

Parametric Technology Corp. (NASDAQ: PTC)

Industry: Internet Software and Services/ Software – Application/Systems Software

Rating: Buy

Target: \$38.50

Date: Jan 6, 2015



Executive Summary

Business Summary

Parametric Technology Corporation, otherwise known as PTC is a company that provides technology solutions to other businesses to improve the way they operate their products. PTC offers solutions in the form of software and service and operates in around 30 countries. They operate in several markets, of which include computer-aided design (CAD), product/application/service lifecycle management in addition to the growing Internet of Things (IoT). They are currently servicing over 28,000 customers across Asia, Europe and the Americas and impact several industries, including retail, medical device, aerospace and automotive.

PTC has experienced steady revenue growth over the past decade, in part due to good business practices and a growing need for smart connected devices. PTC provides companies with the technological advantage they need to become more efficient and recognize their full growth potential.

Business Drivers

PTC's revenue is expected to continue to grow steadily over the next decade for several reasons. PTC has already established itself in the technological solutions market and has already worked with a number of manufacturers from a diversity of industries. With the IoT concept taking shape over the next decade and a strong management team, PTC is in a good position to benefit from the growth due to the recent acquisitions of ThingWorx and Axeda Corporation.



Key Statistics

	Current		2012	2013	Current
Price	\$35.40	Enterprise Value	\$2.494B	\$3.39B	\$4.25B
Date	01 06, 2015	Debt / Enterprise Value	0.15	0.08	0.14
52 Week Range	332.79-\$40.40	Debt / Equity	1.25	0.97	1.58
Shares Outstanding	116,000,000	Price / Book Value	3.00	3.68	4.60
Market Capitalization	\$3.97B	Price / Earnings	30.60	24.00	28.15
Enterprise Value	\$4.24B	Cash	\$389.6M	\$249.1M	\$293.6M
Beta	2.07	ROE	-4.23%	17%	16.28%

Balance Sheet (\$US, thousands)	2010	2011	2012	2013	LTM
Cash & Cash Equivalents	\$240,253	\$167,880	\$489,543	\$241,913	\$293,654
Current Assets (Excluding Cash)	\$328,004	\$424,380	\$389,610	\$680,216	\$438,520
Total Assets	\$1,307,064	\$1,630,000	\$1,791,634	\$1,828,906	\$2,200,000
Current Liabilities	\$452,994	\$465,320	\$481,740	\$336,913	\$382,544
Total Debt	-	\$200,000	\$370,000	\$258,120	\$611,875
Total Liabilities	\$559,760	\$806,990	\$994,380	\$902,430	\$1,346,065
Total Equity	\$747,304	\$822,690	\$797,260	\$926,480	\$853,889
Income Statement (\$US, thousands)	2010	2011	2012	2013	LTM
Income Statement (\$US, thousands) Revenue	2010 \$1,010,049	2011 \$1,166,949	2012 \$1,255,679	2013 \$1,293,541	LTM \$1,357,000
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Revenue	\$1,010,049	\$1,166,949	\$1,255,679	\$1,293,541	\$1,357,000
Revenue EBITDA	\$1,010,049 \$145,840	\$1,166,949 \$113,787	\$1,255,679 \$148,399	\$1,293,541 \$175,456	\$1,357,000 \$271,570
Revenue EBITDA Depreciation & Amortization	\$1,010,049 \$145,840 \$62,180	\$1,166,949 \$113,787 \$62,394	\$1,255,679 \$148,399 \$66,471	\$1,293,541 \$175,456 \$76,551	\$1,357,000 \$271,570 \$77,310



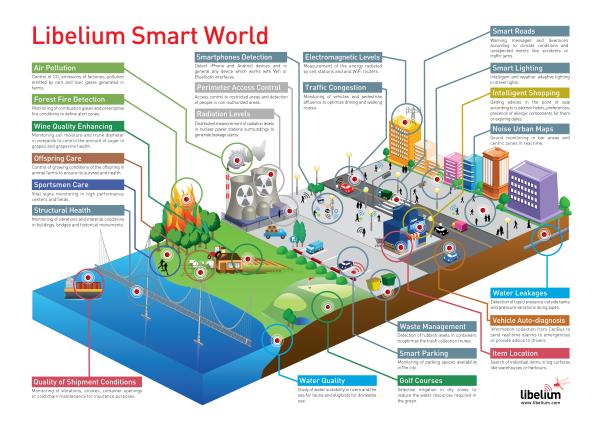


Internet of Things

Adoption of IoT

A recent McKinsey report stated that IoT refers to the "use of sensors, actuators, and data communications technology built into physical objects - that enable those objects to be tracked, coordinated, or controlled across a data network or the Internet". IoT is composed of three major parts, which include: (1) taking data from the physical object (2) making the data accessible on a network and (3) taking action based on given data (McKinsey IoT). The adoption of IoT means that we will see an increasing number of devices connected to the Internet, potentially upwards of 26+ billion by 2020 according to a Gartner report. Companies like Apple for example are creating smart wearable technology such as "Google Glass" that allow you to access a variety of mobile internet applications using voice automation. In a couple of years, we could definitely see an improvement in supply chain management processes with an increase in automatic ordering and supply notification systems.





IoT has the potential to make our cities "smarter" by connecting our energy and transportation networks to information systems, which may allow them to operate more efficiently. As we transition towards a highly-connected environment with more smart devices, mobile Internet sources and knowledge automation, we can expect that providers of technology solutions/software, semiconductors/microchips and electronic device manufacturing will experience growing demand for their services.

Economic Impact

The adoption of IoT has the potential to make significant improvements in a number of industries. The industries expect to be impacted the most by IoT include health care, manufacturing, electricity, urban infrastructure, security and resource extraction. Health care companies may spend an additional \$1.1 – 2.5 trillion annually by 2025 on IoT devices alone, that could go towards treating various chronic diseases, improve patient monitoring and sensors used to reduce counterfeit drugs. Manufacturing



companies may spend an additional \$0.9 - 2.3 trillion annually by 2025 on IoT devices and solutions for global manufacturing processes. The implementation of IoT has the potential to reduce operating and maintenance costs in addition to maximizing input inefficiencies for large manufacturers worldwide. Overall, it is clear that the economic impact of IoT will be significant and total nearly \$6.7 trillion by 2025, according to the recent McKinsey study.

Acquisitions

Past Acquisitions

Since inception, PTC has acquired a number of businesses to fulfill different niche markets. In 2005, they acquired Arbortext, a leader in dynamic publishing. Later that year they acquired Polyplan to enhance their manufacturing process management in addition to Aptavis for technology and retail. In 2006, they acquired Mathsoft for industry engineering and ITEDO for technical illustration solutions. In 2007, they acquired CoCreate to enter the CAD and product development management market. In 2008, Synapsis Technology was acquired to develop environmental compliance software followed by Relex Software the year after to create more powerful and reliable solutions. In 2011, PTC acquired MKS to fulfill the application of software in lifecycle management. Later that year they acquired 4CS to create warranty management solutions followed by Servigistics the year after for service lifecycle management solutions. In 2013, they acquired Enigma for the application of service information delivery followed by NETIDEAS later that year for product lifecycle managed services.

Recent Acquisitions

In 2014, PTC acquired ThingWorx, a company known for its leading software platform that is used to build M2M (machine-to-machine) and IoT applications for the connected world. The platform is complete, reduces run time, cost and risk which makes ThingWorx a key player in the IoT era. With ThingWorx, PTC is able to help customers build smarter and well-connected products to create new value for them. Also over the summer PTC signed an agreement to acquire Axeda Corporation, a company known for its ability to securely connect sensors and machines to the cloud. With Axeda fully acquired by around January 2015, PTC will be able to offer its manufacturers secure connectivity in addition to the business value from machine data to give them an edge in the connected world. Later in the year, PTC acquired Atego to create model-based systems for engineering applications.



Management

PTC's CEO, James Heppelmann has been involved in the information technology industry since 1988. Before his time at PTC, James was a co-founder of Windchill Technology and later became CTO at Metaphase Technology. He graduated with a degree in Mechanical Engineering that had a focus on CAD (computer-aided design). Jeffrey Glidden held similar roles at Airvana and RSA Security before becoming CFO at PTC. PTC has a fairly strong management team composed of executives with plenty of experience in their respected industry.

Revenue Model

PTC is a provider of technology solutions whose primary focus is to help manufacturers take advantage of the Internet of Things. Revenue comes from its five solution lines in addition to the variety of products they offer.

Solution Lines

PLM (product lifecycle management)

PLM is responsible for helping with product development by managing complex processes such as product data, visualization and quality management. By enabling PLM, enterprises will have lower development costs, be faster to enter market and improved product quality.

CAD (computer aided design)

PTC's CAD allows enterprises to create visual 3D prototypes to improve product quality and speed entry to market.

ALM (application lifecycle management)

ALM is responsible for managing software applications throughout product development, it enables manufacturers to coordinate between teams and automate some of the processes.



SCM (supply chain management)

PTC's SCM allows manufacturers to coordinate product development, supply chain and sourcing by providing informative cost modelling solutions. By enabling SCM, manufacturers reduce costs and improve efficiency.

SLM (service lifecycle management)

SLM is responsible for helping enterprises become strategic service organizations by providing insight into an extended service network.

Products

PTC Creo

PTC Creo is a set of software that allows for 2D CAD and 3D CAD visualization of product designs.

PTC Windchill

PTC Windchill manages PTC Creo and CAD-based applications and stores product information while also allowing the user to make changes to improve efficiency.

PTC Arbortext

PTC Arbortext is a dynamic publishing solution that allows enterprises to share technical information.

PTC Mathcad

PTC Mathcad is an easy-to-use software application that allows math and engineering calculations to be presented in a clear and professional manner.

PTC Integrity

PTC Integrity is a type of ALM software that allows enterprises to understand the complexity of product and application development.

PTC Servigistics

PTC Servigistics allows manufacturers and service providers the ability to use service intelligence to improve product lifecycles.

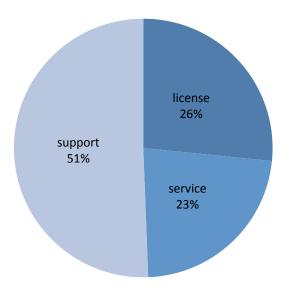
ThingWorx

ThingWorx is a platform used to build and run applications for smart devices. It allows enterprises to take their position in the increasingly connected world.





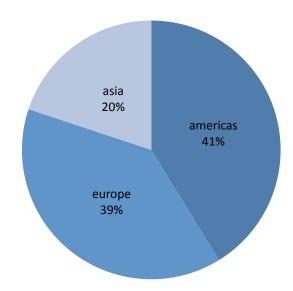
Revenue Breakdown by Type



PTC's revenue comes from operations in 2 segments: (1) software products and (2) services. Software products includes license and support revenue for products excluding those that have to do with training. On the other hand, service includes revenue earned through consulting, implementation and licenses for training-based products. In 2013, around half of PTC's revenue came from support contracts that are renewed annually. Because of this PTC has a significant portion of unearned revenue as payment schedules may differ between contracts. With that said, revenue recognized in a current period could be due to contracts made in this period or the one before. As a safeguard, PTC has taken the necessary measures to obtain appropriate proprietary rights to protect their software products and guidance.

Revenue by Continents

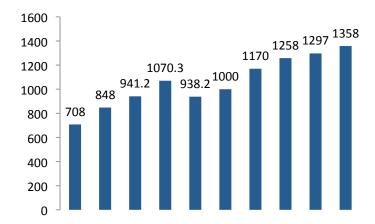




A significant portion of PTC's revenue comes from clientele located in Europe and the Americas. License revenue in the Americas grew by around 14% over the previous year and management is hopeful that favourable macroeconomic conditions will further this growth into future years. Although revenue from Europe decreased over the past year, management expects a recovery due to various economic indicators. Revenue from the Asia (Pacific Rim and Japan) are also expected to increase, but like Europe it will fluctuate year-to-year due to changes in foreign exchange currency rates.

Revenue Growth from 2005 – 2014 (in millions \$)





PTC's revenue (in millions) has grown steadily over the past couple of years. This trend is expected to continue given the expansion of the IoT market and PTC's broad range of expertise due to past acquisitions.

Business Risks

There are several risks that could significantly affect the company's earnings. Firstly, the opportunity to profit from IoT growth may attract larger competitors who could take a significant portion of the market share. With more competition, not only would marketing expenses go up but also research and development costs to ensure that their products can compete. Unsteady foreign exchange currency rates also pose a threat since much of PTC's revenue comes from customers outside of the US. Also since PTC 's revenue is based on a perpetual license model (subscription model) the earnings may not reflect the number of sales made at that time. This is due to the GAAP principles under this model; only a small portion of revenue is recognized at the time of sale whereas the rest can only be accounted for if the project has been completed which may or may not be in time for the upcoming quarterly report.



Valuation Summary

DCF

PTC (Parametric Technology Corporation)															
NASDAQ: PTC S in thousands	2011	2012	2013	unaudited fo	orecasted ->	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total revenue % growth over prior year	1,166,949	1,255,679 7.60%	1,293,541 3.02%	1,356,967 4.90%	1,365,000° 0.59%	1505441 10.29%	1586740 5.40%	1673181 5.45%	1765123 5.50%	1862945 5.54%	1967059 5.59%	2077904 5.64%	2195950 5.68%	2321704 5.73%	2455707 5.77%
Total cost of revenue % growth over prior year % of revenue	356,768 30.57%	372,128 4.31% 29.64%	373,039 0.24% 28.84%	373,683 0.17% 27.54%	380,518 1.83% 27.88%	387,967 1.96% 25.77%	396,076 2.09% 24.96%	404,899 2.23% 24.20%	414,491 2.37% 23.48%	424,912 2.51% 22.81%	436,229 2.66% 22.18%	448,512 2.82% 21.58%	461,838 2.97% 21.03%	476,290 3.13% 20.51%	491,956 3.29% 20.03%
Gross margin	810,181	883,551	920,502	983,284	984,482	1,117,474	1,190,663	1,268,283	1,350,632	1,438,033	1,530,830	1,629,392	1,734,112	1,845,414	1,963,750
Total operating expenses % of revenue	696,394 59.68%	735,152 58.55%	745,046 57.60%	754,581 55.61%	767,948 56.26%	781,682 51.92%	795,795 50.15%	810,301 48.43%	825,211 46.75%	840,539 45.12%	856,299 43.53%	872,505 41.99%	889,172 40.49%	906,315 39.04%	923,950 37.62%
EBITDA Depreciation and amortization % increase over previous year	113,787 62,394	148,399 66,471 6.53%	175,456 76,551 15.16%	228,703 77,307 0.99%	216,534 83153 7.56%	335,793 89441 7.56%	394,868 96205 7.56%	457,982 103480 7.56%	525,421 111305 7.56%	597,494 119722 7.56%	674,531 128776 7.56%	756,887 138514 7.56%	844,940 148989 7.56%	939,099 160255 7.56%	1,039,801 172374 7.58%
EBIT Income tax % of EBIT	51,393 -17,540 -34.13%	81,928 156,130 190.57%	98,905 19,120 19.33%	151,396 52,570 34,72%	133,381 78149 58.6%	246,351 144339 58.6%	298,663 174989 58.6%	354,502 207705 58.6%	414,116 242634 58.6%	477,772 279930 58.6%	545,755 319762 58.6%	618,373 362309 58.6%	695,951 407763 58.6%	778,844 456331 58.6%	867,427 508232 58.6%
Net Income/ Tax-adjusted EBIT Plus: Depreciation and amortization Less: Capital expenditures % increase over previous year Less: Change in net working capital	68,933 62,394 27,817 -45,005	-74,202 66,471 31,413 12,93% -84,635	79,785 76,551 29,328 -6.64% -75,310	98,826 77,307 25,275 -13.82% -74,266	55,232 83,153 24641 -2.51% -70,196	102,012 89,441 24022 -2.51% -83,109	123,674 96,205 23419 -2.51% -85,346	146,797 103,480 22831 -2.51% -89,470	171,482 111,305 22258 -2.51% -95,591	197,842 119,722 21700 -2.51% -100,236	225,993 128,776 21155 -2.51% -105,849	256,063 138,514 20624 -2.51% -112,048	288,188 148,989 20107 -2.51% -118,244	322,513 160,255 19602 -2.51% -125,048	359,195 172,374 19110 -2.51% -132,306
Unlevered free cash flow	148,515	45,491	202,318	225,124	183,940	250,541	281,806	316,915	356,120	396,100	439,463	486,002	535,315	588,215	644,765
Year PV of FCF					1 166115	2 204335	3 207562	4 210801	5 213924	6 214882	7 215304	8 215030	9 213896	10 212257	11 2799553.1
WACC	0.1073														
Enterprise Value (in thousands) Total debt Total cash	4873659 611800 293,654														
Enterprise Value (reg. \$) Total debt (reg. \$) Total cash (reg. \$) Total cash (reg. \$) Shares outstanding Equity Value (reg. \$)	\$ 4,873,659,439 \$ 611,800,000 \$ 293,654,000 118330000 \$ 4,555,513,439														
Share price	\$ 38.50														

Forecasting Revenues and Expenses

To forecast revenue, future costs, depreciation and CAPEX I used an average of growth rate calculated using values from 2012 to 2014 reports. This method was used to reflect the steady growth predicted by economic indicators for companies in the IoT industry. The revenue growth also represents the returns from past and future acquisitions; it was noted earlier in the report that PTC is constantly adding new companies and products to broaden its offerings to its clientele.

In addition, cost of revenue expenses were analyzed as a "% of total revenue" starting with around 29% respectively and are expected to decrease to 20% by 2025 as newer and more efficient technology come into play. It was also noted in the Garter IoT report that "80% of IoT supplier revenue will be [eventually] derived from services". Combining both PTC's "support" and "supplier" revenues in year 2025, it satisfies the revenue proportion suggested by the report.

Forecasting Unlevered Free Cash Flow

To calculate unlevered cash flow for PTC, I assumed that CAPEX would follow its past trend because this tends to be fairly constant for tech companies. However, since PTC has a history for acquiring 1-2



companies per year, the respective forecasted CAPEX values may not be representative. For the remainder of the free cash flow calculation, I used an average over the 3 previous periods to forecast values for current assets (net cash) and current liabilities (net debt).

Terminal Value Calculation	
FCFn g r (WACC)	644,765 0.03 0.1073
Terminal Value	8590721
n (# of years forecasted) Present Value of Terminal Value	11 2799553.086

Terminal Value Assumptions

To calculate the terminal value, a growth rate of 3% was used as a Gartner report suggested a 3.2% worldwide increase in IT spending. For the remainder of the calculation, the WACC value was obtained from a separate analysis while the FCF was taken from the final forecasted year, 2025.

Income Tax (annual report)	2011	2012	2013 2014	ΙE
Statutory federal income tax rate	35%	35%	35%	35%
Change in valuation allowance	3%	103%	-32%	
Foreign rate differences	-15%	-16%	-26%	
Federal and state research and development credit	-5%	-1%	-1%	
State income taxes, net of federal tax benefit	-2%	0%	1%	
Tax audit and examination settlement	0%	1%	-1%	
Foreign withholding tax	0%	3%	5%	
Subsidiary reorganization	1%	3%	0%	
Other, net	1%	1%	5%	
Other	-5%	7%	9%	
Effective income tax rate	18%	129%	-14%	
Average income tax rate	44%			
Average income tax rate based on EBIT Average income tax rate based on EBIT last 2 ye	59% 105%			
Use this to forecast FCF	58.59%			

Forecasting Income Tax Rate

Forecasting the income tax rate was difficult due to fluctuations in PTC's "change in valuation allowance" that is reflective of deferred tax liabilities from acquisitions. In addition, I noticed that the actual past tax rates differ significantly from the federal 35% so this could not be used to forecast the rate for future years. Also as PTC continues to expand globally, the "foreign rate differences" portion may increase as well. Since income tax rate in the annual reports is based on pre-tax income, I wanted



to see how the rate compared to EBIT. While the average income tax rate based on the annual report was 44%, it was merely 5% higher based on EBIT. Therefore an income tax rate of around 52% of EBIT was used to calculate net income. While this may be significantly overstated in certain years, it may compensate for any overestimation regarding growth and projection of sales.

WACC	
K _{rf} (Risk free rate)	0.02
b (Levered beta)	2.07
RP (Risk premium)	0.03
K _E (Cost of equity)	0.0821
T (Marginal tax rate)	0.35
Total debt	611.8
Total equity/ Mkt Cap	4390
D (Book value of company's debt)	0.12
E (Market cap)	0.88
Before tax cost of debt	0.44
K _D (Cost of debt/After tax cost of debt)	0.29
Cost of capital for equity	0.0721
Cost of capital for debt	0.0352
WACC	0.1073
WACC %	10.73%

WACC Assumptions

I assumed a risk-free rate of 2.18% as that was the market interest rate on a 10 year US treasury bond taken from Bloomberg. The levered beta value of 2.07 was obtained from Yahoo Finance around the same time. To calculate the market risk premium I added the expected growth rate of 3% from the terminal value calculation to the value of 2% expected GDP growth to find the return on market. For simplicity I used the marginal federal tax rate of 35% for the calculation since I had already overestimated it while forecasting free cash flows. Debt was calculated using current values from Yahoo Finance while the average effective income tax rate from the annual report was used as the before tax cost of debt.



Comparables Analysis

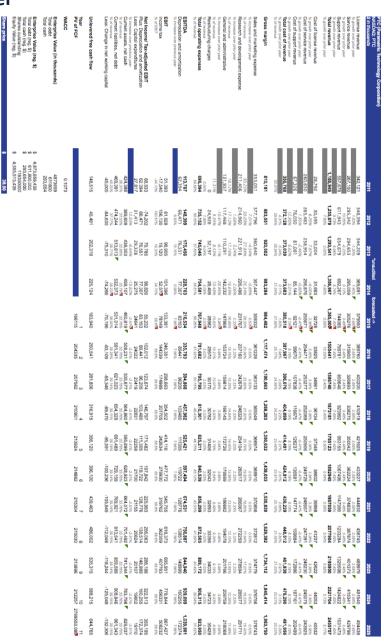
		<u>Enterprise</u>		Last 12	2 Month		Price/			
Company	Mkt Cap	<u>Value</u>		<u>EBITDA</u>	EV/EBITDA		<u>Sales</u>	<u>Sales</u>	ROE%	
			_							
Autodesk	\$ 12,780.00	\$ 11,680.00	\$	310.90	37.57x	\$	2,430.00	5.27x	3.61%	
Oracle Corporation	\$ 189,090.00	\$ 174,250.00	\$	16,940.00	10.29x	\$	38,820.00	4.87x	23.68%	
QAD Inc.	\$ 334.00	\$ 291.20	\$	18.68	15.59x	\$	289.07	1.00x	4.87%	
Hewlett-Packard Company	\$ 71,940.00	\$ 67,390.00	\$	13,150.00	5.12x	\$	111.45	0.65x	17.99%	
ANSYS Inc.	\$ 7,680.00	\$ 6,896.00	\$	430.84	16.00x	\$	936.02	8.31x	11.54%	
Kofax	\$ 640.76	\$ 581.35	\$	26.70	21.78x	\$	298.58	2.26x	3.70%	
SAP	\$ 13,370.00	\$ 15,070.00	\$	1,090.00	13.83x	\$	10,150.00	1.29x	18.97%	
Mean	\$ 42,262.11	\$ 39,451.22	\$	4,566.73	17.17x	\$	7,576.45	3.38x	12.05%	
Median	\$ 12,780.00	\$ 11,680.00	\$	430.84	15.59x	\$	936.02	2.26x	11.54%	
						_				
PTC	\$ 3,920.00	\$ 4,240.00	\$	297.24	14.26x		\$1,360.00	2.89x	16.28%	

The EV/EBITDA ratio suggests that PTC is slightly undervalued relative to its peers, however the mean may be affected by the inclusion of a sample of companies with a wide range of market caps. PTC's price/sales ratio also indicate the company may be undervalued relative to other companies in the application software industry. Although it appears that PTC has been financed mostly by debt indicated by its debt/equity ratio of 1.58, the ROE value indicates that a significant return has been generated from the funds contributed by it's shareholders.



Appendix

Full DCF Model





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