Yale School *of* Management

Equity Research – Applied Financial Analysis Workshop

COMPANY COVERAGE

i2 Technologies, Inc. (ITWO)

i2 Technologies, Inc

Price (2/26/02) – $5.79

52 Wk – $2.98 – $36.00

Target Price – $6.84

RECOMMENDATION
BUY

Buy – Undervalued by 15%
Hold – Fair valued
Sell – Overvalued by 15%

Time Span – 6 months

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Reduction of Expenses is Realistic and Promising

i2 Technologies has experienced a difficult revenue year, but has embarked on an expense-cutting program, which includes moving all R&D to India. Even with conservative estimates on revenue growth, this company's bottom line looks promising. Examining i2's accounting practices in light of some key accounting issues that have troubled other companies makes i2 seem to even more solid— no accounting surprises here.

Before reading this report, see important disclaimer on the last page

INVESTMENT RATING

We are initiating coverage of i2 Technologies, Inc (Nasdaq – ITWO) with a **BUY** rating. We believe the company's story of cost cutting is realistic and the company's fundamentals are sound. Net income will be impacted in the next few years by a serious reduction in R&D expenses. i2's international connection to R&D facilities in India will serve as a key competitive advantage in the years to come. We also examined i2's accounting numbers in some key areas that have been plaguing equity investors generally. It seems that i2 is using straight forward.

COMPANY OVERVIEW

i2 Technologies, Inc. is a provider of e-business and marketplace software solutions that may be used by enterprises to optimize business processes both internally and among trading partners. Its solutions are designed to help enterprises improve efficiencies, collaborate with suppliers and customers, respond to market demands and engage in dynamic business interactions over the Internet. Its i2 TradeMatrix products consider the conditions of companies to optimize key business processes, from product design to customer relationships. Its product suites include software solutions for supply chain management, supplier relationship management and customer relationship management. The Company also provides content and content management solutions as well as a platform for the integration and administration of private and public electronic marketplaces.

HIGHLIGHTS OF THE LAST QUARTER / LAST YEAR

GENERAL

- *Market leadership in Supply Chain Management*: i2 extended its overall lead in the SCM category. Its license revenue was up over last quarter.
- *Establishing a niche*: Supplier Relationship Management. Launched the suite in Jan 2001. Most of the competitors have now realized a need for this and have emulated i2 with their own products.
- *Leader in Distributed Order Management Solutions*: Customers include BAT, Corporate Express and UPM Kymmene.
- *Technology Advancements*: In October 2001, the company introduced i2 Five. Two, a highly scalable business platform designed to enable companies to quickly and dramatically improve key business metrics such as sales, inventory turns, gross and net margin, and concept-to-cash within their enterprise and across their value chain.

- *Strengthened Board of Directors:* i2 announced the following additions to its Board of Directors: Robert L. Crandall, former AMR chairman and CEO in May 2001; and Michael H. Jordan, general partner at Global Asset Capital, LLC and former chairman and CEO of CBS Corporation and Westinghouse in the first quarter of 2002.

FINANCIAL SNAPSHOT OF THE LAST QUARTER

- Total revenues of $193M, lower than analyst expectations and a 49% decline over last year and flat over the last quarter.
- License Revenue of $72M, higher than market expectations and a 72% decline over last year and a 7% increase over last quarter.
- Service Revenue of $69M, lower than market expectations and a 20% decline over last year and a 7.5% increase over last quarter.
- Maintenance Revenue of $51M, slightly lower than market expectation and an 8% increase over last year and a 1.3% increase over last quarter.

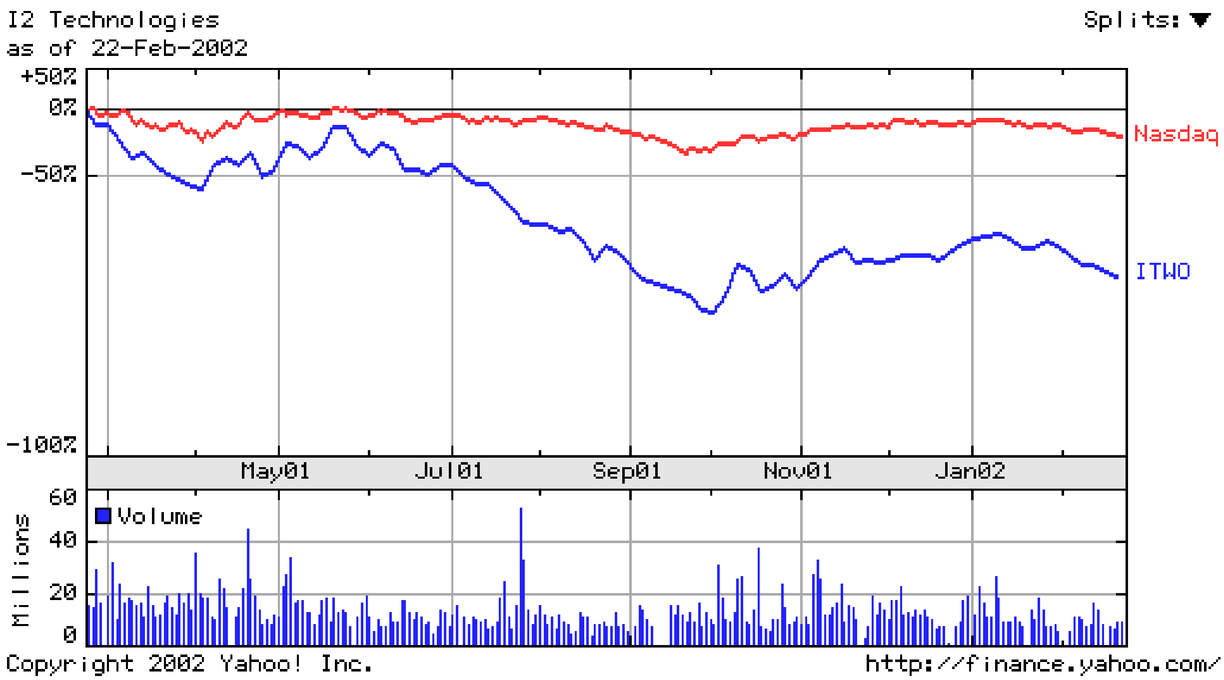
OPERATIONAL SNAPSHOT

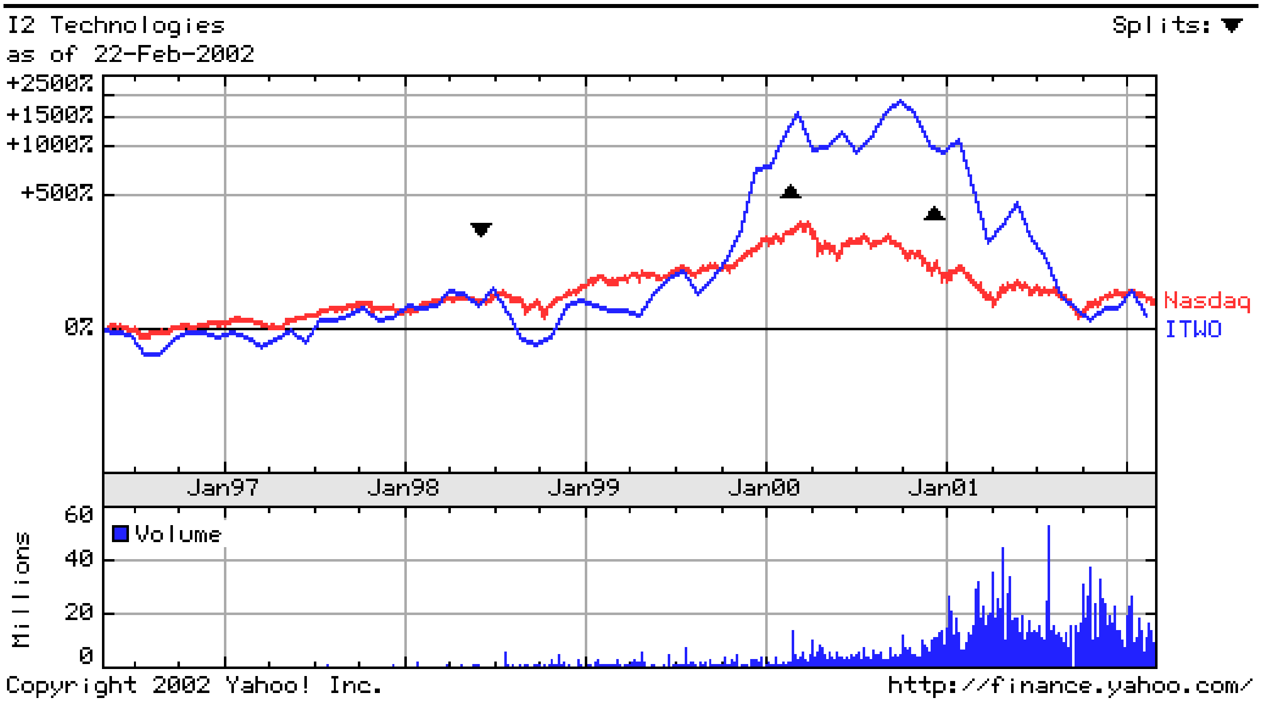
- i2 has initiated closure of 50% of its R&D. Sites are being brought together in an effort to reduce costs.
- Most of the R&D is being done offshore. This is likely to result in a cost reduction of 70% in terms of expenses. A number of employees are being shifted to India and this is scheduled for completion by the first quarter of 2002.
- i2 will continue to spend on R&D. Despite the increase in R&D, they would reduce their overall R&D expenses by shifting most of their R&D operations to India as discussed in the previous point.

SALES SNAPSHOT

- Number of deals increased to 68 from 55.
- Average deal size reduced from $909,000 to $829,000.
- Days sales outstanding was reduced from 85 days to 65 days.
- Productivity of sales executives was up by 65%
- New incentive scheme introduced to sales execs in 2001 will continue through 2002.
- License revenues were at 51% for High Tech, 7% for metals and paper, 20% for Auto and industrial, 10% for CPG and apparel and 12% for others – which includes furniture, utilities, government, etc.

STOCK PERFORMANCE





DISCUSSION OF KEY ACCOUNTING ISSUES

1) Revenue Recognition.

i2 describes its revenue recognition policy as follows:

"Software license revenues are recognized upon shipment, provided fees are fixed and determinable and collection is probable. Revenue for agreements that include one or more elements to be delivered at a future date is recognized using the residual method. Under the residual method, the fair value of the undelivered elements is deferred, and the remaining portion of the agreement fee is recognized as revenue. If fair values have not been established for certain undelivered elements, revenue is deferred until those elements have been delivered, or their fair values have been determined… Service revenues are primarily derived from fees for implementation, consulting and training services and are generally recognized under service agreements in connection with initial license sales and as the services are performed. Maintenance revenues are derived from technical support and software updates provided to customers. Maintenance revenue is recognized ratably over the term of the maintenance agreement. Payments received in advance of revenue recognized are classified as revenue in the Consolidated Balance Sheets" (10K SEC Filing, 2000).

In December 2000 Microstrategy, Inc. was accused of prematurely recognizing revenue from software sales by booking sales before determining the full extent of services it would have to provide in connection with those sales. In the excerpt above, i2 does seem to state that this problem of premature recognition is avoided: "If fair values have not been established for certain undelivered elements, revenue is deferred until those elements have been delivered, or their fair values have been determined." However, there is perhaps some room left to recognize revenue early: "[revenues] are generally recognized under service agreements in connection with *initial* license sales and as the services are performed" (emphasis ours). But this problem of premature recognition of revenues can sometimes be detected since accounts receivable will grow faster than sales. This happens because customers are consistently paying cash much later for the services or goods recorded as cost of sales. In examining the growth rates of i2's revenue and accounts receivable, which are summarized in the table below, we conclude that i2 is probably following a sound revenue recognition strategy.

Revenue Recognition

	1998	1999	2000	2001
Revenue Growth	66%	55%	97%	-12%
Accounts Receivable Growth	67%	23%	89%	-53%

2) Valuing Assets:

Some companies will overstate the value of their assets by decreasing the allowance for doubtful accounts. I2 seems solid on this issue, however, since it shows clearly that it has calculated an allowance for doubtful accounts as roughly 9% of the accounts receivable total.

3) Off-Balance-Sheet Liabilities:

It is difficult to detect off-balance-sheet liabilities, but one piece of evidence is a "restricted cash account" which could be used by the company to cover a liability that is not recorded on the balance sheet. But i2 has no such account and claims that "cash and cash equivalents include cash on hand, demand deposits with financial institutions and short-term time deposits and other liquid investments in debt securities with initial maturities of less than three months." It seems that i2 is not responsible for any off-balance-sheet liabilities. If it is responsible for any of these kinds of liabilities, then the company has buried them deeply in its accounting record.

4) Acquisitions:

One way a parent company can benefit from an acquisition is by adjusting downward the books of the companies they acquire so that a large growth spurt is set to take place in the following year. In this case the acquired company takes a series of charges just before it is acquired. It is difficult to ascertain whether the growth of the parent company the following year comes from its prior operations or from the operations of the newly acquired company. Companies such as General Electric Co. and Tyco International Ltd. have come under scrutiny for this recently. i2 acquired three companies recently: ITLS, SMART and SupplyBase. In millions, i2 paid $7.6, $6.6 and $345.5 for the companies respectively. We leave this as an open issue since the companies were private and we could not obtain accounting information on them that dates prior to the acquisition. This is an issue that we will keep in mind going forward.

VALUATION

Our valuation of $6.84 per share is based on a discounted cash flow model in which the company's strategic outlook was taken into account in revenue and various growth figures. We would like to highlight a few points about the model:

- Senior management expects that the current proportional mix of revenue streams will probably stay constant in the foreseeable future. These proportions have shifted in the company's history, but we will assume here that they stay constant.
- We assume that in 2002 revenue will have 0% growth. This is management's own estimate. A weighted average expected growth of the industries that i2 serves led us to assign a mere 4.8% growth in software license sales in 2003. This is shown in the License Revenue table as shown below. We expect the industry growth to be as mentioned in the table (*Licensed revenues*) leading to an overall growth of 4.86 % in their license revenues.

License Revenues

Industry	**Contribution**	**Growth of industry**	**Weighted growth of revenue**
High Tech	51.00%	8.00%	4.08%
Metals/Paper	7.00%	0.00%	0.00%
Auto and Industrial	21.00%	2.00%	0.42%
CPG & Apparel	9.00%	4.00%	0.36%
All others (1)	12.00%	0.00%	0.00%
Total license revenues			**4.86%**

- We expect the Service and Maintenance revenue to grow at 30%. Companies would continue to invest in the maintenance of their existing systems rather than investing in additional IT infrastructure (License Revenue). This growth combined with the License revenue growth mentioned above would constitute to an overall growth rate of 18% during 2003.
- We expect future revenues to be distributed between License, Service and Maintenance in the region of 46%, 33% and 21%.
- We expect the total revenues to grow by 24% during 2004 and by 20% for years from 2005 to 2008 before achieving a terminal growth rate of 5%. We estimate this from our growth estimate for the industry and given i2's strategic strength in this sector.

- Net income was hit in 2000 by a $1.7B amortization of intangibles and was hit in 2001 by a $2.8B amortization of intangibles in addition to a $4.7B impairment of intangibles charge and a $116MM restructuring charge. We think it was appropriate for i2 to take the amortization expenses and restructuring charges now instead of later. In its recent 10Q filing the management of i2 stated: “we performed an assessment of the carrying values of our identified intangible assets and goodwill recorded in connection with various acquisitions. The assessment was performed because of the significant negative economic trends impacting our current operations and expected future growth rates as well as the decline in our stock price and the market valuations for companies within our industry. Additionally, at the time of our analysis, the net book value of our assets significantly exceeded our market capitalization. Based on this assessment and the consideration of all other available evidence, we determined the decline in market conditions within our industry was significant and not temporary.” This explanation was used to discuss both “impairment” and “amortization” of intangibles.
- Because of the company’s decision to move all R&D to India, senior management forecasted 2002’s R&D expense to be only 14% of revenue, in contrast to about 25% in previous years. We consider this to be a good strategic move. i2’s strong Indian ties would ensure a smooth transition and would help towards this reduction in expenses. In the valuation is included a a sensitivity analysis regarding the various levels of success that the company may attain in decreasing R&D expense.
- We performed a regression analysis to arrive at a 2.29 equity beta. This was close to other beta figures we found. This high beta led to a cost of equity of 17.79% and to a WACC of 15.97%.
- In addition to the “R&D as percent of revenue” sensitivity analysis that we already mentioned above, we performed a sensitivity analysis with terminal growth rate as well.

i2 Technologies DCF Valuation

(in thousands)

Income Statement

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Revenue										
Software licenses	$ 141,766	234,316	352,597	709,177	457,674	457,674	479,642	599,553	749,441	899,329
Services	58,218	91,726	147,893	271,009	320,926	320,926	417,204	521,505	625,806	750,967
Maintenance	21,792	43,115	70,620	146,139	206,999	206,999	269,099	322,918	387,502	465,003
Total Revenue	221,776	369,157	571,110	1,126,325	985,599	985,599	1,165,945	1,443,976	1,762,749	2,115,299
Cost of Revenues										
Cost of software licenses	2,746	7,967	17,981	53,331	66,572	29,568	34,978	43,319	52,882	63,459
Amortization of acquired technology	0	0	0	29,054	48,046	0	0	0	0	0
Cost of services and maintenance	48,422	77,459	125,934	234,191	298,318	216,832	256,508	317,675	387,805	465,366
Total Cost of Revenues	51,168	85,426	143,915	316,576	412,936	246,400	291,486	360,994	440,687	528,825
S&M	77,071	129,978	194,752	390,111	465,861	326,103	361,443	447,633	546,452	655,743
R&D	57,392	94,199	132,278	217,938	290,419	137,984	163,232	202,157	246,785	296,142
G&A	24,984	38,191	53,188	86,888	107,992	88,704	104,935	129,958	158,647	190,377
Amortization of Intangibles	0	0	0	1,724,551	2,792,793	0	0	0	0	0
In-process R&D and acquisition expen	9,306	7,618	6,552	102,373	12,700	19,712	23,319	28,880	35,255	42,306
Impairment of intangibles	0	0	0	0	4,740,519	0	0	0	0	0
Restructuring charges	0	0	0	0	116,541	0	0	0	0	0
Total costs and expenses	219,921	355,412	530,685	2,838,437	8,939,761	818,902	944,415	1,169,621	1,427,827	1,713,392
Operating Income (loss)	1,855	13,745	40,425	(1,712,112)	(7,954,162)	166,697	221,530	274,355	334,922	401,907
Other Income, net	3,309	8,753	7,642	18,227	(60,078)	19,712	23,319	28,880	35,255	42,306
Non-cash settlement	0	0	0	(22,412)	0	0	0	0	0	0
Income (loss) before taxes	5,164	22,498	48,067	(1,716,297)	(8,014,240)	186,409	244,848	303,235	370,177	444,213
Tax (provision) benefit	(6,916)	(17,279)	(24,552)	(35,716)	262,992	0	0	0	0	0
Net Income (loss)	(1,752)	5,219	23,515	(1,752,013)	(7,751,248)	186,409	244,848	303,235	370,177	444,213
Revenue Growth Rate										
Software licenses	-	65%	50%	101%	-35%	0%	4.8%	25%	25%	20%
Services	-	58%	61%	83%	18%	0%	30%	25%	20%	20%
Maintenance	-	98%	64%	107%	42%	0%	30%	20%	20%	20%
Total Revenue	-	66%	55%	97%	-12%	0%	18%	24%	22%	20%
Tax rate						35%	35%	35%	35%	35%

as % of Total Revenue	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Revenue										
Software licenses	64%	63%	62%	63%	46%	46%	46%	46%	46%	46%
Services	26%	25%	26%	24%	33%	33%	33%	33%	33%	33%
Maintenance	10%	12%	12%	13%	21%	21%	21%	21%	21%	21%
Total Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Revenues										
Cost of software licenses	1%	2%	3%	5%	7%	3%	3%	3%	3%	3%
Amortization of acquired technology	0%	0%	0%	3%	5%	0%	0%	0%	0%	0%
Cost of services and maintenance	22%	21%	22%	21%	30%	22%	22%	22%	22%	22%
Total Cost of Revenues	23%	23%	25%	28%	42%	25%	25%	25%	25%	25%
S&M	35%	35%	34%	35%	47%	33%	31%	31%	31%	31%
R&D	26%	26%	23%	19%	29%	14%	14%	14%	14%	14%
G&A	11%	10%	9%	8%	11%	9%	9%	9%	9%	9%
Amortization of Intangibles	0%	0%	0%	153%	283%	0%	0%	0%	0%	0%
In-process R&D and acquisition expen	4%	2%	1%	9%	1%	2%	2%	2%	2%	2%
Impairment of intangibles	0%	0%	0%	0%	481%	0%	0%	0%	0%	0%
Restructuring charges	0%	0%	0%	0%	12%	0%	0%	0%	0%	0%
Total costs and expenses	99%	96%	93%	252%	907%	83%	81%	81%	81%	81%
Operating Income (loss)	1%	4%	7%	-152%	-807%	17%	19%	19%	19%	19%
Other Income, net	1%	2%	1%	2%	-6%	2%	2%	2%	2%	2%
Non-cash settlement	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%
Income (loss) before taxes	2%	6%	8%	-152%	-813%	19%	21%	21%	21%	21%
Tax (provision) benefit	-3%	-5%	-4%	-3%	27%	0%	0%	0%	0%	0%
Net Income (loss)	-1%	1%	4%	-156%	-786%	19%	21%	21%	21%	21%

Selected Balance Sheet Items

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cash and equivalents	137,351	62,611	454,585	739,241	538,218	611,071	722,886	895,265	1,092,904	1,311,485
Short-term investments	14,538	93,387	124,806	84,086	187,977	187,977	187,977	187,977	187,977	187,977
Accounts receivable	76,616	127,677	157,586	298,465	140,246	275,968	326,465	404,313	493,570	592,284
Total Current Assets	237,472	298,152	763,452	1,198,781	961,814	965,887	1,142,626	1,415,097	1,727,494	2,072,993
Premises and Equipment	23,784	31,628	50,483	124,852	129,475	169,096	215,967	274,015	344,877	429,912
Accounts payable	7,983	11,675	20,039	49,628	43,681	39,424	46,638	57,759	70,510	84,612
Deferred revenue	31,744	51,229	72,617	165,689	151,624	147,840	174,892	216,596	264,412	317,295
Total current liabilities	69,595	115,374	178,413	422,054	487,518	344,960	408,081	505,392	616,962	740,355
Long-term debt	584	0	350,000	350,000	410,930	410,930	410,930	410,930	410,930	410,930
Working capital	30,526	120,167	130,454	37,486	(63,922)	9,856	11,659	14,440	17,627	21,153
Change in working capital	-	89,641	10,287	(92,968)	(101,408)	73,778	1,803	2,780	3,188	3,525

as % of Total Revenue	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cash and equivalents	62%	17%	80%	66%	55%	62%	62%	62%	62%	62%
Accounts receivable	35%	35%	28%	26%	14%	28%	28%	28%	28%	28%
Total Current Assets	107%	81%	134%	106%	98%	98%	98%	98%	98%	98%
Accounts payable	4%	3%	4%	4%	4%	4%	4%	4%	4%	4%
Deferred revenue	14%	14%	13%	15%	15%	15%	15%	15%	15%	15%
Total current liabilities	31%	31%	31%	37%	49%	35%	35%	35%	35%	35%

Cash Flow

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
NI	(1,752)	5,219	23,515	(1,752,013)	(7,751,248)	186,409	244,848	303,235	370,177	444,213
Depreciation and Amortization	5,190	12,210	16,430	1,781,000	2,840,000	55,802	71,269	90,425	113,810	141,871
Deprec and Amort as % Premises and Equi	22%	39%	33%	1426%	2193%	33%	33%	33%	33%	33%
Other non-cash expenses					4,740,519					
Change in Working Capital	-	89,641	10,287	(92,968)	(101,408)	73,778	1,803	2,780	3,188	3,525
Cash Flow from Operations		(72,212)	29,658	121,955	(69,321)	168,432	314,314	390,880	480,799	582,558
Capital Expenditures	15,750	19,710	33,500	87,880	88,704	59,136	69,957	86,639	105,765	126,918
Capex as % of sales	7%	5%	6%	8%	9%	6%	6%	6%	6%	6%
Cash Flow from Investing Activities	15,750	19,710	33,500	87,880	88,704	59,136	69,957	86,639	105,765	126,918
Free Cash Flow		(91,922)	(3,842)	34,075	(158,025)	109,297	244,357	304,241	375,034	455,640

DCF

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Free Cash Flows	0	-91922	-3842	34075	-158024.91	109296.56	244357.4	304241.025	375034.168	455640.42
Discounted Free Cash Flows						94,249.6	181,707.0	195,090.9	207,378.2	217,263.9
WACC						15.97%	15.97%	15.97%	15.97%	15.97%
Year						1	2	3	4	5

Cost of Capital

WACC	15.97%
Debt/Total Capital	14.3%
Cost of Debt	7.81%
Risk Free Rate, R_f	4.85%
Market Return R_m	10.50%
Market Risk Premium, $(R_m - R_f)$	5.65%
Equity Beta	2.29
Cost of Equity	17.79%
Tax Rate	35.00%

Valuation

Present Value of Terminal Value	$1,955,238
Present Value of Future Cash Flows	$1,359,473
Enterprise Value	$3,314,710
Net Debt	$410,930
Equity Value	$2,903,780
Shares Outstanding	424,300
Price per share	$6.84

		WACC				
		13.97	14.97	15.97	16.97	17.97
	3%	7.67	6.78	6.04	5.41	4.88
	4%	8.24	7.23	6.40	5.70	5.11
Terminal value	5%	8.95	7.77	**6.84**	6.04	5.39
	6%	9.83	8.44	7.34	6.44	5.71
	7%	10.96	9.27	7.96	6.92	6.08

shaded scenarios = above current price

		WACC				
		13.97	14.97	15.97	16.97	17.97
	10%	10.83	9.44	8.32	7.39	6.61
R&D as % of revenue 2002 - 2008	12%	9.90	8.61	7.58	6.72	6.01
	14%	8.96	7.79	**6.84**	6.06	5.40
	16%	8.03	6.96	6.10	5.39	4.79
	18%	7.10	6.14	5.36	4.72	4.19

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