THE CANADIAN INSTITUTE *of* CHARTERED BUSINESS VALUATORS™

# Illustrative Example of Intangible Asset Valuation

## Shockwave Corporation

**Working Party No. 6's Special Session on the Transfer Pricing Aspects of Intangibles**

# Foreward

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# Introduction

**Intangible Asset Valuation**

# Overview

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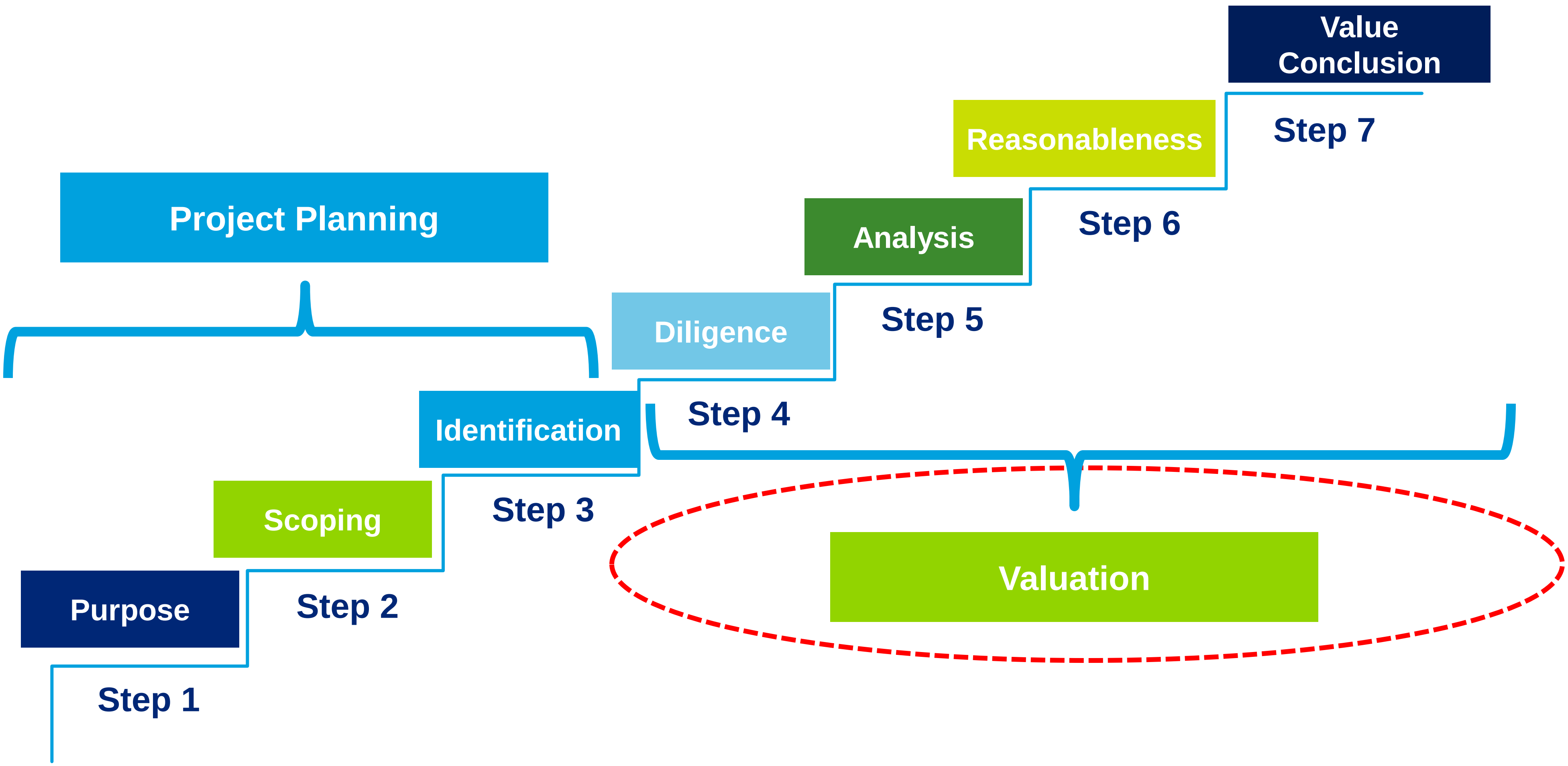
   - Workforce
   - License
   - Customers
   - Technology
4. Reasonability
   - Weighted Average Return on Assets

# Valuation Process



# Methodology Recap

**Intangible Asset Valuation**

# Relief from Royalty

## Description

Determines value by reference to the hypothetical royalty payments that would be saved through owning the asset, as compared with licensing the asset from a third party.

## Frequent Applications

- Brand (most common);
- Technology; and,
- Know-how.

$$FV = PV(r)\sum_{t=0}^{t}\left(\text{Revenue} \times \text{Royalty}\,(1 - \text{tax})\right)$$

## Key Inputs

1. Revenue forecast associated with the intangible asset being valued
2. Expected life of the intangible
3. Notional royalty rate applicable to the intangible
4. Discount rate

## Diligence Matters

- Revenues that are not attributable to the intangible (i.e. non-brand product revenues)
- Length of economic benefit of the asset
- Appropriateness of observable comparables used to derive a notional royalty rate
- Risk premiums included in the discount rate

# Excess Earnings

## Description

The present value of the earnings attributable to the subject intangible asset after providing for the proportion of the earnings that attribute to returns for contributory assets. In order to determine a fair return ‘on’ and/or ‘of’ these contributory assets, their value must be capable of being determined in priority.

## Frequent Applications

- Customer relationships
- Vendor relationships
- Technology
- IPR&D
- Order backlog
- Licenses

$$FV = PV(r)\sum_{t=0}^{t}\left(\text{Revenue} - \text{Expenses} - \text{CAC's} - \text{Taxes}\right) + PV(r)\ \text{Tax Benefit}$$

## Key Inputs

1. Applicable revenue forecast
2. Applicable expenses
3. Contributory asset charges (“CAC”)
4. Expected future tax rates
5. Expected life
6. Discount rate
7. Tax amortization benefit (asset values, tax rates, tax amortization rates)

## Diligence Matters

- Revenue migration/attrition rate
- Expenses saved or to be excluded from the earnings attributable to the asset (i.e. S&M)
- Valuation/selection of the contributory assets and the rates of return used in calculation
- Consistency of expenses and CAC’s
- Risk premiums included in the discount rate

# Cost

## Description

Estimates the fair value of an asset by approximating its depreciated replacement cost, which would include all costs necessary to construct a similar asset of equivalent utility at prices applicable at the time of reconstruction.

The cost approach is based on the premise that a prudent third-party purchaser would pay no more for an asset than its replacement cost.

## Frequent Applications

- Licenses and permits;
- Certifications;
- Internally-generated software; and
- Workforce.

1 Replacement Cost New
2 – Obsolescence Factors

## Key Inputs

1. All hypothetical costs that are needed to recreate the asset including materials and labour
2. Adjustment factors to reduce the replacement cost to the functional, economic, and technological condition of the subject asset

## Diligence Matters

- Inclusion/exclusion of any overhead costs and the allocation rate used;
- Inclusion of opportunity costs;
- Functional, economic, and technological adjustment factor assumptions
- Inclusion of taxes or tax shield

# With or Without

## Description

Estimates the fair value of an asset by comparing the value of the business inclusive of the asset, to the hypothetical value of the same business excluding the asset.

## Frequent Applications

- Non-competition agreements;
- Franchises; and
- Processes and technologies.

$$FV = \underset{2}{PV_1(r)}\ \overset{3}{\sum_{t=0}^{t}} \overset{1}{\begin{pmatrix} \text{Revenue} \\ - \\ \text{Expenses} \\ - \\ \text{CapEx/WC} \\ - \\ \text{Taxes} \end{pmatrix}} - \underset{5}{PV_2(r)}\ \overset{6}{\sum_{t=0}^{t}} \overset{4}{\begin{pmatrix} \text{Revenue} \\ - \\ \text{Expenses} \\ - \\ \text{CapEx/WC} \\ - \\ \text{Taxes} \end{pmatrix}} + \overset{7}{PV_3(r)\ \text{Tax Benefit}}$$

## Key Inputs

1. Free cash flow forecast for business ‘with’ asset
2. Enterprise-wide discount rate
3. Expected life of business
4. Free cash flow forecast excluding subject asset
5. Enterprise-wide discount rate excluding asset
6. Expected period to replace asset + costs
7. Tax amortization benefit (asset values, tax rates, tax amortization rates)

## Diligence Matters

- Identification of incremental income
- Length of recreation period and pattern of ramp-up
- Assumption around competition and market share
- Cost of recreation
- Incremental risk to business cost of capital excluding asset

# Greenfield

## Description

Estimates the value of the asset based on the discounted cashflows of a notional start-up business with no assets but the subject intangible.

## Application

- Non primary income generating assets
  - Licenses and permits;
  - Rights (i.e. Water, cutting, mining)
  - Franchise agreements

$$FV = PV(r) \sum_{t=0}^{t} \begin{pmatrix} \text{Revenue} \\ - \\ \text{Expenses} \\ - \\ \text{CapEx/WC} \\ - \\ \text{Taxes} \end{pmatrix} + \begin{matrix} PV(r) \\ \text{Tax} \\ \text{Benefit} \end{matrix}$$

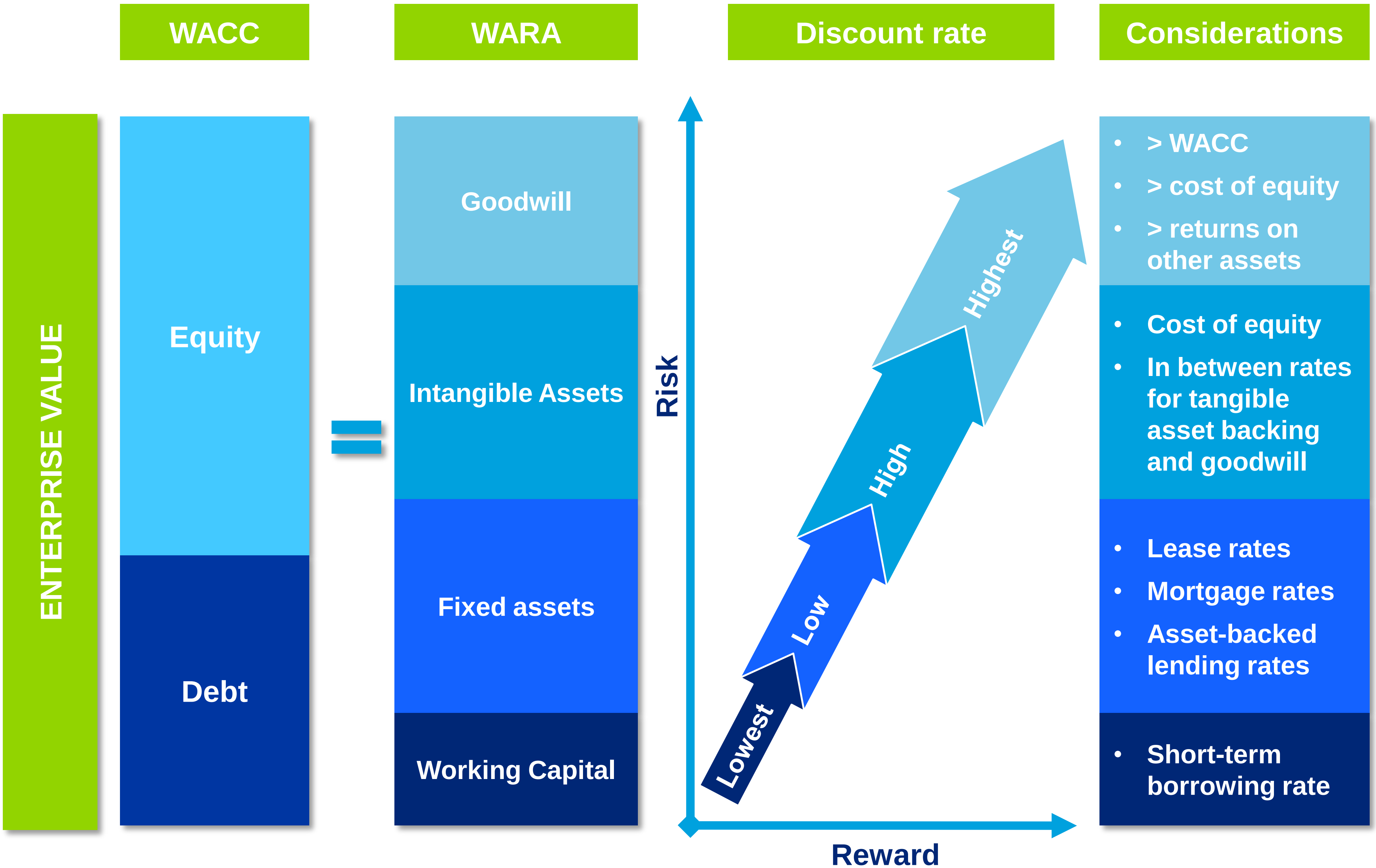
## Key Inputs

1. Start-up cashflow forecast, including capital costs
2. Expected ramp-up period and pattern
3. Start-up-type discount rate
4. Tax amortization benefit (asset values, tax rates, tax amortization rates)

## Diligence Matters

- Support for start-up levels of income and capital costs
- Support for length and pattern of ramp-up
- Assumption around competition and market share
- Incremental risk premiums in discount rate to reflect start-up nature of cashflows

# Discount rate considerations



# Illustrative Example

**Shockwave Corporation**

# Shockwave Corporation: Business Overview

## Business Overview

- Shockwave Corporation is Canada's largest satellite radio provider. Shockwave commenced operations five years ago when the Canadian government granted satellite spectrum licenses to four Canadian start-ups seeking to cultivate a then burgeoning industry for Canada. Since that time, precipitated by the accelerating wireless data needs of telecommunication industry technology, the government has stated that it will not be licensing any new spectrum for satellite radio, but may approve the sale or transfer of existing spectrum.
- Shockwave generates its revenue from monthly subscriptions to consumers sourced via a direct retail sales channel (i.e. direct mail, print and television advertisements, billboards, and retail in-store kiosks).
- Shockwave does not manufacture the satellite radio receivers used by consumers, but transmits signals that can be received by a unit once the unit is registered/activated as an Shockwave unit.
- After five years of research and development activities, Shockwave developed a proprietary software technology for the transmission of 'on-demand' radio content. As a result, Shockwave created six new on-demand premium subscription stations exclusively broadcasting educational programs covering Parenting, Finance, History, Motivational topics, Biographies, and Cooking. This premium service is only offered to customers that are on a 'regular subscription', and are not available separately. The success of this novel business was immediate, generating incremental revenues of approximately $45 million last year.
- Most of Shockwave's 'regular' music and talk radio content is acquired from third-party sources, based on normal recording industry royalty-based pay scales. However, for the exclusive broadcast on its premium 'on-demand' channels, Shockwave produced an archive of over 1,000 twenty- to sixty-minute proprietary programs protected by copyright created via internal publishers and third-party consultants (i.e. doctors, professors, and professionals).
- Two of Shockwave's competitors operate in the B2B space, providing satellite radio content to the airline, and commercial real estate industries, respectively. These competitors have unbranded product offerings.

# Shockwave Corporation: Valuation of Intangibles

**On January 1, 2011, the shares of Shockwave were acquired for $0.8 billion. The net debt and tangible assets acquired approximated $0.4 billion and $0.5 billion respective. The Purchaser would like you to fair value Shockwave's material identifiable intangible assets for certain financial reporting and tax needs.**

Equity Price
$0.8 Billion

\+ Net Debt
$0.4 Billion

= Enterprise Value
$1.2 Billion

− Tangible Assets
$0.5 Billion

= Intangible Assets
$0.7 Billion

**Identified Intangibles**

- Tradename
- On-Demand Technology
- Customer relationships
- Broadcast License
- Program Content
- Assembled Workforce
- Goodwill

**Valuation Methodologies**

- Relief from Royalty
- Excess Earnings
- Cost
- Greenfield
- With or Without

# Shockwave Corporation: Historical Operating Results

## Historical Operations

1. Regular subscription revenues have grown from $100 million to $900 over the first 5 years of operations
2. Cost of sales for regular subscriptions reflect normal industry music content royalties and equate to 60% of revenues
3. Direct costs for ‘On-Demand’ subscriptions represents a non-variable cost and ranges between $800/min and $2,000/min for content development. Approximately 1,000 programs have been developed to date for a total cost of $60 million
4. Operating, sales & marketing, and G&A expenses are semi-variable in nature, approximately 60% of which is labour costs (production, human resource, legal, sales, marketing, finance, and executive), with the balance representing third-party consulting, marketing, professional and facilities costs. These costs increase pro-rata with ‘On-Demand’ revenues
5. Shockwave incurred approximately $60 million in R&D spending to develop the ‘On-Demand’ technology platform over a 5 year period
6. General brand marketing costs approximate 2/3rds of the total sales and marketing spend, which approximates 12% to 13% of revenues
7. Financial position includes $76 million of working capital, $438 million of PP&E, and $400 million of net debt

| | Cashflow Statement | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|
| 1 | **Revenue** | Regular | | 102 | 305 | 508 | 813 | 900 |
| | | On-Demand | | | | | | 45 |
| | | | | 102 | 305 | 508 | 813 | 945 |
| 2 | **COS** | Regular | | 56 | 168 | 279 | 447 | 495 |
| 3 | | On-Demand | | | | | 20 | 40 |
| | | | | 56 | 168 | 279 | 467 | 535 |
| | **Gross Profit** | | | 46 | 137 | 229 | 346 | 410 |
| 4 | **Operating Costs** | | 10 | 15 | 40 | 60 | 80 | 85 |
| 5 | **R&D** | | | 3 | 10 | 20 | 15 | 12 |
| | | | 10 | 18 | 50 | 80 | 95 | 97 |
| 6 | **S&M** | | 15 | 20 | 55 | 65 | 100 | 120 |
| 4 | **G&A** | | 5 | 5 | 10 | 15 | 20 | 24 |
| | **EBITDA** | | (30) | 3 | 22 | 69 | 131 | 169 |
| | | | | 3% | 7% | 14% | 16% | 18% |
| | **Depreciation** | | | 53 | 74 | 87 | 92 | 96 |
| | **EBIT** | | (30) | (50) | (52) | (18) | 38 | 73 |
| | **Taxes** | | | | | | | |
| | **Depreciation** | | - | (53) | (74) | (87) | (92) | (96) |
| | **Capex** | | 200 | 170 | 150 | 120 | 110 | 110 |
| | **Working Capital** | | | 8 | 16 | 16 | 24 | 11 |
| | | | **(230)** | **(175)** | **(144)** | **(68)** | **(4)** | **48** |

7 **Statement of Financial Position**

| | | | |
|---|---|---|---|
| Net Working Capital | 76 | Net Debt | 400 |
| Broadcasting PP&E | 438 | Equity | 114 |
| **Total Assets** | **514** | **Liabilities & Equity** | **514** |

# Shockwave Corporation: Acquisition Forecast

## Acquisition Forecast

1. Regular subscription revenues are expected to grow 5% annually
2. On-Demand subscriptions are expected to increase from 5% of the customer-base in 2010 to 7.5% in 2011, before leveling at 10% beyond 2012
3. Approximately $30 million of On-Demand content will be developed annually to replace the 1/3rd that will become obsolete annually, and grow the business
4. Operating, Sales & Marketing, and G&A expenses are expected to grow between 2%-3% annually
5. Due to continual technological changes in transmission and receiving technology, Shockwave re-writes approximately 20% of the software's algorithm code on an annual basis
6. The Purchaser cannot avail themselves of historical tax losses, and expects to pay taxes at a rate of 35%
7. Capital expenditures are expected to replace broadcasting equipment depreciating 20% annually
8. Non-cash working capital investments of 8% of revenues
9. Long-term growth is expected to equal 2% to 3%
10. The internal rate of return of 12% reflects a market-based WACC, an after-tax cost of debt between 5%-6% and a cost of equity between 15% to 16%

| | Cashflow Statement | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|---|
| 1 | **Revenue** | Regular | 945 | 992 | 1,042 | 1,094 | 1,149 | 1,206 |
| 2 | | On-Demand | 71 | 99 | 104 | 109 | 115 | 121 |
| | | | 1,016 | 1,091 | 1,146 | 1,203 | 1,264 | 1,327 |
| 3 | **COS** | Regular | 520 | 546 | 573 | 602 | 632 | 663 |
| | | On-Demand | 30 | 30 | 30 | 35 | 35 | 35 |
| | | | 550 | 576 | 603 | 637 | 667 | 698 |
| | **Gross Profit** | | 466 | 516 | 543 | 567 | 597 | 628 |
| 4 | **Operating Costs** | | 100 | 103 | 105 | 108 | 110 | 113 |
| 5 | **R&D** | | 12 | 12 | 13 | 13 | 13 | 14 |
| | | | 112 | 115 | 118 | 121 | 124 | 127 |
| 4 | **S&M** | | 137 | 140 | 144 | 148 | 151 | 155 |
| | **G&A** | | 25 | 26 | 26 | 27 | 28 | 28 |
| | **EBITDA** | | 192 | 235 | 255 | 272 | 294 | 318 |
| | | | 19% | 22% | 22% | 23% | 23% | 24% |
| | **Depreciation** | | 98 | 98 | 98 | 99 | 99 | 99 |
| 6 | **EBIT** | | 95 | 137 | 157 | 173 | 195 | 219 |
| | **Taxes** | | 33 | 48 | 55 | 60 | 68 | 77 |
| 7 | **Depreciation** | | (98) | (98) | (98) | (99) | (99) | (99) |
| | **Capex** | | 100 | 100 | 100 | 100 | 100 | 100 |
| 8 | **Working Capital** | | 6 | 6 | 4 | 5 | 5 | 5 |
| | | | **53** | **81** | **96** | **107** | **121** | **137** |
| 9 | **Long-term growth** | **2.5%** | | | | | | |
| | **Residual Value** | | | | | | | **1,438** |
| | **Discount Periods** | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| 10 | **Discount Factor** | **12.0%** | 0.9 | 0.8 | 0.8 | 0.7 | 0.6 | 0.6 |
| | **Present Value** | | **50** | **68** | **72** | **72** | **73** | **863** |
| | **Enterprise Value** | | **1,199** | | | | | |
| | **Net Debt** | | 400 | | | | | |
| | **Fair Value of Shares** | | **799** | | | | | |

# Shockwave Corporation: Diligence Information

| | | |
| --- | --- | --- |
| **Customers** | • Subscribers are renewing at a rate of 80% annually, which is consistent with other marketplace participants | • Approximately 2/3rds of S&M costs are marketing related, with 1/3rd attributable to new customer acquisition and selling costs |
| **"On-Demand" Technology** | • Management could recreate the technology at the same cost, with an accelerated development timetable of 3 rather than 5 years | • Given the annual updates to 20% of the technology, the estimated life of the existing technology approximates 5 years |
| **License** | • Given the newness of the industry, new entrants would follow the same pattern of market share growth once licensed. | • Capital providers for radio start-ups expect a return on investment of approximately 20%<br>• Operating costs in 2005 related to licensing activities |
| **Tradename** | • B2B unbranded competitor product offerings are half the price, and accrue 2/3rds the annual marketing spending | • Research of arm's length tradename arrangements evidences royalties of 4% for telecom retailers, 4% on retail products, 6% for food services, and 2% for technology resellers |
| **"On-Demand" Content** | • Approximately 20% of the content developed in 2010 is outdated, and 5% of the content is inactive/unused | • Costs approximate $1000/min for parenting & health modules (30 min), $1,500/min for 30 min finance & motivational modules and 60 min biographies, and $2,500 for 60 min history modules |
| **Workforce** | • Recruiting costs for operations staff approximate 10% of salary, 15% for R&D and S&M staff, and 20% for G&A staff | • New hires are 50% as productive as existing staff over a 6 month training period for R&D and G&A staff, and a 3 month period for operations and S&M staff |

# Shockwave Corporation: Diligence Information

| Intangible Asset | Relief from Royalty | Excess Earnings | Cost | Greenfield | With or Without | Rationale |
|---|---|---|---|---|---|---|
| **Tradenames** | ✓ | | | | | • Availability of comparable and observable royalties |
| **Content** | | | ✓ | | | • Replacement costs available<br>• Costs and time not prohibitive |
| **Workforce** | | | ✓ | | | • Only acceptable method<br>• No independent cashflows or observable market |
| **License** | | | | ✓ | | • No observable market or ability to replace independently<br>• Impacts overall cashflows for the business without an ability to disaggregate |
| **Customers** | | ✓ | | | | • No observable market or ability to replace independently<br>• Independent direct cashflows are capable of being estimated and disaggregated from total cashflows |
| **Technology** | | ✓ | | | ✓ | • No observable market<br>• Independent direct cashflows are capable of being estimated and disaggregated from total cashflows<br>• Costs and time to recreate are capable of being estimated |

# Shockwave Corporation: Tradename – Relief from Royalty

| Tradename ($millions) | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| Revenues | 1 | 1,016 | 1,091 | 1,146 | 1,203 | 1,264 | 1,327 |
| Royalty Rate | 2 | 3.50% | 3.50% | 3.50% | 3.50% | 3.50% | 3.50% |
| Royalty Savings | | 36 | 38 | 40 | 42 | 44 | 46 |
| Taxes | 35.0% | (12) | (13) | (14) | (15) | (15) | (16) |
| After-Tax Royalty Savings | | 23 | 25 | 26 | 27 | 29 | 30 |
| Long-term Growth | 2.5% | | | | | 3 | 216 |
| Discount Periods | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| Discount Factor | 16.5% 4 | 0.93 | 0.80 | 0.68 | 0.59 | 0.50 | 0.50 |
| Present Value | | 21 | 20 | 18 | 16 | 14 | 108 |

| | | |
|---|---|---|
| Total | | 198 |
| TAB | 5 | 29 |
| Fair Value | | **227** |

## 1 Revenues

- Based on forecast for all branded revenues

## 2 Royalty Rate

- Comparable research range of 2% to 6%

| Brand Margin | B2B | Retail | Diff |
|---|---|---|---|
| Product Price | 50 | 100 | 50 |
| Marketing Cost | 6 | 8 | 3 |
| Net Profit | 44 | 92 | 47 |
| % | 89% | 92% | **3%** |

## 3 Life

- Assumption of an indefinite life

## 4 Discount Rate

- Cost of equity
- Indefinite life
- Revenue growth risk
- Brand recognition, competition, and margin
- WARA

## 5 Tax Basis

- Assumption of depreciable tax basis for asset

# Shockwave Corporation: Content – Cost Approach

1 **Replacement Cost (new)**
- Assumed no inflation from the original costs to develop in 2010

2 **Functional Obsolescence**
- Assumption that these modules would be replicated in an updated version if replaced

| | Module Type (Mins) | # of Modules | Cost/Min ($) | Replacement Cost New ($mill) | Outdated | Inactive | Depreciated Replacement Cost ($mill) |
|---|---|---|---|---|---|---|---|
| **Parenting** | 30 | 150 | 1,000 | 4.5 | 15 | 8 | 3.8 |
| **Health** | 30 | 175 | 1,000 | 5.3 | 18 | 9 | 4.5 |
| **Finance** | 30 | 300 | 1,500 | 13.5 | 100 | 20 | 8.1 |
| **Motivationa** | 30 | 125 | 1,500 | 5.6 | 13 | 6 | 4.8 |
| **Biographies** | 60 | 100 | 1,500 | 9.0 | 25 | 5 | 6.3 |
| **History** | 60 | 150 | 2,500 | 22.5 | 25 | 8 | 17.6 |
| | | **1,000** | | **60.4** | **195** | **55** | **45.1** |

4 **Economic Obsolescence**
- Assumption that these modules would not generate future economic returns if replaced

5 **Depreciated Replacement Cost**
- Assumption that any tax benefits and costs would offset (embedded TAB ~$7 million)
- Assumption that there are no additional opportunity costs (i.e. significant time investment)

# Shockwave Corporation: License – Greenfield Approach

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| **Revenue** | Regular | 102 | 305 | 508 | 813 | 900 | |
| | On-Demand | - | - | - | - | 45 | |
| | | 102 | 305 | 508 | 813 | 945 | |
| **COS** | Regular | 56 | 168 | 279 | 447 | 495 | |
| | On-Demand | - | - | - | 20 | 40 | |
| | | 56 | 168 | 279 | 467 | 535 | |
| **Gross Profit** | | 46 | 137 | 229 | 346 | 410 | |
| **Operating Costs** | | 15 | 40 | 60 | 80 | 85 | |
| **R&D** | | 3 | 10 | 20 | 15 | 12 | |
| | | 18 | 50 | 80 | 95 | 97 | |
| **S&M** | | 35 | 55 | 65 | 100 | 120 | |
| **G&A** | | 5 | 10 | 15 | 20 | 24 | |
| **EBITDA** | | (12) | 22 | 69 | 131 | 169 | |
| | | -12% | 7% | 14% | 16% | 18% | |
| **Capex** | | 370 | 150 | 120 | 110 | 110 | |
| **Working Capital** | | 8 | 16 | 16 | 24 | 11 | |
| | | **(390)** | **(144)** | **(68)** | **(4)** | **48** | |
| **Residual Value** | | | | | | | **1,199** |
| **Discount Periods** | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| **Discount Factor** | **20%** | 0.9 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4 |
| **Present Value** | | **(356)** | **(110)** | **(43)** | **(2)** | **21** | **528** |
| **Total** | | **38** | | | | | |
| **Tax Amortization Benefit** | | 5 | | | | | |
| **Fair Value of License** | | **43** | | | | | |

## 1 Revenues

- Assumed original 2005 through 2010 start-up costs would be equally applicable as at valuation date, including ramp-up and commercialization pattern, margins, and capital costs, with the exception of:
  - Reduced time-period by 1 year, assuming 2005 activities could be truncated
  - Excluded year 1 start-up costs for G&A and operations ($15 million), assuming these costs relate to licensing activities

## 2 Residual Value

- Based on current purchase price as representative of exit value

## 3 Discount Rate

- Reflective of ‘start-up’ type required rates of return

## 4 Tax Basis

- Assumption of depreciable tax basis for asset

# Shockwave Corporation: Workforce – Cost Approach

## 2 Recruiting Costs

- Costs to find and replace workforce based on normal search and hire costs

## 3 Training Costs

- Opportunity cost of salary incurred over period new hires would be unproductive or underutilized

| Workforce | # of FTEs | Avg. Salary ($000) | Recruitment Cost (% of Salary) | Recruitment Cost ($000/FTE) | Unproductive Training Period (months) | Training Cost ($000/FTE) | Replacement Cost ($000/FTE) | Replacement Cost ($millions) |
|---|---|---|---|---|---|---|---|---|
| Operations | 630 | 80 | 10% | 8 | 1.5 | 10 | 18 | 11 |
| R&D | 130 | 75 | 15% | 11 | 3.0 | 19 | 30 | 4 |
| S&M | 330 | 90 | 15% | 14 | 1.5 | 11 | 25 | 8 |
| G&A | 60 | 200 | 20% | 40 | 3.0 | 50 | 90 | 5 |
| **Total** | **1,150** | **101,850** | | | | | | **29** |

## 1 Workforce

- Assumed all employees are required to generate value, and are compensated at FMV

## 4 Depreciated Replacement Cost

- Assumption that any tax benefits and costs would offset (embedded TAB ~$7 million)
- Assumption that there are no additional opportunity costs (i.e. significant time investment)

# Shockwave Corporation: Customers – Excess Earnings

| | | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| **Revenues** | | 945 | 992 | 1,042 | 1,094 | 1,149 | 1,206 |
| **Customer Erosion** | **20.0%** | 80% | 64% | 51% | 41% | 33% | 26% |
| **Existing Customer Rev.** | | 756 | 635 | 533 | 448 | 376 | 316 |
| **COGS** | | 440 | 368 | 309 | 261 | 218 | 183 |
| **Operations** | | 74 | 60 | 49 | 40 | 33 | 27 |
| **S&M** | **0.0%** | - | - | - | - | - | - |
| **G&A** | | 19 | 15 | 12 | 10 | 8 | 7 |
| **EBITDA** | | 223 | 192 | 164 | 137 | 117 | 99 |
| **Depreciation** | | 73 | 57 | 46 | 37 | 29 | 24 |
| **EBIT** | | 151 | 135 | 118 | 100 | 87 | 76 |
| **Taxes** | **35.0%** | 53 | 47 | 41 | 35 | 31 | 27 |
| **Fixed Assets** | **3.3%** | 25 | 21 | 18 | 15 | 13 | 11 |
| **Brand** | **2.3%** | 17 | 14 | 12 | 10 | 9 | 7 |
| **Working Capital** | **0.7%** | 5 | 4 | 4 | 3 | 3 | 2 |
| **License** | **0.8%** | 6 | 5 | 4 | 4 | 3 | 3 |
| **Workforce** | **0.3%** | 3 | 2 | 2 | 2 | 1 | 1 |
| | | 42 | 40 | 37 | 32 | 29 | 26 |
| **Discount Periods** | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 |
| **Discount Factor** | **15.0%** | 0.93 | 0.81 | 0.71 | 0.61 | 0.53 | 0.46 |
| **Present Value** | | **39** | **33** | **26** | **20** | **15** | **12** |

| | |
|---|---|
| **Discrete Period** | **144** |
| **Residual** | **31** |
| **Total** | **175** |
| **TAB** | **28** |
| **Fair value** | **203** |

### 1 Revenues

- Based on overall forecast revenues for the business, assuming:
  - Existing subscribers will experience 20% annual attrition
  - Existing subscribers revenues, net of attrition, will growth at the same rate as new subscribers
  - On-demand revenues are attributable to technology rather than customers

### 2 Costs

- COGS, operating costs, G&A, and depreciation assumed to attribute to existing customer revenues on a pro-rata basis with new customer revenues

### 3 S&M Costs

- S&M costs excluded assuming no incremental selling costs to existing customers, and a brand CAC to cover general marketing

### 4 Contributory Asset Charges

- Next Slide

### 5 Discount Rate

- Reflects cost of equity, adjusted for risk profile

### 6 Tax Basis

- Assumption of depreciable tax basis for asset

# Shockwave Corporation: Contributory Asset Charges

1

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| **Opening PP&E** | | 438 | 440 | 442 | 444 | 445 | 446 |
| **Capex** | | 100 | 100 | 100 | 100 | 100 | 100 |
| **Depreciation** | 20.0% | 98 | 98 | 98 | 99 | 99 | 99 |
| **Ending PP&E** | | 440 | 442 | 444 | 445 | 446 | 447 |
| **Return On** | 8.0% | 35 | 35 | 35 | 36 | 36 | 36 |
| **Revenues** | | 945 | 992 | 1,042 | 1,094 | 1,149 | 1,206 |
| **CAC - PP&E** | **3.3%** | **3.7%** | **3.6%** | **3.4%** | **3.3%** | **3.1%** | **3.0%** |

2

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| **Opening Working Capital** | | 76 | 81 | 87 | 92 | 96 | 101 |
| **Change** | | 6 | 6 | 4 | 5 | 5 | 5 |
| **Ending Working Capital** | | 81 | 87 | 92 | 96 | 101 | 106 |
| **Return On** | 3.3% | 6 | 7 | 7 | 8 | 8 | 8 |
| **Revenues** | | 945 | 992 | 1,042 | 1,094 | 1,149 | 1,206 |
| **CAC - PP&E** | **0.7%** | **0.7%** | **0.7%** | **0.7%** | **0.7%** | **0.7%** | **0.7%** |

3

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| **Opening Content** | | 45 | 45 | 45 | 45 | 48 | 50 |
| **New Content** | | 30 | 30 | 30 | 35 | 35 | 35 |
| **Depreciation** | 40.0% | 30 | 30 | 30 | 32 | 33 | 34 |
| **Ending Content** | | 45 | 45 | 45 | 48 | 50 | 51 |
| **Return On** | 15.0% | 7 | 7 | 7 | 7 | 7 | 8 |
| **Revenues** | | 71 | 99 | 104 | 109 | 115 | 121 |
| **Return On %** | | 10% | 7% | 6% | 6% | 6% | 6% |
| **Return Of** | | 20 | 20 | 20 | 21 | 22 | 22 |
| **Return Of %** | | 28% | 20% | 19% | 19% | 19% | 18% |
| **CAC - Content** | **27.3%** | **37%** | **26%** | **25%** | **25%** | **25%** | **25%** |

| | | |
|---|---|---|
| **Tradename Pre-tax** | 4 | 3.5% |
| **Tradename After-tax** | | **2.3%** |

## 1 PP&E CAC

- Represents “Return On” investment in PP&E only, as “Return Of” investment in PP&E considered in the Excess Earnings via depreciation
- Required “Return On” investment rate based on consideration of ABL rates (i.e. mortgages, leases, senior debt, secured lending, etc.)
- CAC as a percentage of total revenues over which asset accrues its returns

## 2 Working Capital CAC

- Represents “Return On” investment in working capital only, as the asset does not waste
- Required “Return On” investment rate based on consideration of short-term borrowing rates
- CAC as a percentage of total revenues over which asset accrues its returns

## 3 Content CAC

- Represents “Return On” and “Return Of” investment, as replacement of the asset is not otherwise explicitly captured in the Excess Earnings
- Required “Return On” investment rate based on consideration of cost of equity, risk profile of the asset, and WARA
- CAC as a percentage of On-Demand revenues where the asset accrues its returns

## 4 Tradename CAC

- Based on after-tax royalty rate used to value asset

# Shockwave Corporation: Technology – With and Without

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| Regular | | 945 | 992 | 1,042 | 1,094 | 1,149 | |
| On-Demand | | | | | 55 | 86 | |
| **Revenues** | | 945 | 992 | 1,042 | 1,149 | 1,235 | |
| Regular | | 520 | 546 | 573 | 602 | 632 | |
| On-Demand | | | | | 35 | 35 | |
| **COGS** | | 520 | 546 | 573 | 637 | 667 | |
| **Operations** | | 93 | 93 | 96 | 103 | 108 | |
| **S&M** | | 127 | 128 | 131 | 141 | 148 | |
| **G&A** | | 23 | 23 | 24 | 26 | 27 | |
| **R&D** | | 20 | 20 | 20 | 13 | 13 | |
| **EBITDA** | | 162 | 182 | 199 | 230 | 272 | |
| **Depreciation** | | 98 | 98 | 98 | 99 | 99 | |
| **EBIT** | | 64 | 84 | 100 | 131 | 173 | |
| **Taxes** | 35% | 22 | 29 | 35 | 46 | 61 | |
| **After-tax earnings** | | 139 | 153 | 164 | 184 | 212 | |
| **Capital Expenditures** | | 100 | 100 | 100 | 100 | 100 | |
| **Working Capital** | | 4 | 4 | 4 | 9 | 7 | |
| | | **36** | **49** | **60** | **75** | **105** | |
| **Long-term Growth** | 2.5% | | | | | | **1,438** |
| **Discount Periods** | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| **Discount Factor** | 13.5% | 0.94 | 0.83 | 0.73 | 0.64 | 0.57 | 0.57 |
| **Present Value** | | **33** | **41** | **43** | **48** | **59** | **813** |
| **Without Technology** | | 1,038 | | | | | |
| **With Technology** | | 1,199 | | | | | |
| **Technology Value** | | **161** | | | | | |
| TAB | | 28 | | | | | |
| **Fair Value** | | **188** | | | | | |

## 1 Revenues

- Based on overall forecast revenues for the business, excluding on-demand revenues assuming:
  - Pre-revenue 'build' period of 3 vs. 5 year
  - Equivalent ramp-up pattern towards 10% of regular subscribers

## 2 Costs

- COGS, Operating Costs, S&M, G&A based on proration of total revenues between regular vs. on-demand business – assumed incremental to on-demand business (capital costs excluded)

## 3 R&D Costs

- Assumed original $60 million development costs to be incurred over 3 vs. 5 year period

## 4 Residual

- Reflects original residual value after ramp-up period (including WACC)

## 5 Discount Rate

- Reflects heightened risk to overall business over ramp-up period

## 6 With vs Without

- Deduct value of business with technology vs. without
- Assumption of depreciable tax basis for asset, not businesses

# Shockwave Corporation: Technology – Excess Earnings

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| Revenues 1 | | 71 | 99 | 104 | 109 | 115 | 121 |
| COGS 2 | | | | | | | |
| Operations | | 7 | 9 | 10 | 10 | 10 | 10 |
| 5 Development | | 12 | 12 | 13 | 13 | 13 | 14 |
| S&M 3 | 33.3% 4 | 3 | 4 | 4 | 4 | 5 | 5 |
| G&A | | 2 | 2 | 2 | 2 | 3 | 3 |
| EBIT | | 47 | 71 | 75 | 80 | 84 | 89 |
| Taxes | | 16 | 25 | 26 | 28 | 30 | 31 |
| Brand | 2.3% | 2 | 2 | 2 | 2 | 3 | 3 |
| Content | 27.3% | 19 | 27 | 28 | 30 | 31 | 33 |
| License 6 | 0.8% | 1 | 1 | 1 | 1 | 1 | 1 |
| Workforce | 0.3% | 0 | 0 | 0 | 0 | 0 | 0 |
| PP&E | 0.0% | - | - | - | - | - | - |
| Working Capital | 0.7% | 0 | 1 | 1 | 1 | 1 | 1 |
| Cashflow | | 8 | 15 | 16 | 17 | 19 | 20 |
| Long-term Growth | 2.5% | | | | | | |
| Residual | | | | | | | 145 |
| Discount Periods | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| Discount Factor 7 | 16.5% | 0.93 | 0.80 | 0.68 | 0.59 | 0.50 | 0.50 |
| **Present Value** | | **8** | **12** | **11** | **10** | **9** | **73** |
| **Total** | **123** | | | | | | |
| TAB | 18 | | | | | | |
| **Fair Value** | **141** | | | | | | |

### 1 Revenues

- Based on total on-demand forecast revenues assuming:
  - Perpetual life – no obsolescence
  - Regular subscriber revenues excluded -- attributable to other assets (i.e. customer value) – akin to a CAC

### 2 Content Costs

- Considered as part of Content CAC (return 'on' and 'of'), including reinvestment

### 3 Costs

- Operating Costsand G&A based on proration of total revenues between regular vs. on-demand business – assumed incremental to on-demand business

### 4 S&M Costs

- Assumed 1/3rd of S&M costs represents selling costs attributable to on-demand business based on pro-rata revenues
- Assume brand CAC to cover general marketing

### 7 Discount Rate

- Reflects cost of equity, WARA, risk profile of asset, and heightened risk of future development/perpetual life

### 6 CACs

- Reflects required returns on and of contributory assets, but:
  - Excludes PP&E
  - Includes Content

### 5 Development Costs

- All development costs to maintain and extend life of technology included

# Shockwave Corporation: Technology – Finite Life

| | | 2011 | 2012 | 2013 | 2014 | 2015 | Residual |
|---|---|---|---|---|---|---|---|
| **Revenues** | | 71 | 99 | 104 | 109 | 115 | 121 |
| **Migration Factor** | 20.0% | 90% | 72% | 58% | 46% | 37% | 29% |
| **Existing Technology** | | 64 | 71 | 60 | 50 | 42 | 36 |
| **COGS** | | | | | | | |
| **Operations** | | 6 | 7 | 6 | 5 | 4 | 3 |
| **S&M** | 33.0% | 3 | 3 | 2 | 2 | 2 | 1 |
| **G&A** | | 2 | 2 | 1 | 1 | 1 | 1 |
| **EBIT** | | 53 | 60 | 51 | 43 | 36 | 30 |
| **Taxes** | | 19 | 21 | 18 | 15 | 13 | 11 |
| **Brand** | 2.3% | 1 | 2 | 1 | 1 | 1 | 1 |
| **Content** | 27.3% | 17 | 20 | 16 | 14 | 12 | 10 |
| **License** | 0.8% | 1 | 1 | 0 | 0 | 0 | 0 |
| **Workforce** | 0.3% | 0 | 0 | 0 | 0 | 0 | 0 |
| **Working Capital** | 0.7% | 0 | 0 | 0 | 0 | 0 | 0 |
| **Cashflow** | | 14 | 17 | 14 | 12 | 10 | 9 |
| **Long-term Growth** | -15.2% | | 14% | -15% | -15% | -15% | -15% |
| **Residual** | | | | | | | 30 |
| **Discount Periods** | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 4.5 |
| **Discount Factor** | 13.5% | 0.94 | 0.83 | 0.73 | 0.64 | 0.57 | 0.57 |
| **Present Value** | | **14** | **14** | **10** | **8** | **6** | **17** |
| **Total** | **68** | | | | | | |
| TAB | 12 | | | | | | |
| **Fair Value** | **80** | | | | | | |

### 1 Revenues

- Based on total on-demand forecast revenues assuming:
  - 20% annual migration/obsolescence
  - Regular subscriber revenues excluded -- attributable to other assets (i.e. customer value) – akin to a CAC

### 2 Content Costs

- Considered as part of Content CAC (return 'on' and 'of'), including reinvestment

### 3 Costs

- Operating Costs and G&A based on proration of total revenues between regular vs. on-demand business – assumed incremental to on-demand business

### 4 S&M Costs

- Assumed 1/3rd of S&M costs represents selling costs attributable to on-demand business based on pro-rata revenues
- Assume brand CAC to cover general marketing

### 5 Development Costs

- All development costs extend life of technology excluded

### 6 CACs

- Reflects required returns on and of contributory assets, but:
  - Excludes PP&E
  - Includes Content

### 7 Discount Rate

- Reflects cost of equity, WARA, risk profile of asset, and heightened risk of future development/perpetual life

# Shockwave Corporation: Weighted Average Returns Analysis

## 1 Tangible Assets

- Based on after-tax cost of debt, including short-term borrowings and ABL rates

## 2 Intangibles

- Based on cost of equity, adjusted for risk profile and finite vs. indefinite life nature of assets

## 4 Brand

- Represents time-weighted average start-up return of 20% and 12% terminal value return

**WARA -- With or Without Approach**

| | Asset | Value | Return (After-tax) | Contribution to WACC |
|---|---|---|---|---|
| 1 | Working Capital | 76 | 2.9% | 0.2% |
| 2 | Fixed Assets | 438 | 6.5% | 2.4% |
| | Brand | 198 | 16.5% | 2.7% |
| 3 | Technology | 161 | 13.5% | 1.8% |
| | Content | 38 | 15.0% | 0.5% |
| 4 | Customers | 175 | 15.0% | 2.2% |
| | License | 32 | 15.5% | 0.4% |
| | Workforce | 24 | 13.5% | 0.3% |
| | Goodwill | 80 | 22.9% | 1.5% |
| | **Enterprise Value** | **1,199** | **WACC** | **12.0%** |

**WARA -- Excess Earnings Approach (Indefinite Life)**

| Asset | Value | Return (After-tax) | Contribution to WACC |
|---|---|---|---|
| Working Capital | 76 | 2.9% | 0.2% |
| Fixed Assets | 438 | 6.5% | 2.4% |
| Brand | 198 | 16.5% | 2.7% |
| Technology | 123 | 16.5% | 1.7% |
| Content | 33 | 15.0% | 0.4% |
| Customers | 175 | 15.0% | 2.2% |
| License | 28 | 15.5% | 0.4% |
| Workforce | 21 | 13.5% | 0.2% |
| Goodwill | 108 | 20.3% | 1.8% |
| **Enterprise Value** | **1,199** | **WACC** | **12.0%** |

**WARA -- Excess Earnings Approach (Finite Life)**

| Asset | Value | Return (After-tax) | Contribution to WACC |
|---|---|---|---|
| Working Capital | 76 | 2.9% | 0.2% |
| Fixed Assets | 438 | 6.5% | 2.4% |
| Brand | 198 | 16.5% | 2.7% |
| Technology | 68 | 13.5% | 0.8% |
| Content | 33 | 15.0% | 0.4% |
| Customers | 175 | 15.0% | 2.2% |
| License | 28 | 15.5% | 0.4% |
| Workforce | 21 | 13.5% | 0.2% |
| Goodwill | 163 | 20.3% | 2.8% |
| **Enterprise Value** | **1,199** | **WACC** | **12.0%** |

## 3 Technology

- Based on cost of equity, adjusted for:
  - Life (indefinite vs finite)
  - Goodwill rate of return
  - Development risk
  - Incremental risk to overall business without technology, including residual value

## 3 Technology

- Purpose and decision:
  - Build vs. Buy
  - Existing finite life vs indefinite future development rights

**Weighted Average Cost of Capital**

| | Value | RRR | Contribution |
|---|---|---|---|
| Working Capital | 75 | 2.9% | 0.2% |
| LT Debt | 325 | 6.0% | 1.6% |
| Equity | 800 | 15.5% | 10.3% |
| | **1,200** | **12.0%** | **12.0%** |

# Shockwave Corporation: Reasonability Check

- ✓ Tradenames are the most valuable asset, followed by customer relationships, then technology
- ✓ Goodwill rate of return is above intangible rates of return
- ✓ Goodwill rate of return is consistent with a start-up type rate of return for the industry
- ✓ The Technology is twice as valuable as its original cost
- ✓ Required rates of returns for all assets are consistent with their risk profile
- ✓ Goodwill approximates 10% of the purchase price (i.e. why pay for goodwill?)

# QUESTIONS?