction information. Information on market royalty rates may be limited.
- (a) iBridge Network
  - (b) Tech Transfer Online
  - (c) TechEx
  - (d) Yet2
  - (e) The Dean's List
  - (f) Flintbox
  - (g) iBridgenetwork.org
  - (h) Techtransferonline.com
  - (i) Techex.com
  - (j) Yet2.com
  - (k) Thedeanslist.com (patents for sale)
  - (l) Flintbox.com

Source: Technology Transfer Tactics – April 2008, page 60.

## Chapter 8 - Multi-Period Excess Earnings Method

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### I Multi-Period Excess Earnings Method

#### A) Overview

- Multi-Period Excess Earnings Method (MPEEM) is an income-based valuation approach (i.e., it estimates value based on expected future economic earnings attributable to an asset).
- For most intangible asset valuations, this valuation approach is a DCF Method. (Note: In very rare instances, a Single-Period Capitalization Method might be used.)
- MPEEM is most commonly used to value the primary or most important asset responsible for the income generating ability of a business enterprise or a key segment of a business enterprise.
- Typical intangible assets deemed to be “Primary Income Generating Assets” (“PIGA”) (also, “primary assets” or “enabling assets”) and valued using MPEEM include:
  - Customer-related intangible assets,
  - Enabling (“Key”) Technology (generally sold to third-parties) and/or
  - Trade names (extremely strong recognition and impact).

#### B) MPEEM – Primary Steps

- Assess business operations and the appropriate asset(s) (“PIGA”) to be valued using the MPEEM. (Key Issue)
- Estimate future revenues driven by the specific intangible asset(s) (i.e., existing customers or a specific technology) and other supporting (i.e., contributory) assets. Includes consideration of impact of deferred revenue. (Key Issue)
- Estimate expenses (COGS and/or Operating Expenses) that are required to generate the revenue from the key intangible asset and related contributory assets. Includes consideration of costs to fulfill any deferred revenue liability. (Key Issue)
- Adjust the above expenses as appropriate for any unrelated expenses. (Key Issue)
  - (a) Developmental R&D expenditures for IPR&D and future technologies are usually NOT needed in the valuation of existing technology(ies).

- (b) Some marketing expenses may be related to obtaining new customers and, hence, may not be needed for the valuation of existing customer-related intangible assets.
- (c) Due to these adjustments, the EBITDA margin for existing customers or technology may exceed the EBITDA margin for the overall business. The higher short-term margin reflects the exclusion of investment in new intangibles.
- Determine the types of assets and fair values of the assets needed to support the generation of profits (Key Issue). Other needed assets are known as contributory assets and typically include:
  - (a) Working capital
  - (b) Fixed assets
  - (c) Intangible assets that are separable from goodwill, such as trade name, non-competes, other
  - (d) Intangible assets that are not separable from goodwill, such as assembled workforce
  - (e) Goodwill is not considered a contributory asset. (Goodwill may include buyer specific synergies, future technology and/or customers and excess purchase price which are not required to support an existing Primary Income Generating Asset (PIGA).)
- Estimate the rate of return (discount rate) for each contributory asset based on the estimated risk associated with the asset. (Note: charge for royalty-based assets can be based on the royalty rate.) (Key Issue)
- Calculate the excess earnings (residual income) associated with the primary intangible asset by subtracting the contributory asset charges (or royalty charges) from the related pro forma income for the overall group of related assets.
- Estimate the discount rate for the intangible asset being valued. (Key Issue)
- Calculate and sum the present value of the projected economic benefits (excess earnings) from the intangible asset.
- Calculate and add tax amortization benefit to reach conclusion of fair value of the specific item valued.

#### C) MPEEM – Observations

- The MPEEM is not a formula, but, rather, a complex process for the valuation of a primary intangible asset.
- The MPEEM requires significant informed judgment.

- Failure to properly address the appropriate selection and use of the method and the development of appropriate assumptions may lead to erroneous valuations.

#### D) Key Elements of the MPEEM

- Identification of asset(s) to be valued using MPEEM
- Revenues
  - (a) Level
  - (b) Remaining economic life (advanced topic to be covered in future courses)
- Development of estimated expenses
- Contributory asset charges
  - (a) Identification and valuation
  - (b) Rate of return for each
  - (c) Rate of return for subject asset
  - (d) Revenue base

#### E) Key Elements – Identification of Primary Income Generating Asset(s)

- Identification of Primary Income Generating Asset(s) to be valued under ASC 805 and/or ASC 350 is complex.
- Correct identification of PIGA requires knowledge of:
  - (a) Relevant accounting guidance
  - (b) Detailed understanding of the target company
  - (c) In-depth understanding of intangible asset valuation theory
- Identification of PIGA may require extended discussions among:
  - (a) Valuation Professional
  - (b) Accountants
  - (c) Management
- The following slides provide an overview of complex accounting concepts and terms that are relevant for the identification of intangibles in a financial reporting context.
- The majority of acquired going concerns would be expected to have at least one asset valued using an MPEEM.
  - (a) A small basic firm may have customer-related asset (CRA) requiring valuation using the MPEEM.

- (b) A multi-national corporation could have hundreds of assets requiring valuation using the MPEEM. Some might be CRA and others might be technology or trade names.
- CRA history provides background on complexity of identification
  - (a) Initial guidance provided in ASC 805 on the separation and valuation of CRA apart from goodwill was limited.
  - (b) ASC 805 (formerly EITF 02-17) increased values allocated to CRA by clarifying guidance on CRA which are separable from goodwill.
- SEC comment on general inappropriateness of CRA valuation using the Cost Approach further supports the general position that each business unit would have a PIGA to be valued using the MPEEM.

#### F) Key Elements – Identification of PIGA(s) – Insights from ASC 805 and 350

- Accounting rules provide that the acquisition of a firm with complex operations will often result in assets and liabilities being allocated to a number of different operating segments and reporting units.
  - (a) Acquisition may create new or require reorganization of the operating segments and/or reporting units structure for financial reporting purposes as prescribed in the accounting literature.
- ASC 350 provides that assets and liabilities are assigned to a reporting unit if both of the following are true:
  - (a) The asset will be employed in, or the liability relates to, the operations of the reporting unit.
  - (b) The asset or liability will be considered in determining the fair value of the reporting unit.
- If the asset or liability relates to the operations of multiple reporting units, the allocation should be reasonable, supportable and applied in a consistent manner.

#### G) Key Elements – Identification of PIGA(s) – ASC 350 and Allocation of Goodwill

- ASC 350 provides that all goodwill acquired in a business combination must be assigned to one or more reporting units as of the acquisition date.
  - (a) Goodwill should be assigned to reporting units expected to benefit from synergies between buyer and target.
  - (b) The method of assigning goodwill must be reasonable, supportable and applied in a consistent manner.
- Process of assigning goodwill typically involves:
  - (a) Value business enterprise of each reporting unit

- (b) Detailed purchase price allocation for each reporting unit
- (c) Comparison of fair value of reporting unit before and after the acquisition

#### H) Key Elements – Identification of PIGA(s) – Reporting Unit and Operating Segment

- As defined in ASC 805, a reporting unit is an operating segment or one level below an operating segment (referred to as a component).
- Per ASC 280, an operating segment is a component of an enterprise:
  - (a) That engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the same enterprise),
  - (b) Whose operating results are regularly reviewed by the enterprise's chief operating decision maker to make decisions about resources to be allocated to the segment and assess its performance, and
  - (c) For which discrete financial information is available.
- A component is considered a reporting unit if it constitutes a business as defined by ASC 805 for which discrete financial information is available and regularly reviewed by segment management.
- Two or more components are aggregated if they have similar economic characteristics under the guidance in ASC 280.
- An operating segment may be deemed a reporting unit if all components are similar, none of its components are identified as a reporting unit or if there is only a single component.
- If an entity is not required to present segment information under ASC 280, it is still required to test for goodwill impairment at the reporting unit level.
- Observation – agreement with management and accountants regarding identification of appropriate intangibles is imperative.

#### I) Key Elements – Identification of PIGA(s) – Example 1

- Buyer Company acquires Target Company. Target is a job shop type operation that manufactures standardized widgets.
- What questions should the valuation professional ask to help identify PIGA?
- What would be the expected PIGA(s)?

#### J) Key Elements – Identification of PIGA(s) – Example 2

- Big Pharma Company acquires Target Company. Target owns three FDA approved drug formulations which are highly profitable.



- What questions should the valuation professional ask to help identify PIGA?
- What would be the expected PIGA(s)?

K) Key Elements – Identification of PIGA(s) – Example 3

- Big Technology Company acquires Specialized Company. Specialized has developed and manufactures specialized chips which are used in the telecommunications industry.
- What questions should the valuation professional ask to help identify PIGA?
- What would be the expected PIGA(s)?

L) Key Elements – Identification of PIGA – Challenges Involving Two Primary Assets

- 3.5.04 “The Working Group recognizes that there has been diversity in practice as to whether multiple subject intangible assets (which share the same revenue / cash flows) should be valued using an MPEEM and, if so, whether such analyses should reflect simultaneous cross charges between subject intangible assets. For example, both customer-related assets and technology assets have been observed in practice as being valued using this method with such cross charges reflecting an attempt to adjust for overlapping revenues / cash flows.”
- 3.5.05 “The Working Group strongly believes that the use of simultaneous application of the MPEEM with either single or multiple cross charges to multiple intangible assets that share the same revenue / cash flow is not best practice and should be avoided.”
- 3.5.06 “One alternative, when possible and supportable, for avoiding overlapping revenues / cash flows would be to revenue / cash flow split the PFI related to the multiple subject intangible assets such that their analyses are mutually exclusive. In such a case no one subject intangible asset should be charged for any other which has been subject to the revenue/cash flow split. Valuation specialists should be cautioned, however, against the use of arbitrary means by which they split revenues or cash flows. Thus, in performing a revenue or cash flow split, the valuation specialist may give consideration to factors such as the following as support for the split (this list is not intended to be exhaustive):
  - (a) a clearly delineated revenue split between assets,
  - (b) a rate of return analysis on marketing expenses versus research and development expenses,
  - (c) a projected revenue pattern associated with different generations of product,
  - (d) the migration of relative product contributions between assets, or
  - (e) the relative contribution of core or base technologies as compared to applied technologies.”

- 3.5.07 “Another alternative is to value only one subject intangible asset using the MPEEM while any other subject intangible asset would be valued using an alternate method. Examples of these alternate methods are relief from royalty, cost approach, “with and without,” and techniques that indicate a “synthetic” or “hypothetical” royalty (in which a portion of the earnings are identified that essentially represent a royalty payment, but without the use of royalty rate market data). In this case, the asset valued using the MPEEM would be charged a royalty as described above for the other asset(s) to the extent that the other asset(s) is (are) contributory or to the extent that the other asset's (assets') value(s) is (are) derived from overlapping revenues/cash flows.”

M) Key Elements – Estimation of Projected Revenues – General Considerations

- Judgment is required in determining the period over which future cash flows should be expected for purposes of determining the fair value of an intangible asset.
  - (a) Those estimates should incorporate assumptions that marketplace participants would use in making estimates of fair value.
- ASC 350 provides general areas for consideration in estimating the remaining economic life of an intangible asset.

N) Key Elements – Estimation of Projected Revenues – Two General Means of Estimating Economic Life

- Future revenues and income for PIGA can often be estimated based on two different processes:
  - (a) Lifecycle analysis (remaining life based on expected future financial viability) is a means to estimate the remaining economic life of an asset. Lifecycle analysis is often used for key technology.
  - (b) Attrition analysis is a statistical means to estimate the remaining economic life of a group of similar intangible assets. Attrition analysis is often used in the “lifing” of existing customer-related intangibles.
    - A classic example of customer-related intangible assets that could be statistically lived would be newspaper or magazine subscribers.
    - A set of dramatically different customers – large continuing advertiser (Wal-Mart) versus small individual retail store would not share similar remaining economic lives to the newspaper.

O) Key Elements – Estimation of Projected Revenues – Surveys of Amortization Period

- The AICPA has performed surveys of financial statements to determine the frequency of occurrence of intangible assets and the amortization period for the intangible assets. (See AICPA Trends & Techniques, Section 2, Balance Sheet, November 1, 2009)

- The first slide presents four separate years of surveys with the number of companies surveyed and the frequency of intangible assets observed.
- The second survey presents counts for specific ranges of amortization lives. The amortization life survey is for the 2008 period.
  - (a) For trademarks, 295 occurrences were observed but of these 190 were being amortized over specific period. The remaining trademarks would have an indefinite life. This relative percentage is consistent with surveys performed by Houlihan Lokey.
  - (b) Similarly, for license, franchises and memberships, a portion of the rights (21 of 96) have an indefinite life for financial reporting purposes.
- In considering the amortization lives, presumably, these would approximate the economic lives for the assets.

P) Key Elements – Estimation of Projected Revenues – Surveys of Amortization Period – Frequency of Occurrence

**Table 2 - 19: Intangible Assets**

	Number of Entities			
	2008	2007	2006	2005
Number of companies surveyed	500	600	600	600
Goodwill from business combination	444	542	542	522
- % of total	88.8%	90.3%	90.3%	87.0%
Trademarks, brand names, copyrights	295	330	296	271
- % of total	59.0%	55.0%	49.3%	45.2%
Customer lists/relationships	272	320	290	243
- % of total	54.4%	53.3%	48.3%	40.5%
Patents, patent rights	139	161	153	149
- % of total	27.8%	26.8%	25.5%	24.8%
Technology	138	162	142	140
- % of total	27.6%	27.0%	23.7%	23.3%
Licenses, franchises, memberships	96	114	111	106
- % of total	19.2%	19.0%	18.5%	17.7%
Noncompete covenants	93	112	103	87
- % of total	18.6%	18.7%	17.2%	14.5%
Contracts, agreements	92	104	89	85
- % of total	18.4%	17.3%	14.8%	14.2%
Other - described	62	65	77	79
- % of total	12.4%	10.8%	12.8%	13.2%

Q) Key Elements – Estimation of Projected Revenues – Surveys of Amortization Period – Amortization Period

Table 2 - 20: Amortization Period - 2008

Intangible Asset	Exceeding 40 Years	31-40 Years	Number of Entities			Estimated or Legal Life
			21-30 Years	11 - 20 Years	10 or Less	
Trademarks, brand names, copyrights	1	5	20	58	64	42
Customer lists/relationships	-	-	10	99	107	56
Patents, patent rights	1	1	6	44	42	45
Technology	-	1	2	41	68	25
Licenses, franchises, memberships	-	1	8	20	22	24
Noncompete covenants	-	-	2	8	62	21
Contracts, agreements	2	-	8	26	31	25

R) Key Elements – Estimation of Projected Revenues – Attrition Analysis

- Attrition (mortality) analysis is a statistical process for estimating the future losses of a group of related assets.
- Use attrition analysis if there are too many discrete assets to perform individual lifecycle analyses and historical data may provide more accurate estimate.
- An attrition analysis would be appropriate for a group of assets that have similar characteristics.
- Attrition analysis requires examination of historical customer data, future expectations, and often statistical analysis.
  - Attrition analysis is generally performed by the valuation professional.
  - Detailed historical customer data should be provided by management.
- Attrition of assets may not be straight-line.
- Numerous issues complicate attrition analysis:
  - (a) Correct segmenting of customers – A population may require segmenting to accurately assess – large customers may have different attrition and economic life compared to small customers.

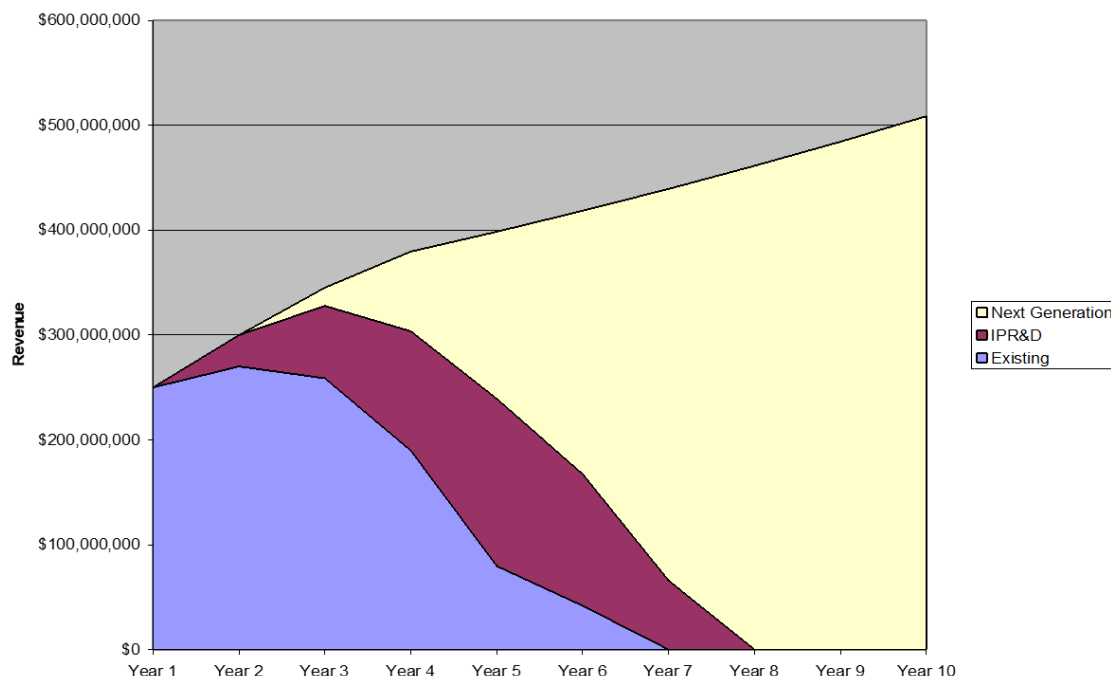
- (b) Definition of asset – At what level does a customer relationship exist – firm, location or individual?
- (c) Limited data availability
- (d) Loss measurement –
  - When is a customer lost – after a large drop or only when revenues from a customer approach \$0?
  - What time period without purchase will suggest a lost customer?
- (e) Numerous other situations

S) Key Elements – Estimation of Projected Revenues – Customer Contracts

- Useful life of an intangible asset that arises from contractual rights such as a customer contract should reflect the contract life plus potential future renewal(s). Renewal(s) should be included if:
  - (a) Past experience suggests contracts will be renewed
  - (b) Contract renewal/extension comes without substantial cost
  - (c) Contract renewal/extension accomplished without material modification

T) Key Elements – Estimation of Projected Revenues – Lifecycle Analysis

- The estimation of remaining economic life using lifecycle analysis will vary on a case by case basis. The factors outlined in ASC 350 provides general considerations for this complex task.
- Future revenues and cash flows for many assets (especially intangibles) is often best estimated by management – valuation professionals may have limited insights into the asset or industry. Lack of relevant qualifications of valuation professional has resulted in their disqualification as an expert by tax and civil courts in numerous instances.
- Even with a management lifecycle estimate, valuation professionals must perform sufficient procedures to be comfortable with management-provided inputs.
- If the valuation professional does not perform these procedures, for a financial reporting valuation, the responsibility would fall upon the auditor.
- Stage in product lifecycle has large impact on valuation assumptions including discount rate and expected remaining life of asset.



#### U) Key Elements – Estimation of Projected Revenues - Lifecycle Concepts by Status of Technology

- ASC 730 Research and Development identified R&D activities with the following definitions:
  - (a) *Research* is a planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service (hereinafter, “product”) or a new process or technique (hereinafter, “process”) or in bringing about a significant improvement to an existing product or process.
  - (b) *Development* is the translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process, whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototype, and operation of pilot plants. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, and other ongoing operations, even though alterations may represent improvements, and it does not include market research or market testing activities.
- The above conceptual framework becomes important in determining different technology classifications.
- Research – very early in lifecycle – possible products may not have even been identified.
- Development – further in lifecycle – progressing to product phase.

- Existing technology – currently in the marketplace.
  - (a) Considered technologically complete because:
    - it meets design specifications, and
    - is either in or beyond beta stage of development (has reached technological feasibility as described per ASC 985).
  - (b) Ability to accurately estimate future revenues would partially relate to time that existing technology has been on the market.
- In-Process Technology (IPR&D):
  - (a) Is still in the development stage.
  - (b) Has not reached technological feasibility.
  - (c) Working model of the technology is not available. (Drug formulation that does not have final FDA approval would likely be IPR&D.)
  - (d) All the steps of a detailed technology design/development have not been completed.
  - (e) Greater uncertainty would be expected with forecast future results.
  - (f) IPR&D projects require consideration on a project by project basis.
  - (g) Examined in more detail in BV 302, *Special Topics in the Valuation of Intangible Assets*.
- Future (Next Generation) Technology:
  - (a) No (or very limited) detailed plan is available.
  - (b) Future technology sales to existing customers likely viewed as part of customer-related intangible value.
  - (c) Future technology to future customers considered part of goodwill.
  - (d) If a business enterprise has demonstrated reasonably predictable revenue over time and the ability to replace technologies, then the unidentified next generation revenues may be estimated by:
    - Develop forecast of total revenues for the business enterprise.
    - Subtract existing technology and IPR&D revenues from the business enterprise revenue to obtain revenues associated with future technology.

#### V) Key Elements – Revenue: Considerations for Technology and Customer Valuations

- Revenue of an entity can be driven by two or more income generating intangible assets (i.e., CRA and Technology).

- For ASC 805, if customers are valued as a separable intangible asset, then only existing customers are valued as an identifiable intangible asset. (Future customers are not a specific acquired intangible asset.) However, the value of customers should reflect both:
  - (a) Sales of existing products or services, and
  - (b) Sales of future products or services to the existing customers.
- For the valuation of technology using an Income Approach, projected revenues should consider both:
  - (a) Sales to existing customers, and
  - (b) Sales to future customers.
- Future technology sales to future customers does not meet the legal or separable criteria of ASC 805 and is therefore considered part of goodwill.
- The general relationship is presented in the graphic below.
- Future developments may provide further guidance in this area which is beyond the scope of this introductory course.

#### W) Key Elements – Customer-Related Intangibles

- “Acquiring new customers is the most difficult and expensive customer management process. Companies must communicate their value propositions to new customers in the segments targeted by their customer selection processes.”
- To the purchaser, the acquired customers represent the expected ongoing and continued business relationship, and thus future revenues, with that base of customers.
- “Companies recognize that it is far less expensive to retain customers than to continually add new ones to replace those who defect. Loyal customers value the quality and service of the company's products and are often willing to pay somewhat higher prices for the value provided. They are less likely to search for alternatives, thereby significantly raising the discounts that a potential competitor must offer to attract customers' attention.”
- Source: *Strategy Maps - Converting Intangible Assets into Tangible Outcomes*, Robert S. Kaplan, David P. Norton, Harvard Business School Press, Boston, MA. 2004, pp. 115, 116.
- EITF 02-17 now ASC 805:
  - (a) Clarifies and broadens recognition of customer relationships intangible:
    - Customer relationship arises from contractual rights,
    - Purchase or sales orders are considered contracts, and

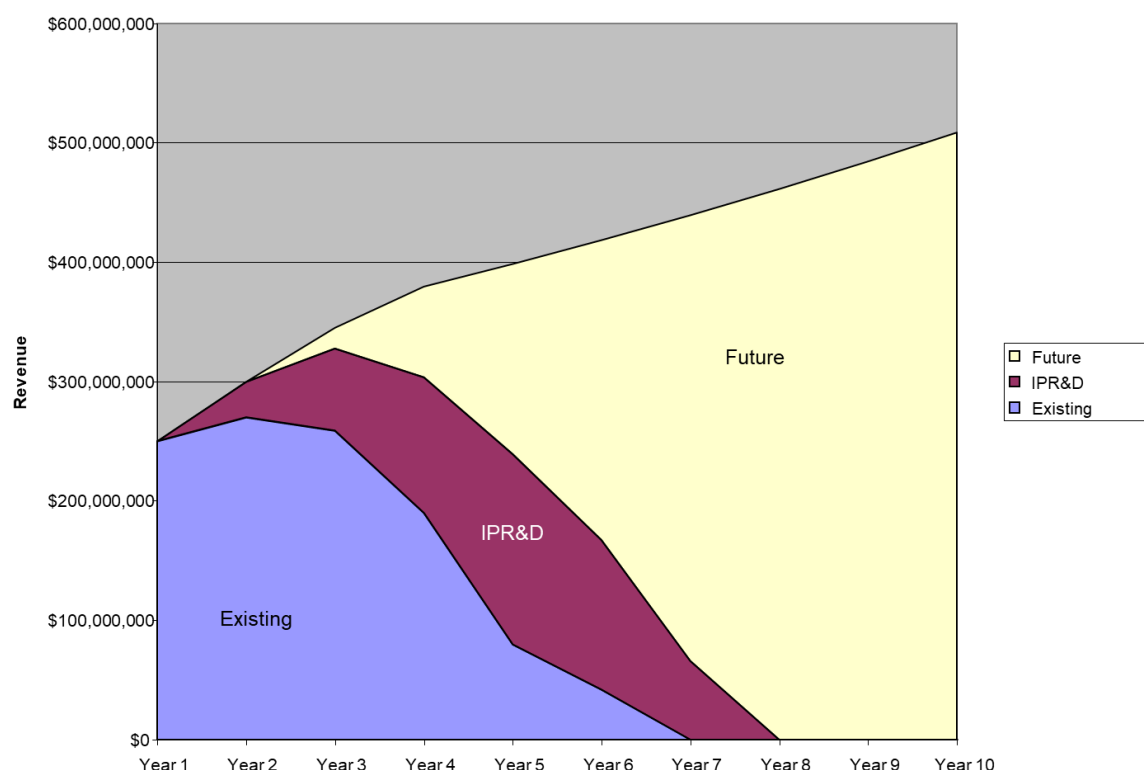


- Customer contract and customer relationship may represent two distinct intangibles.
- Customer relationship exists if:
  - Entity has information about customer, and
  - Entity has “meaningful” contact with customer.
- The useful life of an intangible asset that arises from contractual rights shall not exceed the period of the right.
- Useful life shall include the renewal period only if:
  - (a) Evidence (past experience) exists that contracts will be renewed.
  - (b) Contract renewal/extension come without substantial cost.
  - (c) Contract renewal/extension accomplished without material modification.

#### X) Key Elements – Revenue: Product vs. Technology Revenue

- An enabling technology may be imbedded in several products. Some companies track revenues by product lines rather than technology classifications inherent in the product lines. If the same enabling technology is the primary driver for a group of products, the MPEEM for the technology should likely use the financial results of all of the products.
- A product may be thought of as a bundle of assets. The bundle of assets will vary but could include technology and other intangibles.
- Financial reporting guidance does provide for some grouping of assets that are related. Among the considerations would be an expectation that the assets have a similar remaining economic life.
- It would seem unlikely that technology and a trade name would have similar economic lives nor would other elements of a product be expected to necessarily have similar lives. Products are rarely valued for ASC 805 as an intangible asset (they might constitute a separate reporting unit).

## Y) Key Elements of the MPEEM – Revenue Map for Technology



## Z) Key Elements of the MPEEM – Sample Technology Revenue Map

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Product Revenue	\$250,000,000	\$300,000,000	\$345,000,000	\$379,500,000	\$398,475,000	\$418,398,750	\$439,318,688
growth		20%	15%	10%	5%	5%	5%
Existing	\$250,000,000	\$270,000,000	\$258,750,000	\$189,750,000	\$79,695,000	\$41,839,875	\$0
allocation	100%	90%	75%	50%	20%	10%	0%
IPR&D	\$0	\$30,000,000	\$69,000,000	\$113,850,000	\$159,390,000	\$125,519,625	\$65,897,803
allocation	0%	10%	20%	30%	40%	30%	15%
Next Generation	\$0	\$0	\$17,250,000	\$75,900,000	\$159,390,000	\$251,039,250	\$373,420,884
allocation	0%	0%	5%	20%	40%	60%	85%
Reconciliation	\$250,000,000	\$300,000,000	\$345,000,000	\$379,500,000	\$398,475,000	\$418,398,750	\$439,318,688

Note: Multi-technology firms would likely have a number of existing and in-process technologies specifically identified and valued.

**AA) Key Elements – Cost of Goods Sold Expense**

- For a single technology firm, estimation of cost of goods sold is straightforward.
- For a firm with multiple technologies that are discrete sources of revenues (as an example, a drug company with different approved drugs), estimation of revenues and COGS should be straightforward (assuming adequate records).
- When technology(s) are used for different products, the process can increase in complexity.
- Overall COGS margin projected for the firm's product portfolio can be applied to each technology classification, unless existing technology(s) and IPR&D is/are expected to have different gross profit margins.

**BB) Key Elements – Research and Development Expenses**

- In valuing technology using the MPEEM, it is important to accurately identify and adjust R&D expenses to reflect proper assumptions.
- Research and development expenses may consist of:
  - (a) Research (defined\*)
  - (b) New technology development (previously defined)
  - (c) Maintenance R&D expenditures on existing technology
- Maintenance R&D includes routine or periodic alterations to existing products, production lines, manufacturing processes, and other ongoing operations, even though alterations may represent improvements, and it may include market research or market testing activities.\*
- ASC 730.
- Existing technology –
  - (a) Maintenance R&D expenditures, if needed, should be included. Research and development would be excluded.
- IPR&D –
  - (a) R&D expenses associated with completion of specific IPR&D would be included as an expenditure in that valuation (excluded from existing technology).
- Future products – Research and new technology development relating to future products and would not be included as an expense in existing technology or IPR&D valuations.
- Given these factors, the profit margins associated with an existing technology often exceed those of the enterprise as a whole due to expenses associated with IPR&D and future technology development.

### CC) Key Elements – Contributory Assets – Overview

- Underlying principle – The generation of revenues and net income requires the contribution of a number of different types of business assets. (CRA by themselves would not be able to generate revenue and net income.)
  - There is generally a primary income generating asset (to be valued using MPEEM as best method) amongst the group of related business assets.
  - Contributory assets are less directly tied to revenue generation.
  - Contributory assets are often more readily valued using approaches other than the MPEEM.
  - Each of the contributory assets is entitled to a share of the net income of the asset group for its role as a part of the generation of net income.
  - Each share (contributory asset charge) is subtracted from the income of the asset group. The remaining income after the contributory asset charges represents the earnings (residual income or excess earnings) generated by the “key” or primary intangible (existing customer relationships or technology).
  - Various contributory assets can benefit an asset group, as long as they are employed in generating the overall economic benefit associated with the subject intangible being valued using the MPEEM.
  - Total return earned by each individual contributory asset should be allocated to specific projects that benefit from that asset.
  - Contributory asset charges are generally calculated as a percentage of revenues. This eases allocation of the charge among various assets being valued. (Presentation as % of EBITDA may provide further useful insights.)
  - Returns should be charged over the period that the subject asset benefits from each of the contributory assets.
- (a) Working capital, fixed assets and many intangibles would be charged over the life of the forecasts.
- (b) A two-year non-compete agreement might be expected to be a contributory asset only over its two-year life.
- CAC are typically determined based on revenue allocations for the use of contributory assets.
  - At 3.1.09 “The most common method to allocate CACs to assets is generally based on the relative revenue generated by each subject intangible each year. There may be instances, however, when other methods such as relative amounts earned, relative units produced, relative square footage occupied, relative headcount used or relative costs expended by each subject intangible asset, each year, may represent a more appropriate allocation method.”

## DD) Key Elements – Contributory Assets – Simple Illustration of Contributory Asset Charge

### Capital Charge Analysis

\$ in 000's

Projected Year 1	\$	42,000					
Average Revenues Yrs 1 - 5	\$	44,597					
Tax Rate		40.0%					
Asset	Fair Value	Remaining Useful Life	Return On (after-tax)	Capt'l Charge (after-tax)	Revenue Base (1)	Charge, % Rev. (after-tax)	Capital Charge Selected
Net Working Capital (Excl. Excess Cash)	\$ 5,169	N/A	4.0%	\$ 207	\$ 42,000	0.49%	0.49%
Fixed Assets	6,840	10.0	8.0%	547	44,597	1.23%	1.23%
Internal Technology	1,450	Varies	16.0%	232	44,597	0.52%	0.52%
Assembled Workforce	1,560	N/A	16.0%	250	44,597	0.56%	0.56%
<b>TOTAL</b>	<b>\$16,019</b>			<b>1,236</b>		<b>2.80%</b>	<b>2.80%</b>

Note(s):

(1) Revenue base estimate reflects capacity of each asset to support future revenues.

(2) Trade name is needed to support operations. Charge for use of tradename was included as an operating expense in the income statement.

## EE) Key Elements – Contributory Assets – Examples of Typical Contributory Assets

- Common contributory assets include:

(a) Working capital

(b) Fixed assets

(c) Intangible assets including:

- Technology
- Franchise/license
- Trade name
- Non-compete agreements
- Assembled workforce

## FF) Key Elements – Contributory Assets – Working Group May 31, 2010 Final Release – CAC Calculations

- 3.6.01 "Valuation specialists should consider the contributions to cash flow of the various contributory assets and charges for these assets should be estimated for each year in the projection period, rather than, for instance, automatically fixing such levels to amounts estimated at the valuation date."
- 3.6.02 "In calculating a CAC, the valuation specialist should consider whether each of the contributory assets used in the previous period CAC calculation remains

relevant in the next period. The appropriate level of contributory assets in future periods is a determination based on facts and circumstances.”

- 3.6.06 “. . . the valuation specialist should consider whether the contributory asset to be used or replaced in the future would have an economic rent that varies over time.”
- 3.6.08 “The stage of an entity in its lifecycle (as viewed by a market participant) is important as the valuation specialist considers future contributory asset requirements. In many cases early stage enterprises may be experiencing rapid growth which allows them to leverage existing assets more efficiently over time and, as such, the level of contributory assets may decline as a percentage of revenue (in some cases this declining percentage may be offset through allocation of the aggregate CAC to current and future assets thereby effectively “smoothing” the CAC allocated to the subject intangible asset over time). Further, mature companies would expect to see relatively stable levels of assets in comparison to revenues.”

GG) Key Elements – Contributory Assets – Working Group May 31, 2010 Final Release – Working Capital

- Paragraph 2.2.05 notes working capital includes operating cash.
- 2.2.06 notes use of normalized working capital rather than actual working capital balance. Further notes use of market participant levels.
  - (a) WARA should not reflect excess or shortfall of assets.
- 2.2.07 “If the revenue component of the PFI was developed on an accrual basis, then it likely would be appropriate to include the deferred revenue as a component of working capital. . . . deferred revenue should be included if in working capital on a normalized basis if deferred revenue is a part of the entity’s ongoing operation.”
- 3.2.02 “One issue that arises in certain industry sectors is the appropriate treatment of negative working capital. This does not refer to those instances where inadequate working capital has been acquired as a part of the transaction. Instead this is the circumstance in certain industry sectors for which negative working capital is the norm. It is the view of the Working Group that negative working capital that is generated in the normal course of business in certain industry sectors enhances overall entity value and should be considered in determining the appropriate level of working capital to serve as the basis for calculating CACs. This will, in effect, create “negative” CACs for working capital the apportioned amount of which would enhance the value of the subject intangible asset. This treatment is correct because it reflects economic realities . . .”
- 3.2.03 “Another issue is the impact of one-time business combination accounting adjustments to working capital such as inventory step-ups. The Working Group believes that such one-time adjustments should be excluded from the initial and ongoing levels of working capital (based on a market participant assumption) used in the CAC calculation. . . . adjust for the effects of any one-time modifications of the PFI utilized in the valuation of the subject intangible asset to avoid double counting profit or expense.”

HH) Key Elements – Contributory Assets – Working Group May 31, 2010 Final Release – Fixed Assets

- 2.2.03 “. . . a normalized level of fixed assets for an entity in its infancy may be different from the level required once the entity reaches a mature stage in its life cycle. To the extent the PFI reflects excess or deficient levels of contributory assets, it should be adjusted to reflect normalized levels.”

II) Key Elements – Contributory Assets – Working Group Final Document – CAC for Elements of Goodwill

- 2.2.15 – “The determination of whether a CAC for elements of goodwill is appropriate should be based on an assessment of the relevant facts and circumstances of the situation, and the valuation specialist should be cautioned to not mechanically apply CACs or alternative adjustments for elements of goodwill if the circumstances do not warrant such a charge. The Working Group believes that assembled workforce is typically the only element of goodwill for which a CAC is taken. Accordingly, the burden of proof is higher to support taking CACs or making alternative adjustments for elements of goodwill other than assembled workforce.”

JJ) Key Elements – Contributory Assets – Intangibles Valued using the RFR Method

- Trade names and other “royalty valued” intangibles are frequently necessary in the generation of revenues and cash flows of an asset group.
- In an MPEEM calculation, the charge for the use of a royalty based intangible can be included as an operating expense (direct charge) – charge for use of trade name is royalty expense calculated as revenues multiplied by a pretax royalty rate (after assessing what the royalty payment involves).
- The SEC has stated a preference for the inclusion of a royalty expense for the use of a royalty-based intangible in the calculation of income rather than a contributory asset charge for the use of the intangible.
- An alternative would be an after-tax contributory asset charge for using a royalty-based intangible. With a 1% royalty rate and a 40% tax rate, the after tax charge would be 0.6%. The 1% pretax royalty is deducted before corporate taxes. The 0.6% after tax charge is deducted from after tax income with other contributory asset charges.

KK) Key Elements – Contributory Assets – Return ON and OF – General Concept

- Correct consideration of returns ON and return OF contributory assets is an essential step in the application of the MPEEM.
- The owner of an asset requires a return ON their investment in addition to the return OF the value of the asset.
  - (a) Return OF represents the return of the principal (original investment). At the maturity date of a typical Treasury bond, the investor would receive the return OF their investment, i.e., the par value of the bond.

- (b) Return ON represents return above the return OF an asset needed to motivate investors. Holder of a Treasury bond would receive a return ON their investment consisting of interest payments over the life of the bond.
  - Most typical treatment is inclusion of depreciation/amortization as an expense (return OF) and inclusion of a return ON. Royalty based assets are exception as royalty charge includes both return OF and return ON.
- LL) Key Elements – Contributory Assets – General Categories for Contributory Assets
- Four alternate categories:
    - (a) Non-wasting (e.g., working capital)
      - Return ON required
      - Return OF not required – asset is not “wasting”
    - (b) Wasting, capitalizable (e.g., fixed assets)
      - Return ON required
      - Return OF required – asset is “wasting”
    - (c) Cost based, expensed (e.g., assembled workforce)
      - Return ON required
      - Return OF is likely reflected in operating expenses
    - (d) Royalty based (e.g., trade name)
      - Return ON required
      - Return OF required as asset is likely wasting without reinvestment
      - Return ON and OF captured in the royalty rate
- MM) Key Elements – Contributory Assets – Return ON and OF – Working Capital and Fixed Assets
- Working capital only requires a return ON the asset. Working capital is not subject to depreciation or amortization unlike tangible and intangible assets. Working capital is not a wasting asset.
  - Tangible assets – For a tangible asset such as a piece of equipment, depreciation represents a return OF the investment. Clearly, an investor would require an additional return ON the asset in order to assume the risk of the investment. In the context of a business enterprise, this return ON would be a share of the net income of the entity.



### NN) Key Elements – Contributory Assets – Gross Lease Method vs. Return on Assets Method

- Two different forms of contributory asset calculation are relevant for fixed assets:
  - (a) Gross Lease Method – Contributory asset charge includes both return OF and ON assets.
    - Similar to a typical lease payment charged by a third party for the use of an asset.
  - (b) Return on Assets Method – Contributory asset charge includes return ON assets.
    - Depreciation included in calculation of net income.
- For intangible assets valued using the Cost Approach, CAC charges may more appropriately map to the ROA Method.
- For intangible assets valued using the RFR Method, CAC charges would more appropriately map to the Gross Lease Method.

Return on Assets vs. Gross Lease Method			
		Gross	
	ROA	Lease	
	Method	Method	Comments
EBITDA	\$100	\$100	Any differences in operating expenses eliminated to simplify example.
Depreciation/Amortization (Return OF)	30	0	ROA method reflects ownership of assets. Return OF is included.
EBIT	70	100	
Taxes @ 40%	28	40	
Net Income	42	60	
Contributory Asset Charges	8	26	GLM includes return ON and OF in the "lease" charge.
Residual (Excess) Earnings	<b>\$ 34</b>	<b>\$ 34</b>	
<b>Calculation of CAC for Gross Lease Method</b>			
Base CAC from ROA Method		\$8	
Tax Effectuated Depreciation		18	
CAC for Gross Lease Method		<b>\$26</b>	
<b>Calculation of Tax Effectuated Depreciation</b>			
Depreciation		\$30	
Tax Provision		12	
Tax Effectuated Depreciation		<b>\$18</b>	

### OO) Key Elements – Contributory Assets – Return ON and OF – Internally Developed Intangibles

- As operating expenses may include expenditures to replace an internally developed intangible, inclusion of amortization expense (return OF) is generally not included.

- (a) Assembled workforce – Return OF may be captured in salary and other expenses for hiring, training of workforce. Expected to already be included as operating expenses of the acquired firm. Deduction of an amortization charge (return OF) might represent double counting of expense.
- (b) Software valued using Cost Approach – potentially similar treatment as above.
- (c) Software valued using RFR Method – challenging issue.
- At 3.4.07 of the CAC document – “The *return of* for each year is equivalent to the sum of: a) annual economic depreciation for the fair value of the acquired or current fixed assets (adjusted to market participant levels) and b) annual economic depreciation for the projected market participant levels of capital expenditures required to support the entity’s operations and the subject intangible asset over that asset’s remaining useful life.”
- Return OF should reflect economic return OF asset not accounting return OF asset. If economic life of an asset is 8 years but the accounting life of the asset is 5 years, the return OF would be best calculated using an 8 year life.

PP) Key Elements – Contributory Assets – Working Group Final Release –  
Calculation of Excess Earnings

- The following table from the CAC document highlights the use of economic depreciation concepts.

EBITDA

Less: Tax Depreciation

EBIT(Amortization assumed to be zero)

Less: Taxes

Debt Free Net Income

Add: Tax Depreciation

Less: Return of the fixed assets (economic depreciation of fair value)

Less: Return on the average balance of the fixed assets (at fair value)

Less: Other CACs (as necessary)

Equals: Excess earnings or cash flow

*Source: CAC Document paragraph 3.4.07*

QQ) Key Elements – Contributory Assets – Working Group Final Release: “Return of”

- 3.5.01 “While it may be theoretically correct to add back all expenses related to the maintenance of the contributory intangible assets to pre-tax cash flow and then take a true *return of* for a particular contributory intangible asset, there may be difficulty in estimating supportable costs to be added back.”

RR) Key Elements – Contributory Asset Charges and Appropriate Revenue Base – Example

- To test the reasonableness of charges for working capital and fixed assets, an appropriate or representative asset level for the contributory asset charge can be approximated by reference to comparable companies’ asset values (at book) relative to their revenues. This market investigation is useful in analyzing both fixed asset and working capital contributory asset charges.

SS) Key Elements – Contributory Assets – Reconciliation to Market Data

- Contributory asset charges (CACs) are an area of divergent practice within the appraisal profession.
- Additional information on the level of contributory asset charge may be developed from a review of data on guideline public companies (e.g., working capital as a percentage of revenue in guideline companies).
- 3.1.07 of the CAC document notes “market participant views of the level of contributory assets for the subject entity are often estimated in practice with reference to industry comparable data, which is often only available based on book value.”
- There are several challenges associated with the use of these data:
  - (a) Assets may be stated at cost and not fair value.
  - (b) Assets may not be used in operations or underutilized.
- Still, a comparative analysis (see example on following page) may provide helpful insights in assessing a contributory asset charge estimate.

## TT) Key Elements – Contributory Assets – Reconciliation to Market Data

PE Buyer, Inc.

Valuation of Intangible Assets of Tuff Tables, Inc. for ASC 805

DFNWC Capital Charge Comparison

Asset	Subject	Public 1 Bassett	Public 2 Bush	Public 3 Chromcraft	Public 4 Dorel	RMA Composite	RMA Composite
Total Current Assets	7,660	106,300	83,400	73,100	321,800	63,300	63.3%
Pro Forma Total Current Liabilities	2,491	34,900	45,200	22,400	121,900	50,500	50.5%
Net Working Capital (Excl. Excess Cash)	\$ 5,169	\$ 71,400	\$ 38,200	\$ 50,700	\$ 199,900	\$ 12,800	
Return ON (after-tax)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	
Capital Charge (after-tax)	\$ 207	\$ 2,856	\$ 1,528	\$ 2,028	\$ 7,996	\$ 512	
Projected 2007 Revenue	\$42,000	\$ 340,000	\$ 320,000	\$ 220,000	\$ 920,000	\$ 60,000	
Implied Charge as % of Revenue (after-tax)	0.49%	0.84%	0.48%	0.92%	0.87%	0.85%	
Ratio of Revenues to Working Capital	8.1	4.8	8.4	4.3	4.6	4.7	

Note(s):

(1) The rate of return on NWC is based on the short term borrowing cost estimate.

(2) Amounts for Tuff Tables reflect adjustments to exclude non-operating current assets (excess cash)

## UU) Key Elements – Contributory Asset Charges and Appropriate Revenue Base

- The development of an appropriate contributory asset charge requires:
  - (a) Fair value estimate,
  - (b) Rate of return estimate for the contributory asset, and
  - (c) Revenue base.
- As the charges for contributory assets are generally expressed as a percentage of revenues, the determination of the correct revenue base for the development of the estimate is an important consideration.
- Estimated revenue base should consider capacity of the contributory asset to support projected future revenues. In the case of a contributory asset where significant revenue growth is expected in the asset group, there is a potential for material overestimates of contributory asset charges.
  - (a) A highly scalable contributory asset (many intangibles), or
  - (b) Contributory asset which is significantly below capacity (sometimes for tangible assets, i.e., plant operating far below capacity where rapid growth is expected).

## VV) Key Elements – Contributory Asset Charges and Appropriate Revenue Base – Example

- What is the fixed asset charge (return ON) as a percentage of revenues for a primary intangible asset (PIGA) with a five-year life?
- Assumptions involving fixed assets for contributory charge:
  - (a) FV of \$10,000,000 (significantly below capacity to support future revenue growth)

(b) Required return ON – 10%

(c) Annual charge (return ON) – \$1,000,000

	<u>Revenues</u>	<u>Charge/Rev</u>
Year One Revenues	- \$200,000,000	0.5%
Year Two Revenues	- \$400,000,000	0.25%
Year Three Revenues	- \$500,000,000	0.2%
Year Four Revenues	- \$550,000,000	0.182%
Year Five Revenues	- \$575,000,000	0.174%
Average Revenues for Next Five Years	- \$445,000,000	0.225%

#### WW) Key Elements – Contributory Assets – Other Thoughts

- 3.4.16 “While the Working Group has applied these techniques on an after-tax basis in the example calculations, some believe that pre-tax calculations would more closely emulate the actual circumstance of renting or leasing assets, as rental or lease payments are deductible on a pre-tax basis.”
- A model which uses pre-tax charges would allow for a better assessment of total profit and its allocation among the various contributory assets. This could help assess the reasonableness of valuation inputs.

#### XX) Key Elements – Contributory Asset Charges and Appropriate Revenue Base – Example

- Note differing contributory asset charges:
  - (a) 0.5% of revenues if Year One revenues are used
  - (b) 0.225% of revenues if average revenues of five years are used
  - (c) 0.175% of revenues if Year Five revenues are used
- In the event future capital expenditures are needed to build additional capacity, the fair value of these future Capex should be included in the CAC calculation in the future period(s).

#### YY) Key Elements – General Guidelines for Estimating a Discount Rate for Existing Technology

- Rates of return were previously discussed in Section 6. The following factors can be considered to estimate rates of return associated with technology based intangible assets:
  - (a) The range between WACC and Cost of Equity may be used as one of several factors to estimate the required return for well-established and proven technology which cover large parts of the business or cash flows. Some factors that can be considered to establish riskiness of technology or patent are:
    - Commercial utility of the technology or patent
    - Economic contribution of the technology

- Profitability
  - Competing alternate technologies
  - Obsolescence of the technology
  - Geographic enforceability of the patent
  - The relative risk and uncertainty associated with the patent
- For existing technology which is relatively new or not well proven, an appropriate basis may be the:
  - (b) Overall required rate of return on Intangibles per WARA analysis; or
  - (c) WACC of young, single-product comparable companies can be used as a benchmark to estimate required return, to the extent that guideline market data is available.
- The rate of return on overall intangibles of “young comparable companies” may be an appropriate starting point for newer existing technology. These entities exhibit risk and return characteristics most comparable to a newer or “yet to be proven” existing (as opposed to established) technology. Note however the estimated capital cost would be at the business enterprise level.

## II Deferred Revenue

### A) Introduction

- Deferred revenue (“DR”) (deferred income, unearned or income or unearned subscription revenue) represents an obligation to provide products / services to a customer(s) where payment for the products or services was made prior to meeting applicable revenue recognition criteria.
- DR is classified as a liability account on the balance sheet representing the “remaining performance obligation”. DR can be classified as:
  - (d) Current liability; and/or
  - (e) Long-term liability
- The deferred revenue liability is reduced and recognized as revenue recognition criteria are met.

### B) Deferred Revenue – Valuation Requirements

- Under ASC 805, the fair value of acquired deferred revenue typically differs from its reported book value.
- Upon initially recording deferred revenue (prior to a business combination), the book value of deferred revenue is initially equal to the cash consideration received. This includes payment by the buyer for all efforts incurred to obtain the sale and ultimately deliver the goods and/or services.
- Deferred revenue liability is adjusted as revenue is earned (i.e., products/services are provided).

- In contrast, the FV of deferred revenue under ASC 805 is based on costs required to fulfill the deferred revenue obligation plus a mark-up on those costs.

### C) Deferred Revenue – Impact on Assets Valued Using MPEEM

- As deferred revenue originally represents an offset to the receipt of cash from a customer, the valuation of customers (or enabling technology) requires adjustment to eliminate the impact of previously received cash.
- Additionally, the future costs required to fulfill the deferred revenue obligation also require inclusion in the appropriate MPEEM.
- A detailed discussion of deferred revenue valuation is included in BV 302.

## III Valuation of Technology – Pharma Acquisition Example

### Excess Earnings Method

		December 31									
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue (1)		\$ 10,000	\$ 50,000	\$ 100,000	\$ 150,000	\$ 165,000	\$ 165,000	\$ 123,750	\$ 61,875	\$ 30,938	\$ 15,469
Growth		N/A	400.0%	100.0%	50.0%	10.0%	0.0%	-25.0%	-50.0%	-50.0%	-50.0%
Cost of Goods Sold	10.0%	1,000	5,000	10,000	15,000	16,500	16,500	12,375	6,188	3,094	1,547
Gross Profit		9,000	45,000	90,000	135,000	148,500	148,500	111,375	55,688	27,844	13,922
SG&A Expenses	30.0%	3,000	15,000	30,000	45,000	49,500	49,500	37,125	18,563	9,281	4,641
Total R & D		1,000									
Less: Development R & D (2)		800									
Maintenance R & D (3)		200	200	200	200	200	200	200	200	200	200
Operating Income		5,800	29,800	59,800	89,800	98,800	98,800	74,050	36,925	18,363	9,081
Less: Royalty on Trade Name (4)	4.0%	400	2,000	4,000	6,000	6,600	6,600	4,950	2,475	1,238	619
Pretax Income		5,400	27,800	55,800	83,800	92,200	92,200	69,100	34,450	17,125	8,463
Income Taxes	40.0%	2,160	11,120	22,320	33,520	36,880	36,880	27,640	13,780	6,850	3,385
After-Tax Earnings		3,240	16,680	33,480	50,280	55,320	55,320	41,460	20,670	10,275	5,078
<b>After-Tax Capital Charges (5)</b>	<b>% of Revenue</b>										
Net Working Capital (Excl. Excess Cash)	0.50%	50	250	500	750	825	825	619	309	155	77
Fixed Assets	0.75%	75	375	750	1,125	1,238	1,238	928	464	232	116
Internal Technology	0.25%	25	125	250	375	413	413	309	155	77	39
Assembled Workforce	0.50%	50	250	500	750	825	825	619	309	155	77
Total Capital Charges	2.00%	200	1,000	2,000	3,000	3,300	3,300	2,475	1,238	619	309
Income from Technology		3,040	15,680	31,480	47,280	52,020	52,020	38,985	19,433	9,656	4,768
Partial Period Factor		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Mid-Year Convention	Discount Rate	0.5000	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	7.5000	8.5000	9.5000
Present Value Factor	25.0%	0.8944	0.7155	0.5724	0.4579	0.3664	0.2931	0.2345	0.1876	0.1501	0.1200
<b>Present Value</b>		<b>2,719</b>	<b>11,220</b>	<b>18,020</b>	<b>21,652</b>	<b>19,058</b>	<b>15,246</b>	<b>9,141</b>	<b>3,645</b>	<b>1,449</b>	<b>572</b>
Sum of Present Values		\$ 103,188									
Plus: Tax Amortization Benefit (6)		13,417									
Fair Value of Technology		\$ 116,605									
<b>Fair Value of Technology, Rounded</b>		<b>\$ 120,000</b>									

#### Notes:

- (1) Financials based on Management projections.
- (2) Development R & D expense excluded in calculation of maintenance R & D.
- (3) Future levels of maintenance R & D estimated based on year 1 estimate.
- (4) See Market Comparable Royalty Rate exhibit.
- (5) See Capital Charge Analysis exhibit.
- (6) TAB calculated using discount rate of 25 percent.

## IV Valuation of Customer-Related Intangibles

### A) Key Considerations

- Customer revenues may be generated from a number of different sources:



- (a) Product revenues
  - (b) Maintenance fees – Annual service fees or support fees
  - (c) Add-on revenues from upgrades, or renewed service contracts.
  - (d) Since product revenues and maintenance revenues may reflect different margin and attrition rates, splitting the customer relationship valuation into two components may be warranted. However, a viable option may be to derive a “blended” margin and attrition assumption for the entire customer relationship portfolio, which would include both sources of revenue (initial sales and associated maintenance).
- Projection period (economic useful life) should be consistent with attrition rate.
  - Does the attrition rate make sense?
    - (a) Remember only existing customers as of the valuation date are being valued in a customer-related intangible asset valuation.
    - (b) Is the attrition rate estimate supported with historical data?
    - (c) Is it linear or non-linear? (discussed further in advanced course)
    - (d) Should the customer relationships be segmented into different groups (large customers may have different attrition pattern from smaller customers)?
    - (e) PCAOB is assessing auditor procedures to confirm reasonableness of management’s estimates of attrition. PCAOB has commented on audit deficiencies where attrition estimate not assessed by auditor.
  - For existing customers - only those sales and marketing expenses necessary to support existing customers are to be included. Any sales and marketing expenses needed to attract new customers are NOT included.
  - For technology value associated with future customers – marketing costs associated with future customers would be included.
  - Acquirer does not have to duplicate the historical levels of marketing, training, and start-up expenses to generate revenues from the existing customer-related intangibles.
- B) Valuation of Customer-Related Assets - Estimating Asset Rate of Return – Customer-Related Intangible Assets
- The required rates of return for customer-related intangible assets vary depending on the riskiness of the asset.
  - The following is a sample of different types of customer-related intangible assets, listed in order of riskiness (low to high):
    - (a) Backlog
    - (b) Significant contractual customer relationships
    - (c) Long lived relationships with reliable customers providing a large portion of cash flows to the enterprise
    - (d) Relationships with risky, recently obtained customers



(e) Walk-ins: Considered part of goodwill, not separately identifiable or valued

### C) Valuation of Customer-Related Intangibles – Tuff Tables Example

#### Excess Earnings Method

\$ in 000's

			December 31									
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue (1)			\$ 42,000	\$ 43,260	\$ 44,558	\$ 45,895	\$ 47,271	\$ 48,690	\$ 50,150	\$ 51,655	\$ 53,204	\$ 54,800
Growth			N/A	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Annual Attrition Rate	15.0%											
Annual Retention Factor	85.0%											
Revenue from Existing Customers	% of Revenue		85.0%	72.3%	61.4%	52.2%	44.4%	37.7%	32.1%	27.2%	23.2%	19.7%
Cost of Goods Sold	56.4%		35,700	31,255	27,364	23,957	20,975	18,363	16,077	14,075	12,323	10,789
Gross Profit			20,145	17,637	15,441	13,519	11,836	10,362	9,072	7,943	6,954	6,088
SG&A Expenses	26.3%		15,555	13,618	11,923	10,438	9,139	8,001	7,005	6,133	5,369	4,701
Addback: Selling Expenses for New Customers	3.0%		9,400	8,229	7,205	6,308	5,522	4,835	4,233	3,706	3,245	2,841
Operating Income			1,071	938	821	719	629	551	482	422	370	324
Less: Royalty on Trade Name (2)	5.0%		7,226	6,327	5,539	4,849	4,246	3,717	3,254	2,849	2,494	2,184
Pretax Income			1,785	1,563	1,368	1,198	1,049	918	804	704	616	539
Income Taxes	40.0%		5,441	4,764	4,171	3,652	3,197	2,799	2,450	2,145	1,878	1,644
After-Tax Earnings			2,177	1,906	1,668	1,461	1,279	1,120	980	858	751	658
			3,265	2,858	2,502	2,191	1,918	1,679	1,470	1,287	1,127	987
<b>After-Tax Capital Charges (3)</b>												
Net Working Capital (Excl. Excess Cash)	0.49%		176	154	135	118	103	90	79	69	61	53
Fixed Assets	1.23%		438	384	336	294	257	225	197	173	151	132
Internal Technology	0.52%		186	163	142	125	109	96	84	73	64	56
Assembled Workforce	0.56%		200	175	153	134	117	103	90	79	69	60
Total Capital Charges	2.80%		999	875	766	671	587	514	450	394	345	302
Income from Customer Relationships			2,266	1,983	1,737	1,520	1,331	1,165	1,020	893	782	685
Partial Period Factor			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Mid-Year Convention	Discount Rate		0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5
Present Value Factor	16.0%		0.9285	0.8004	0.6900	0.5948	0.5128	0.4421	0.3811	0.3285	0.2832	0.2441
<b>Present Value</b>			<b>2,103</b>	<b>1,588</b>	<b>1,198</b>	<b>904</b>	<b>683</b>	<b>515</b>	<b>389</b>	<b>293</b>	<b>221</b>	<b>167</b>
Sum of Present Values (4)			8,062									
Plus: Tax Amortization Benefit			1,537									
Fair Value of Customer Relationships			9,599									
<b>Fair Value of Customer Relationships, Rounded</b>			<b>\$ 9,600</b>									

Notes:

(1) Financials based on Management projections.

(2) See Market Comparable Royalty Rate exhibit.

(3) See Capital Charge Analysis exhibit.

(4) Remaining useful life calculated as time to realize 95% of discounted cash flows.

### V Practical Expedient Example from the CAC Toolkit

A) The following slides present the Practical Expedient example from the CAC final release.

- Exhibit B-1 – Entity Value
- Exhibit B-1a – Depreciation
- Exhibit B-2 – Adjusted PFI and Entity Value
- Exhibit B-2a – Incremental Depreciation
- Exhibit B-3 – Contributory Asset Charges – Basis for Practical Expedients (not attached)
- Exhibit B-4 – Contributory Asset Charges
- Exhibit B-5 – Customer Relationships MPEEM

## VI Practical Expedient Example from the CAC Toolkit

A) The Entity Value in this Practical Expedient is based on 8-year straight-line depreciation (rather than tax depreciation) and an effective tax rate to equate to the Entity Value in the Comprehensive Example. Based on the market participant PFI and purchase price of \$4,746, the IRR of the transaction is calculated to be 10%. In addition a market-based WACC of 10% is estimated, which reconciles to the IRR. This example reflects a non-taxable transaction.

## B) Practical Expedient Example - Entity Value – Exhibit B-1

Exhibit B-1

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Residual
Revenue	\$ 1,000	\$ 1,050	\$ 1,165	\$ 1,306	\$ 1,456	\$ 1,596	\$ 1,718	\$ 1,823	\$ 1,907	\$ 1,976	\$ 2,035
Gross Profit	90%	900	945	1,049	1,175	1,310	1,436	1,546	1,641	1,716	1,832
<b>Operating Expenses:</b>											
Maintenance R&D	0.50%	5	5	6	7	7	8	9	9	10	10
R&D - Future IP	2.50%	25	26	29	33	36	40	43	46	48	51
Trade name advertising	0.50%	5	5	6	7	7	8	9	9	10	10
Current customer marketing	3%	27	26	23	18	13	8	4	2	1-	-
Future customer marketing		18	22	29	40	53	64	73	80	84	89
Total marketing	5%	50	53	58	65	73	80	86	91	95	99
Total G&A	7%	70	74	82	91	102	112	120	128	133	142
Total Operating Expenses	15%	150	158	175	196	218	240	258	274	286	296
EBITDA		750	787	874	979	1,092	1,196	1,288	1,367	1,430	1,482
Depreciation		222	246	275	311	351	392	436	481	519	545
Amortization		-	-	-	-	-	-	-	-	-	-
EBIT		528	541	599	668	741	804	852	886	911	937
Taxes	38.40%	203	208	230	256	284	308	327	340	350	359
Debt Free Net Income		325	333	369	412	457	496	525	546	561	578
less: Incremental Working Capital	30%	15	15	35	42	45	42	37	32	25	21
add: Depreciation		222	246	275	311	351	392	436	481	519	545
less: Capital Expenditures		286	400	450	500	525	541	557	574	591	609
Debt Free Cash Flow		246	164	159	181	238	305	367	421	464	493
Residual Value											7,343
PV Factor	10%	0.9535	0.8668	0.7880	0.7164	0.6512	0.5920	0.5382	0.4893	0.4448	0.4044
PV DFCF		235	142	125	130	155	181	198	206	206	199
Entity Value		4,746									

## VII Practical Expedient Example – Depreciation – Exhibit B-1a

## Depreciation: \$745 of Financial Reporting Basis with an 8-Year Straight-Line Depreciation

## Exhibit B-1a

This is a reference schedule for the projected depreciation reflected in the Entity Value. The valuation specialist should have an understanding of the assumptions reflected in, and the calculation of, the depreciation provided in the PFI. Such an understanding will allow for an assessment of the reasonableness of the simplifying assumption that the tax depreciation and statutory tax rate are reasonably approximated by accounting depreciation and the effective tax rate.

## Straight-Line Depreciation Of:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Residual
Acquired or Current Fixed Assets	\$186	\$160	\$133	\$106	\$80	\$53	\$27	\$ -	\$ -	\$ -	

## Capital Expenditures:

Year 1	36	36	36	36	36	36	36	36	-	-	
Year 2		50	50	50	50	50	50	50	50	-	
Year 3			56	56	56	56	56	56	56	56	
Year 4				63	63	63	63	63	63	63	63
Year 5					66	66	66	66	66	66	66
Year 6						68	68	68	68	68	68
Year 7							70	70	70	70	70
Year 8								72	72	72	72
Year 9									74	74	74
Year 10										76	76
Residual											78
Total Depreciation	222	246	275	311	351	392	436	481	519	545	567

## Fixed Asset Turnover

Beginning Balance	745	809	963	1,138	1,327	1,501	1,650	1,771	1,864	1,936	2,000
add: Capital Expenditures	286	400	450	500	525	541	557	574	591	609	627
less: Depreciation	222	246	275	311	351	392	436	481	519	545	567
Ending Balance	809	963	1,138	1,327	1,501	1,650	1,771	1,864	1,936	2,000	2,060
Average Fixed Assets	777	886	1,051	1,233	1,414	1,576	1,711	1,818	1,900	1,968	2,030
Fixed Asset Turnover	129%	119%	111%	106%	103%	101%	100%	100%	100%	100%	100%

## VIII Practical Expedient Example – Deal Tax Structure

The PFI in this exhibit is **adjusted to reflect the tax benefits that would result from a restatement of the tax basis of certain of the assets to fair value.** The tax benefit inherent in the fair value of an asset is not reflected in the PFI of a non-taxable transaction. For example, the step-up in fixed assets or the fair value of an assembled workforce are not reflected in the entity's tax basis and the PFI for the transaction excludes this benefit. **In order to maintain consistency between the PFI to be used in valuing the customer relationships and the fair value of the assets to which a CAC will be applied, the PFI should be adjusted to include the cash flow benefits of the increase in the tax basis of the contributory assets.** The Working Group believes that the fair value of an intangible asset should not differ depending on the tax structure of a particular transaction. For additional discussion on the applicability of TABs see paragraphs 3.1.08 and 4.3.08 in this Monograph and paragraphs 5.3.9 - 5.3.108 in the 2001 AICPA IPR&D Practice Aid. When the PFI is adjusted to include the additional cash flow benefit embedded in the fair value of the contributory assets, this results in an Adjusted Entity Value that is greater than the Entity Value by an amount equal to the present value of the tax benefits related to the increase in tax basis. The Entity Value is recalculated at the WACC/IRR of 10% to arrive at the Adjusted Entity Value of \$4,872. This increase of \$126 is equivalent to the present value of the incremental tax benefit related to the step-up in the fixed assets and the assembled workforce. This Adjusted Entity Value is used only for reconciliation at this phase of the analysis. The Working Group recognizes that these adjustments might not be significant to the analysis and may be excluded based on the judgment of the valuation specialist.

## IX Practical Expedient Example – Exhibit B-2

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Residual
Revenue		\$1,000	\$1,050	\$1,165	\$1,306	\$1,456	\$1,596	\$1,718	\$1,823	\$1,907	\$1,976	\$2,035
Gross Profit	90%	900	945	1,049	1,175	1,310	1,436	1,546	1,641	1,716	1,778	1,832
<b>Operating Expenses:</b>												
Maintenance R&D	0.50%	5	5	6	7	7	8	9	9	10	10	10
R&D - Future IP	2.50%	25	26	29	33	36	40	43	46	48	49	51
Trade name advertising	0.50%	5	5	6	7	7	8	9	9	10	10	10
Current customer marketing	3%	27	26	23	18	13	8	4	2	1-	-	-
Future customer marketing		18	22	29	40	53	64	73	80	84	89	92
Total marketing	5%	50	53	58	65	73	80	86	91	95	99	102
Total G&A	7%	70	74	82	91	102	112	120	128	133	138	142
Total Operating Expenses	15%	150	158	175	196	218	240	258	274	286	296	305
EBITDA		750	787	874	979	1,092	1,196	1,288	1,367	1,430	1,482	1,527
Depreciation		222	246	275	311	351	392	436	481	519	545	567
Depreciation of fixed asset step-up		63	54	45	36	27	18	9-	-	-	-	-
Adjusted Depreciation		285	300	320	347	378	410	445	481	519	545	567
Amortization - AWF		20	20	20	20	20	20	20	20	20	20-	20
EBIT		445	467	534	612	694	766	823	866	891	917	960
Taxes	38%	171	179	205	235	266	294	316	332	342	352	368
Debt Free Net Income		274	288	329	377	428	472	507	534	549	565	592
less: Incremental Working Capital	30%	15	15	35	42	45	42	37	32	25	21	18
add: Adjusted Depreciation		285	300	320	347	378	410	445	481	519	545	567
Amortization - AWF		20	20	20	20	20	20	20	20	20	20	20
less: Capital Expenditures		286	400	450	500	525	541	557	574	591	609	627
Debt Free Cash Flow		278	193	184	202	256	319	378	429	472	500	514
Residual Value												7,343
PV Factor	10%	0.9535	0.8668	0.7880	0.7164	0.6512	0.5920	0.5382	0.4893	0.4448	0.4044	0.4044
PV DFCF		265	167	145	145	167	189	203	210	210	202	2,969
Adjusted Entity Value		4,872										

## X Practical Expedient Example – Incremental Depreciation

### Incremental Depreciation due to the \$255 Fair Value Step-up with an 8-Year Straight-Line Depreciation

Exhibit B-2a

This is a reference schedule for the projected depreciation reflected in the Adjusted Entity Value and also provides the fixed asset turnover based on the fair value of the fixed assets. The valuation specialist should have an understanding of the assumptions reflected in, and the calculation of, the depreciation provided in the PFI. Such an understanding will allow for an assessment of the reasonableness of the simplifying assumption that the tax depreciation and statutory tax rate are reasonably approximated by accounting depreciation and the effective tax rate.

RUL (Years)	Step-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
1	9	9							
2	18	9	9						
3	27	9	9	9					
4	36	9	9	9	9				
5	45	9	9	9	9	9			
6	54	9	9	9	9	9	9		
7	63	9	9	9	9	9	9	9	
Total (rounded)		252	63	54	45	36	27	18	9

#### Fixed Asset Turnover

Beginning Balance	1,000	1,001	1,101	1,231	1,384	1,531	1,662	1,774	1,867	1,939	2,003
add: Capital Expenditures	286	400	450	500	525	541	557	574	591	609	627
less: Depreciation from Exhibit B-1a	222	246	275	311	351	392	436	481	519	545	567
less: Incremental depreciation above	63	54	45	36	27	18	9	-	-	-	-
Ending Balance	1,001	1,101	1,231	1,384	1,531	1,662	1,774	1,867	1,939	2,003	2,063
Average Fixed Assets	1,001	1,051	1,166	1,308	1,458	1,597	1,718	1,821	1,903	1,971	2,033
Fixed Asset Turnover	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

## XI Practical Expedient Example – Contributory Asset Charges – Exhibit B – 4

### Contributory Asset Charges

The assumptions underlying the Comprehensive Example are consistent with the practical expedients discussed in Exhibit B-3. Working capital, fixed assets and the AWF maintain a reasonably constant relationship to the revenue. Therefore the *return on* the aggregate of the contributory assets in the initial period can reasonably be carried forward as a percent of revenue to apply the CACs. The following demonstrates one approach to these practical expedients.

Year 1	<u>Working Capital</u>		<u>Fixed Assets</u>	<u>Assembled Workforce</u>
Revenue	\$950	\$1,000	\$1,000	\$1,000
Beginning Balance		285	1,000	200
add: Incremental Investment	30%	15	286 (1)	11 (3)
less: Return Of (depreciation)		n/a	285 (2)	- (4)
Ending Balance		300	1,001	211
Average Balance		293	1,001	206
Mid-period Adjustment Factor		0.9535	0.9535	0.9535
Return On (5)	3%	8	5% 48	10% 20
Percent of Revenue		0.84%	4.77%	1.96%
Total <i>Return On</i> applied as a CAC		7.57%		

(1) Exhibit B-1.

(2) Exhibit B-2 includes incremental depreciation due to the fixed asset step-up.

(3) The percent increase in revenue (\$50/\$950 or 5.3%) applied to the initial fair value of \$200, rounded.

(4) The *return of* is reflected in operating expenses as discussed in Exhibit B-3.

(5) After tax rates of return.

## XII Practical Expedient Example – Customer Relationships - MPEEM

**Customer Relationships MPEEM: Practical Expedients****Exhibit B-5**

Applies the practical expedients in the valuation of the customer relationships.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Residual
Total Revenue	\$1,000	\$1,050	\$1,165	\$1,306	\$1,456	\$1,596	\$1,718	\$1,823	\$1,907	\$1,976	\$2,035
Customer Relationship Revenue	900	855	770	616	431	259	130	65	33-	-	-
Gross Profit	90.0%	810	770	693	554	388	233	117	59	30-	-
<u>Operating Expenses:</u>											
Maintenance R&D	0.0% -	-	-	-	-	-	-	-	-	-	-
R&D - Future IP	0.0% -	-	-	-	-	-	-	-	-	-	-
Trade name advertising	0.0% -	-	-	-	-	-	-	-	-	-	-
Current customer marketing	3.0%	27	26	23	18	13	8	4	2	1-	-
Future customer marketing	-	-	-	-	-	-	-	-	-	-	-
Total marketing		27	26	23	18	13	8	4	2	1-	-
Total G&A	7.0%	63	60	54	43	30	18	9	5	2-	-
Total Operating Expenses		90	86	77	61	43	26	13	7	3-	-
EBITDA		720	684	616	493	345	207	104	52	27-	-
Adjusted Depreciation		257	244	212	164	112	67	34	17	9-	-
Amortization - AWF		18	16	13	9	6	3	2	1-	-	-
EBIT		445	424	391	320	227	137	68	34	18-	-
less: Trade Name Royalty	5.0%	45	43	39	31	22	13	7	3	2-	-
IP Royalty	10.0%	90	86	77	62	43	26	13	7	3-	-
Adjusted EBIT		310	295	275	227	162	98	48	24	13-	-
Taxes	38.0%	119	113	106	87	62	38	18	9	5-	-
Debt Free Net Income		191	182	169	140	100	60	30	15	8-	-
add: Amortization - AWF		18	16	13	9	6	3	2	1-	-	-
AWF Growth Investment		10	9	16	14	9	5	2	1-	-	-
less: Return On Contributory Assets		68	65	58	47	33	20	10	5	2-	-
Excess Earnings		151	142	140	116	82	48	24	12	6-	-
PV Factor	10.0%	0.9535	0.8668	0.7880	0.7164	0.6512	0.5920	0.5382	0.4893	0.4448	0.4044
PV Excess Earnings		144	123	110	83	53	28	13	6	3-	-
Total PV Excess Earnings		563									
Tax Amortization Benefit		152									
Fair Value - Customer Relationships		715									
Fair Value - Comprehensive Example		719									