



PTC Inc.  
| Nasdaq: PTC |

INVESTMENT RESEARCH REPORT

*"The Accounting of Things"*

RECOMMENDATION: *Strong Sell*



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## Spruce Point Capital Is An Industry Recognized Research Activist Investment Firm Founded In 2009

- Founded by Ben Axler, a former investment banker with 16 years experience on Wall Street
- Ranked the #1 Short-Seller in the world by [Sumzero](#) after a comprehensive study of 12,000 analyst recommendations dating back to 2008 (March 2015)
- Ranked the #13 Most Influential FinTweeter on Twitter according to [Sentieo analysis](#) (Dec 2016)

## Spruce Point's Track Record of Identifying Technology Companies Struggling To "Transform"

			PTC, Inc.
Report Date	<a href="#">4/23/15</a>	<a href="#">4/13/16</a>	3/23/17
Company Promotion	Best of breed ATM manufacturer capable of making a hardware to software transition	Revenue growth high single digits, >10% Adj EBITDA, FCF of ~20%	IoT "big dog" business and successful conversion to subscription model will result in 10% growth CAGR, Non-GAAP margins of 30%, 95% recurring revenues
Our Criticism	GAAP/Non-GAAP metric diversion, inability to sustain operating cash flow, mounting competition and technology disintermediation, bad acquisitions, insider selling and overvaluation. Nobody would acquire NCR	Technology disintermediation leading to deflationary pricing, inability to reconcile GAAP/Non-GAAP metrics, aggressive accounting and cash flow overstatement, transactions of dubious quality (Abacus), insider liquidation and overvaluation	Technology disruption in core business leading to deflationary pricing, hyper promotion of IoT money losing business, aggressive accounting and reduced disclosures leading to less transparency, extreme GAAP/Non-GAAP divergence, frequent reclassifications, dubious restructuring charges, insider selling and overvaluation
Spruce Point Successful Outcome	<a href="#">Failed strategic alternatives and inability to find a buyer</a> resulted in NCR having to issue \$820m of perpetual convertible preferred stock w/5.5% coupon to <a href="#">Blackstone</a> . NCR's cash flow declined YoY as we forecasted. Stock fell -35%	Sabre has twice reduced financial goals. FCF was revised from \$375m to \$360m and now \$350m; its <a href="#">CEO resigned</a> . The Company has even stated it cannot reasonably offer GAAP guidance without <a href="#">unreasonable effort</a> . Stock has declined -26%	TBD





## *Executive Summary*



## *Quick Research Highlights Driving Our Strong Sell Opinion And 50% - 60% Downside Target:*

**PTC's Conversion Story From Perpetual Licenses To Subscription Model Is Late To The Game, And An Excuse For Management To Explain Away Poor Results And Deteriorating Economics. Its Conversion Uses Gimmicks And A Questionable Value Proposition To Compel Users To Subscribe**

**Investors Are Ignoring PTC's Weak Financial Results In Favor of Dubious Metrics Such As "Bookings", "ACV" and "Unbilled Deferred Revenue" – Read The Fine Print, They Have No Correlation To Future Revenues. We Even Spoke With PTC's Former EVP of Sales To Ask His Opinion What These Metrics Mean, And He Couldn't Explain Them. We Can't Even Find Evidence That PTC's \$20M Mega Deal With The Air Force (It Booked And Said Closed In Q4'16) Even Exists With PTC As The Prime**

**PTC Is Acting As If It's Distressed. The Company Is Dangerously Levered, Just Did A Stealth Credit Amendment In Q1 After It Burned Cash For The First Quarter In Recent History, Has Largely Tapped Out Its Revolver, Has Too Much Cash Trapped Internationally, And Is Now Having To Fund Its Negative Working Capital Position**

**PTC's 5 Yr. Recurring Restructuring Odyssey Appears To Be An Elaborate Accounting Scheme To Sell Investors On Meaningless Non-GAAP Figures. We've Done A Deep Dive Analysis And Are Shocked By PTC's Overstatement Of Office Locations, And Irreconcilable Employee Headcounts. Are They Just Firing And Re-Hiring People To Expunge Expenses? We Believe Its Restructuring Directly Violates SEC Guidelines Given Its Inability To Make Reliable Estimate. PTC's CFO Was Chief Accounting Officer At Autodesk During A Period It Had an SEC Investigation And Said Its Financials Could No Longer Be Relied Upon**

**PTC Has Squandered \$585 Million On Its Internet-of-Things (IoT) Acquisition Spree. PTC's IoT Is Nothing More Than A Highly Promoted, Low Growth, Money Losing Business Used To Distract Investors From Its Core Legacy Business Issues. Management Is Promoting Misleading Organic Growth And Can't Get Its Market Share Figures Straight. We Estimate Organic Growth Below 9%. Analysts Expect 30-40% Growth. Its Market Share Appears To Be 10%, Not 18%-28% Touted By Third Party Reports**

**While All Analysts Say "Buy" Six Insiders Have Stock Sale Programs, And They Only Own 1% Of The Company. Analysts' See Upside To \$60 (+12%), But We See 50% - 60% Downside As Our Long-Run View. This Represents A Terrible Risk/Reward For Owning PTC's Shares. PTC Is Trading At Peak Valuation With Little Covenant Cushion; Careful Investing To All....**



# *Spruce Point Believes PTC Is A “Strong Sell” For The Following Reasons:*

## **PTC (“PTC” or “the Company”) Is A Legacy Computer-Aided Design Software and Solutions Provider to Engineers, Manufacturers, and Others. In Our Opinion, PTC Is Struggling To Transform Itself And Masking Financial Distress By Heavily Promoting a SaaS Conversion “Story” And Hying Its Low Growth, Money-Losing Internet of Things (IoT) Business**

- PTC is showing many signs of an old-line technology company struggling to transform (Note: its name + ticker change from Parametric Technology (PMTCT)). Spruce Point has a successful history exposing similar stories such as NCR and Sabre. With PTC, the similarities are striking. On the surface, the Company’s transformation appears wildly successful. Since PTC started its SaaS conversion story in FY14, and accelerated the move in FY16, its “Bookings” – an obscurely defined measure management steers investors towards - are up 6x, and significantly outperformed PTC’s guidance in FY16. As a result, PTC’s shares surged almost 100% from its early 2016 lows
- Investors are blinded by meaningless bookings, and ignoring the large GAAP vs. Non-GAAP discrepancies. PTC’s actual GAAP financial performance rapidly deteriorated in FY16. Part of the deterioration is explained by the short-term effect of the model transition. Subscription sales carry lower upfront costs than a fully paid perpetual licenses, so as a result there is a natural short-term depression of sales and EPS from this transition. PTC and its analysts’ believe that its results have bottomed, and it is set to have a rapid acceleration of earnings and cash flow; there are indications that this simply isn’t the case
- We believe that there’s more than just conversion dynamics suppressing results, and underlying disruption is occurring in PTC’s business from new competitors at much lower price points (free!). PTC’s long-term GAAP/Non-GAAP EBIT and EPS divergence total a stunning \$933m and \$7.15 per share since 2012. PTC’s working capital recently turned negative, it burned cash flow in Q1’17 for the first time, had to borrow on its credit facility to fund itself, make a credit amendment, and has limited remaining borrowing capacity. These results speak volumes about PTC’s fragile financial condition. The Company is highly levered at 3.5x Debt/EBITDA
- PTC effectively pulled forward FY16 results with gimmicks such as a Win-Back program (the name in and off its self tells you that PTC is losing out) which pushed maintenance users to take a subscription and inflated bookings. We believe many users were forgoing the expense of maintenance; PTC is now compelling them to take a subscription which includes maintenance. Although nothing has really changed, it allows PTC to inflate its bookings metric. The true organic progress of PTC’s conversions are impossible to discern. PTC defines its own, non-standard metrics, such Annual Contract Value (ACV), and Unbilled Deferred Revenue to spin its story. Read the fine print: these metrics have almost no relevance to expected revenues. For PTC to extract any value, its customers have to stick with a subscription for 4+ years, yet the average customer contract is just 2 years. If customers churn, PTC is toast. Most transition models don’t succeed, and we have plenty of examples
- PTC even introduced a “rule of thumb” to monitor the impact of its bookings impact on Sales and Non-GAAP EPS, yet this rule is a moving target, and a caveat was added that the analysis cannot be reconciled to GAAP results. Major red flag! The last company we exposed that said it couldn’t model its results to GAAP was Sabre Corp, which recently cut cash flow guidance twice. PTC’s conversion story looks nothing like others we’ve analyzed. The most unusual aspect of PTC’s model change is that its Deferred Revenues aren’t growing – another major red flag.



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## **PTC Is Intentionally Obfuscating Or Not Disclosing Many Traditional Metrics Used To Evaluate Its Business**

- PTC used to provide reasonably good information to investors in its excel spreadsheet posted on its investor relations website. A tab in the file called “Supplemental Data” would regularly disclose information such as Active Support Seats, Quota-Carrying Sales Reps, and deal size figures. These figures are no longer provided. We think we know why: by analyzing the data leading up to its omission, revenue per Active Support Seats and per Quota Rep was in secular decline
- PTC sales are conducted either directly through its sales force, or through indirect channel partners (aka VARs). PTC used to provide the split of direct vs. indirect sales in its SEC filings, but stopped this practice. However, the Company still provides the % split in its Supplemental Data tab. To our dismay, these percentages do not reconcile to historical SEC filings and suggest potential \$30-\$50m of revenue misstatement. This fact caused us to take a deeper look into PTC’s channel partners. By using the Wayback machine to see total resellers listed on PTC’s website, we find significant shrinkage from FY11–FY16 of 440 to 253 or 43%
- PTC’s vanishing resellers and sales quota reps omission supports our view of PTC as a melting ice cube. The reason that PTC’s resellers are shrinking may be explained by a recent program guide we found on the PTC User Community website. PTC wants resellers to pay it upfront for selling subscriptions, which amounts to asking resellers to provide it financing. PTC reserves almost nothing for allowance for doubtful accounts, which again points to offloading cash collection to its partners. PTC pretends its DSOs are improving, but when adjusted for receivables buried in “other current assets” the DSO is stubbornly high

## **Perpetual Restructuring Charges, Segment Shuffling, Reclassifications + Other Signs of Unreliable Financial Reporting**

- PTC has been taking restructuring charges now for 5 years totaling >\$230m. Its assets are nothing more than people, computers and offices, yet it cannot seem to optimize itself correctly. Part of the issue, is that PTC has embarked on a reckless and expensive acquisition spree. Since 2011, PTC has made 11 acquisitions totaling \$1.1bn (many to build its Internet-of-Things (IoT) hype machine (more on this coming up)). We’ve successfully argued that the best way to evaluate any roll-up strategy is to evaluate free cash flow after acquisition costs (See reports on our website: LKQ, Ametek, Echo Global Logistics). We find no evidence yet that PTC has extracted any value from these deals, especially in light of having its weakest cash flow quarter in Q1’17
- More to the point of restructuring charges, we find worrisome issues by looking carefully at the nature, composition, and impact of these programs on results. To illustrate, PTC appears to be getting lower return on investment (measured by opex savings) per cash cost of executing its restructuring programs. It is now even guiding to growth in operating expenses due to planned investments...huh? We also have difficulty reconciling employee headcount figures, while accounting for employees acquired from acquisitions, and those explicitly identified for termination or “repurposing” – PTC’s total employee count is down just 1.5% in the same period it has taken massive charges. Is the Company just firing and re-hiring employees to expunge expenses?



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- If PTC were really executing on its restructuring program and optimizing its assets, we wouldn't find so many discrepancies with its operational footprint. For example, PTC discloses in its Annual Reports its total square footage under the discussion of its properties. We find a net increase in total office square footage from FY11-FY16 despite reporting fewer offices. Furthermore, PTC cannot seem to reconcile its global office locations. To illustrate, using the Wayback machine, we find a systematic overstatement of office locations disclosed in its Annual Report vs. office locations listed on its website; the discrepancy is currently a 35% overstatement, which cannot merely be dismissed as a small oversight
- In light of the fact that PTC dramatically ramped up its guidance for restructuring charges in FY16, and cannot get its numbers straight, heightens our fear that its restructuring charges are nothing more than a means to flush expenses through the income statement. The SEC says that companies have to reliably estimate a restructuring program, yet PTC appears unable to do so. As part of PTC's Non-GAAP figures, it asks investors to ignore these charges as an add-back to results. Its last restructuring program had charges totaling 10% of Adjusted Operating Expenses and 7% of sales. Now that PTC states its restructuring program is “materially complete” it puzzles us that its restructuring accrual still amounts to \$25m. Shouldn't it be \$0?
- In addition to recurring restructuring, PTC has a dizzying amount of reclassifications and segment reporting changes. Due to recent changes, PTC stopped disclosing how it allocates these restructuring charges (along with other pertinent financial information such as segment depreciation, capital expenditures, etc.) across its business units. It appears to place it in violation of *ASC 280 Segment Reporting*. In our view, this augments or concerns that PTC's restructuring program could be bogus. In addition, it appears obvious to us that PTC's last segment reorganization stuffed more expenses into the “unallocated” line item, which serves to flatters the reporting of “segment profit” for each of its businesses
- There's plenty of additional evidence to suggest weak financial controls. For example, in October 2016 PTC had to file an [8-K](#) to correct its GAAP guidance because it “inadvertently omitted interest expense” – oops small oversight! [Earlier in the year](#), PTC settled with the Dept. of Justice and SEC for \$28m related to a Foreign Corrupt Practices Act investigation of payments by former employees to Chinese official between 2006 and 2011.
- PTC has often disclosed that “*We are currently under audit by tax authorities in several jurisdictions.*” Finally, investors are starting to see the magnitude of the issue. In Q4'16, PTC revealed a \$12m payment to Korea tax authorities. PTC has tried to save taxes by reorganizing its European operations through Ireland (dissolving the Atego acquisition), but has left a sloppy trail and continues to act as if Atego is in operation. In the process, PTC's GAAP and Non-GAAP tax rate seem meaningless. Its income statement shows tax benefits (allowing inflation of its EPS), but in reality PTC continues to spend \$25m-\$30m in cash taxes



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## **Management's Promotion: All Aboard The CEO's Internet-of-Things (IoT) Hype Train**

- Another way PTC has diverted attention from its struggling core business is by attaching itself to the IoT “story” - the latest buzz business high on hope, but short on growth and profits. PTC's CEO Jim Heppelmann has all the markings of a stock promoter, and not an operator. To illustrate, he uses promotional language such as “*thought leader*” and “*big dog*” when describing himself and PTC. If this doesn't make you pause, consider the fact that Mr. Heppelmann promotes his IoT thought leadership via articles on the topic co-authored by Harvard professor Michael Porter. However, what PTC doesn't widely disclose is that Mr. Porter was a director and received fees from PTC. In other words, Heppelmann's Harvard thought leadership looks like a paid-for promotion
- When it comes to spending money, PTC is not shy about spending big money to chase a dream. PTC's foray into the IoT space is largely acquired and exhibiting all the elements of an overly promoted failure. PTC's IoT business is the combination of five expensive acquisitions (Axeda, Kepware, ThingWorx, ColdLight, Vuforia) totaling \$585m, and purchased at an average 7.5x revenue multiple. The multiple could be justified only by exponential growth, but sadly there is none
- Either having loose lips, or intending to over-promote, PTC's CEO recently proclaimed that its IoT business had 53% organic sales growth. However, based on our detailed analysis, we estimate that its true organic growth is a meager 8.6%. Single digit revenue growth and a money losing operation that isn't scaling should not get any investors excited about PTC's promotional IoT business. At the ~8% organic growth rate, it will take PTC 10.5 years to achieve \$200m in revenue, a run rate the CFO claims is the breakeven point. Will investors wait this long? Apparently, the executives of the companies acquired by PTC are not willing to wait for the big upside that PTC promotes. We observe that many of the key founders and executives have already jumped ship, while PTC is trying to recruit “evangelists” to promote its dreams
- PTC cites every research paper it can find to spin the story that IoT is growing 30%-40% p.a and that it is a market share leader. Yet, in its recent March 2017 IoT presentation it cut its addressable market size from \$1.1bn (2014) to \$900m (Today). At PTC's current LTM IoT segment revenue of \$90m, it has just 10% market share, not the 18%-27% the reports it cites claim. PTC's claims of being a “thought leader” are equally as dubious. There are substantial competitors offering IoT platforms: Amazon, IBM, Salesforce, Intel, and Samsung just to name a few. PTC's ThingWorx platform has 10K Twitter followers vs. hundreds of thousands (and millions) for some of its competitors; whose thoughts can be heard the loudest?
- With so much competition in the IoT platform space, it's no surprise management stopped disclosing key metrics such as IoT customers and logos, and now references the “freemium” model when describing its business model; you get what you pay for. What we've found is that average revenue per IoT customer is declining, along with the % of recurring revenue. In our opinion, PTC is attempting to sell a solution for a loosely defined problem, and doesn't have the right footprint to sell strategically into the right decision making channels



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### **Investors Overlooking Management’s Past Associations With Controversial Companies, While Sleepy Governance Creates Moral Hazard And Allows Management To Sell, Sell, Sell All The Time**

- PTC’s CEO is no stranger to corporate controversy, having been associated with SDRC. To illustrate, Heppelmann was the CTO at Metaphase Technology, a JV formed in 1992 between SDRC and Control Data Systems to develop and market advanced PDM software. According to an SEC complaint, from 1992-1994, executives at SDRC inflated revenue and earnings through fictitious revenues. A material amount of the improperly recognized revenue was based on purchase orders containing conditional language from SDRC’s Far East Operations. When the scheme was disclosed in September 1994, approximately \$30m of SDRC product was stored in a warehouse at the Cincinnati Airport. Heppelmann was not named in the complaint
- PTC’s CFO Andrew Miller came from Autodesk where he was the Chief Accounting Officer and Controller through 2008. In 2006, Autodesk announced its Audit Committee was conducting a review of its stock option granting practices; an SEC investigation commenced. Autodesk announced its financial statements could no longer be relied upon. During the review, Autodesk also determined that it incorrectly recorded certain reseller credits
- Overseeing management is a Board that happily rewards them for failure, and can’t define what goals management should be focused on. To illustrate, the Comp Committee gave the CEO a pass for failing to hit long-term Non-GAAP EPS targets defined at his promotion to CEO in 2010, covering periods through 2013-2015. It allowed 49.7% of his unearned award to vest. This practice creates moral hazard, and could give PTC’s executives additional confidence to inflate financial performance to realize value for its considerable “free” equity grants. It’s also noteworthy that PTC ties none of its executive cash bonuses to performance in IoT which it promotes as a significant growth driver. In fact, the latest proxy statement only mentions IoT once
- The short-term incentive cash bonus targets have changed every year since 2013. The latest two bonus targets, Subscription ACV and Non-GAAP operating expenses (opex), are defined in such an inconsistent way to allow management to game the system. For example, in calculating Non-GAAP opex PTC omits restructuring charges, which we’ve argued are suspect and have been reoccurring for 5 years. Secondly, PTC omits selected expenses related to acquisitions tied to its IoT strategy. Conveniently, PTC doesn’t say it removes acquisition contributions to its Subscription ACV. Lastly, PTC uses a similar sleight-of-hand in removing excess incentive compensation. Again, PTC gets all the benefit to its Subscription ACV performance metric, but wants to exclude a portion of the costs. Not surprisingly, PTC’s Non-GAAP operating expense of \$646.2m just barely beat its threshold target of \$648.2m
- Insider ownership by management and directors is near an all-time low at just 1%. It’s noteworthy that ownership materially decreased in 2011 when the restructuring programs began. At the current time, six insiders have active stock sale programs



## *Spruce Point Sees 50% - 60% Downside*

### **Investors' Are Overlooking PTC's Deteriorating Financials + Signs Of Distress, And Focus Only On Bookings. Its Valuation Has Reached Unjustified Levels. Consider The Following:**

- PTC has made four revisions to its credit agreement since Nov 2015. Its latest revision (not even properly discussed in the recent 10-Q, but quietly filed as an exhibit) buys it a little extra wiggle room while it grapples with limited borrowing capacity (just \$40m disclosed at year end), too much inefficient cash trapped abroad (77%), and has to fund a negative working capital position while it burns cash flow. PTC's current total leverage of 3.5x puts it dangerously close to its 4.0x covenant
- Meanwhile, PTC's analysts largely ignore these issues, and place an average price target of \$60 with a majority saying "Buy". At its current share price, there's just 12% upside. In our view this is a terrible risk/reward to owning shares at current levels. The sell-side analysts' take the Company's results at face value and assume management's guidance can easily be achieved without any consideration given to the numerous concerns we've raised in our report. Bookings, a seemingly made up metric which the Company heavily disclaims, is all the analysts narrowly focus on
- PTC currently trades at 5.6x, 23x, 40x 2017E Sales, Adjusted EBITDA and Non-GAAP EPS, respectively. Its 5-year average valuation of Sales, EBITDA, and Non-GAAP EPS multiple is 3.7x, 17x, and 26x, respectively. PTC also trades at 94x and 43x LTM and 2017E operating cash flow. To put in perspective its current valuation, in 2014 (pre-conversion) its multiple was 3.5x, 13x and 17x Sales, EBITDA, and Non-GAAP EPS respectively. PTC's multiple expansion is comparable with Adobe's (which is consider the gold standard example). Unlike Adobe's conversion, PTC has experienced negative cash flow and declining deferred revenue – a fact that no one can explain. At the current time, PTC trades at a premium to its peers which on average are valued at 5.6x, 16x, 26x, 22x multiple of Sales, EBITDA, EPS and operating cash flow, respectively. These peers are generally expected to produce more top-line revenue growth than PTC, have better cash generation, but analysts' are fixated on the ramp of PTC's Non-GAAP EPS growth, which we have shown has severe distortions from economic realities
- Comparable acquisitions of companies in technical software and electronic data automation space have sold (with a control premium) at next 12 months forward multiples of 3.5x revenues and approximately 14x EBITDA, respectively. Most recently, Siemens announced the acquisition of Mentor Graphics for 3.5x and 13x Sales and EBITDA, respectively, in November 2016. Mentor is arguably a much better business with a similar top line growth profile, but operating cash flow margins at 25% vs. 6% at PTC. These deal premiums suggest further over-valuation of PTC's shares
- By all valuation benchmarks, PTC's share price is overvalued. Given the numerous accounting distortions in PTC's reporting that affects EBITDA and EPS, we believe the best way to value its shares are on a multiple of revenues and operating cash flow. For the sake of argument, we assume management's 2017E figures, and apply more realistic multiples to discount our concerns. At 2.5x – 3.5x revenues and 18x – 21x operating cash flow, we see approximately 50% – 60% downside risk





# Capital Structure Overview

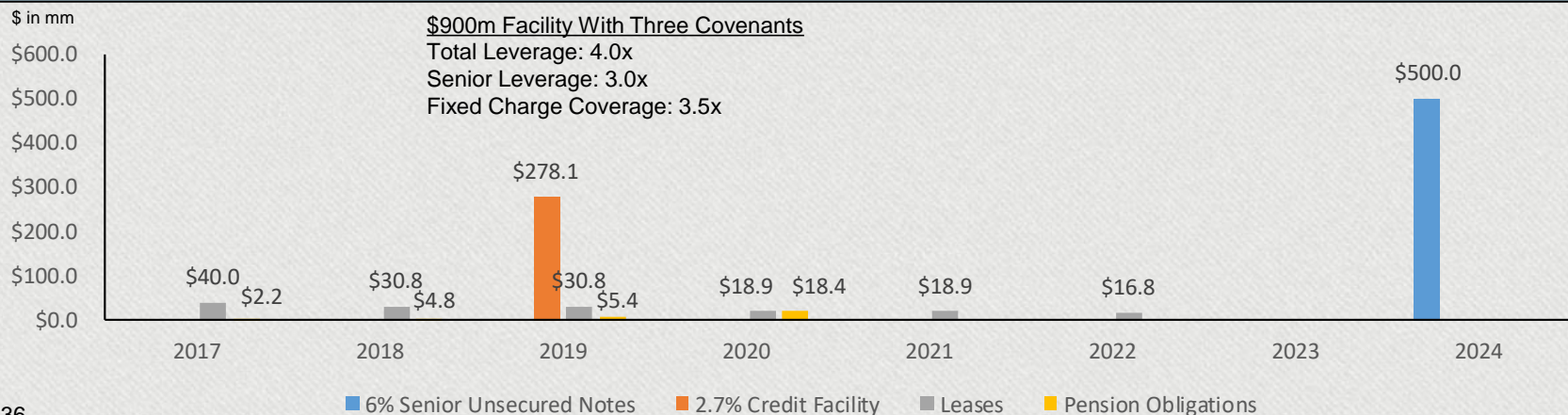
**PTC's valuation is rich and its financial condition is fragile with 77% of cash trapped abroad and an estimated \$40m of borrowing availability to borrow due to covenant limitations strains its financial condition. (1)**

\$ in mm except per share figures

Stock Price	\$53.60	<b>Street Valuation (Calendar Yr)</b>	<b>2016A</b>	<b>2017E</b>	<b>2018E</b>
Diluted Shares	115.3	EV / Sales	5.8x	5.6x	5.3x
<b>Market Capitalization</b>	<b>\$6,180.1</b>	EV / Adj. EBITDA	30.5x	23.2x	19.2x
Credit Facility (1)	\$278.1	Price / GAAP EPS	NM	165.6x	78.5x
Note payable	\$500.0	Price / Adj. EPS	44.4x	39.9x	30.1x
<b>Total Debt</b>	<b>\$778.1</b>	Debt / Adj. EBITDA	3.5x	2.7x	2.2x
Less: Cash and Equivalents (2)	\$236.9				
<b>Total Adj. Enterprise Value</b>	<b>\$6,721.3</b>				

1) Includes \$40m of year end borrowing 2) includes \$13.7m of proceeds from sale of undisclosed investment. Based on Wall St. Sell-side analyst estimates

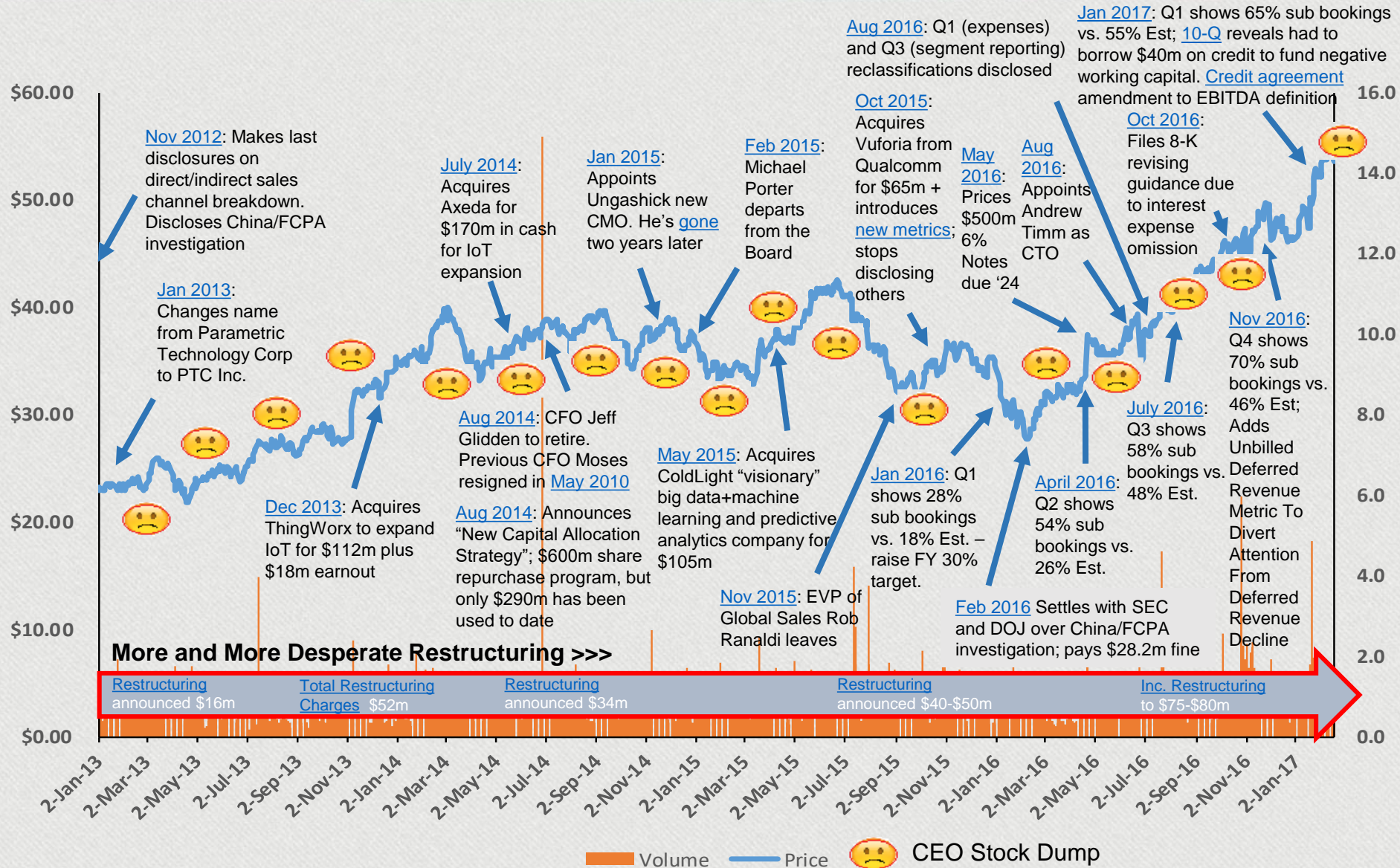
## Debt Maturity Profile







# PTC's Meteoric Stock Increase Deserves Significant Investor Scrutiny







## *Fundamental Strains And Subscription Conversion “Story”*



## *What Is Straining PTC?*

- The CAD and related software spaces (PLM, SLM, ALM) are mature and very competitive end markets that have experienced deflationary pricing over time. For a great history of PTC and its pricing, we recommend the [chapter on PTC](#) from “*The Engineering and Design*” by David Weisberg. Today, PTC competes against larger rivals such as Dassault, Siemens, Autodesk and others. In addition to the challenges of operating in a mature end market, the space is now coming under siege from next generation startups (e.g. [OnShape](#) which is pure cloud solution, and gaining traction amongst the next generation of engineers at leading universities such as [MIT](#); OnShape is a longer term [disruptor](#) in the industry).
- In an attempt to preserve and grow revenues, PTC has pivoted away from providing products towards being a solutions provider. This strategy focuses on two distinct, yet hopefully related, business initiatives
  - Change the legacy product delivery mechanism (perpetual license + maintenance) to a SaaS subscription and position the firm’s capabilities as an integrated part of client’s product management processes
  - Develop a leading IoT platform that can serve as a standalone service solution or ideally can be used in conjunction (or cross-sold) with the legacy software offering
- PTC’s vision to shift from a product sales company to a solutions provider is ambitious, and pulling off the integrated solutions – IoT state is reminiscent of Apple transforming itself from a PC company to a media platform with an integrated product ecosystem (more on this later).
- Acknowledging that the IoT initiative can have an extremely wide range of financial/strategic outcomes, let’s first consider the three strategic challenges with converting the legacy product business to a solutions service.
  - Customer Relationships: Although PTC continues to focus within the industrial space, the point of sale is beginning to evolve from an engineering team (CFO signoff) to a Head of Product and potentially CIO (C-Suite signoff)
  - Complexity of Sale: The sale begins to evolve from the competitive technical merits of the product versus the competitors, to understanding the client’s overall product strategy and how the suite of solutions can help to better run the client’s business. Once the solutions oriented “partner” sale has been made, these relationships need to be fostered to ensure that the solutions are actually integrated into the client’s product management processes
  - Pricing: The software solutions have undergone deflationary pricing over time in the legacy licensing model. The upside of a subscription model are lower upfront costs and greater flexibility in managing usage over time. However, the client ends up spending 30% +more over the life of the contract when purchasing through a subscription and can cancel



# *Key Questions To Consider As PTC's Pivots Towards Solutions*

- Does PTC have the right client decision making relationships? Does PTC have the right support model and individuals to execute on the sale and implementation of solutions? Can PTC resellers execute the transition abroad when many of them are product sales oriented and may not be exclusive to PTC? Is the subscription service appropriately priced to reflect the premium associated with greater payment/use flexibility and is there reason to believe that this pricing won't also be deflationary over time.
- Switching gears to the IoT initiative, it's important to realize that this is a space still in its infancy and that it represents a fundamental shift in how companies operate their business model. Before the IoT space really takes hold, customers' will have to make significant budgeting, planning, risk management, and reputational decisions. There will certainly be some customers keen on a trying to seize a first mover advantage, but the reality is most will take a wait and see approach that will be measured in years rather than quarters. It's important to realize that this sale is less about PTC pushing a capability, than it is about delivering the best solution to a customer who has already bought into the IoT concept.
- What are the odds that PTC miraculously pulls off the IoT transformation, and remains a top five player in a space that is still in its infancy? Thinking back to the Apple analogy, lets look at the critical success factors that allowed the unlikely to occur:
  - Product Focused: Apple has clearly become an outstanding consumer marketing company, but at its core it is a product company. The Company's ability to manage the transition was predicated on understanding and delivering what clients wanted better than its competitors.
  - One Success at a Time: The transition from making PCs to eventually selling media didn't happen overnight. Their ability to make this progression was predicated by building credibility and loyalty with one best in class product after another (iPod, iPhone, iPad) until they owned the consumer's mindshare (and content)
  - Innovation: Apple made a large number of acquisitions that allowed features to be added to their product, but the actual design and functionality was always maintained internally. Their ability to deliver the optimal solution came as a direct result of innovating rather than acquiring and assembling their product.
  - Leadership: Steve Jobs ability to create a culture and lead a smooth transition of this magnitude was a testament to the quality of his leadership team

**Investors' evaluating the odds of the full PTC IoT transformation should think through the answers to the below questions in regards to the success that PTC has had relative to Amazon and IBM (lesser degree Microsoft and GE).**

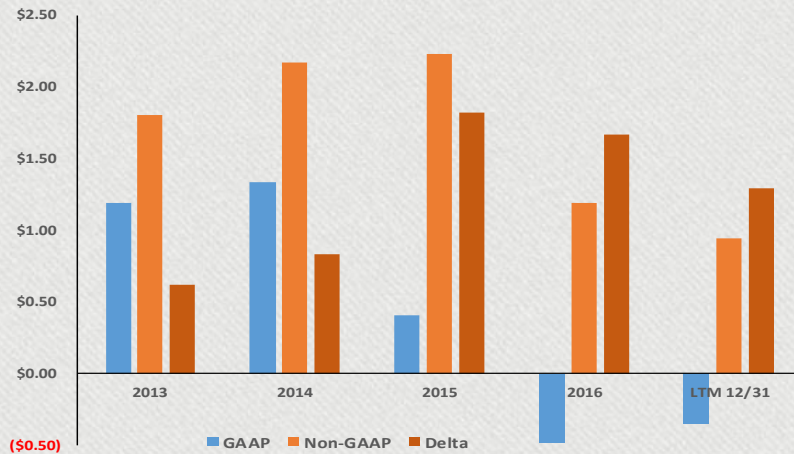
- Has PTC established a reputation of service excellence with clients? Hint: See [Forrester Wave](#) study for details. Does PTC have enough service penetration to occupy significant mindshare with the C-Suite of potential customers? What are the implications and product sacrifices of PTC's decision to acquire rather than build? Is PTC's leadership team up to the task of delivering on this transformation despite their track record of being late to SaaS, endless restructurings and significant turnover of acquired talent?



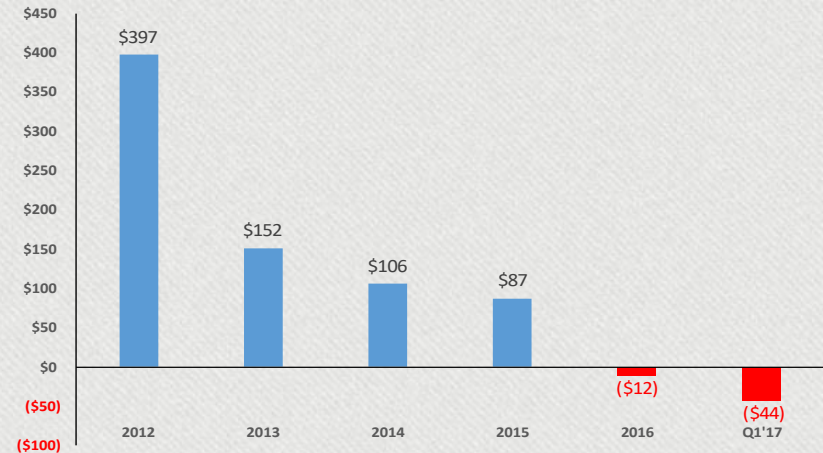
# Evidence of a Strained Financial Model

Management would like investors to believe its tepid recent performance is a result of its subscription transition, but Spruce Point believes poor acquisitions, underlying struggles and a fundamental shift in the market away from PTC is to blame

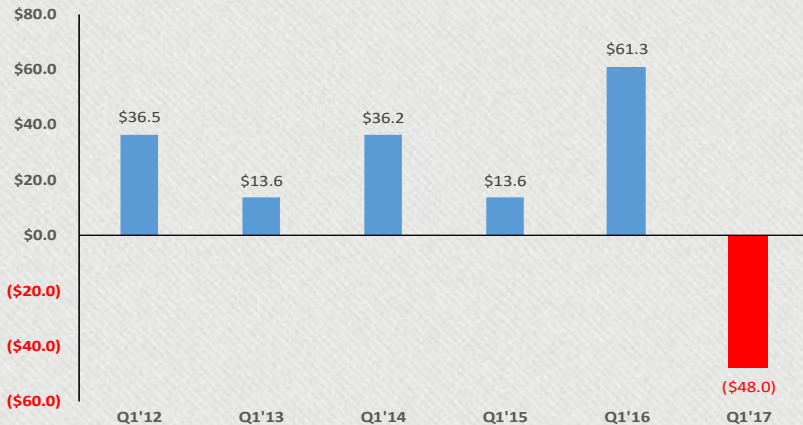
Wide GAAP vs. Non-GAAP Earnings Delta



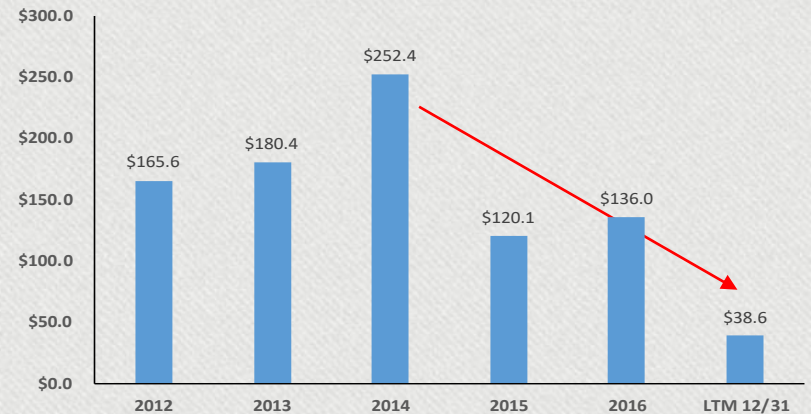
Alarming That Working Capital Is Now Negative



Q1 Operating Cash Flow Negative First Time In 6yrs



Adjusted Free Cash Flow (1)



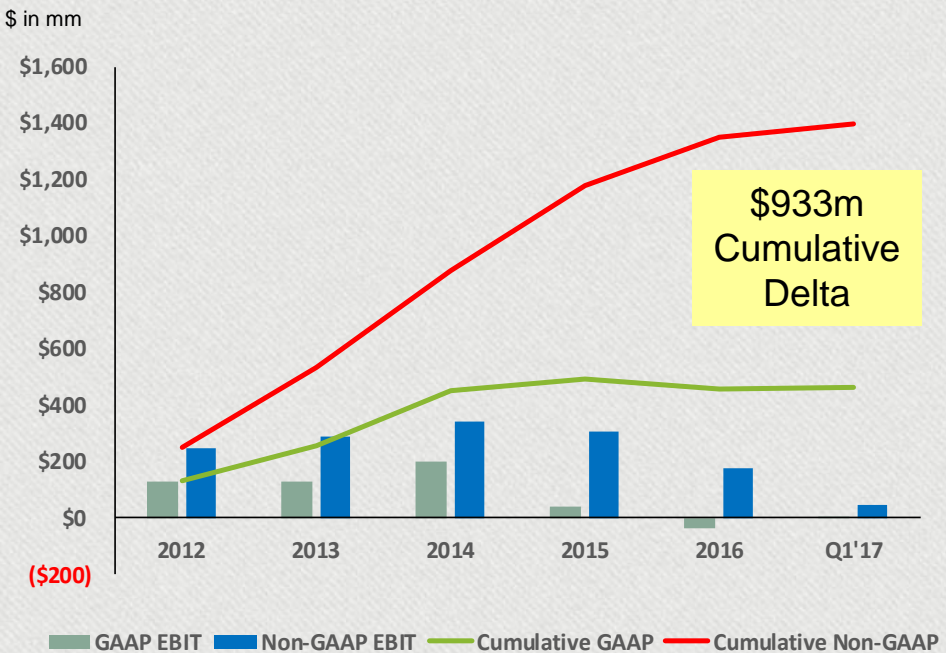
(1) We define FCF = OCF – capex – cash to settle employee withholding taxes. This is consistent with our report on Ultimate Software



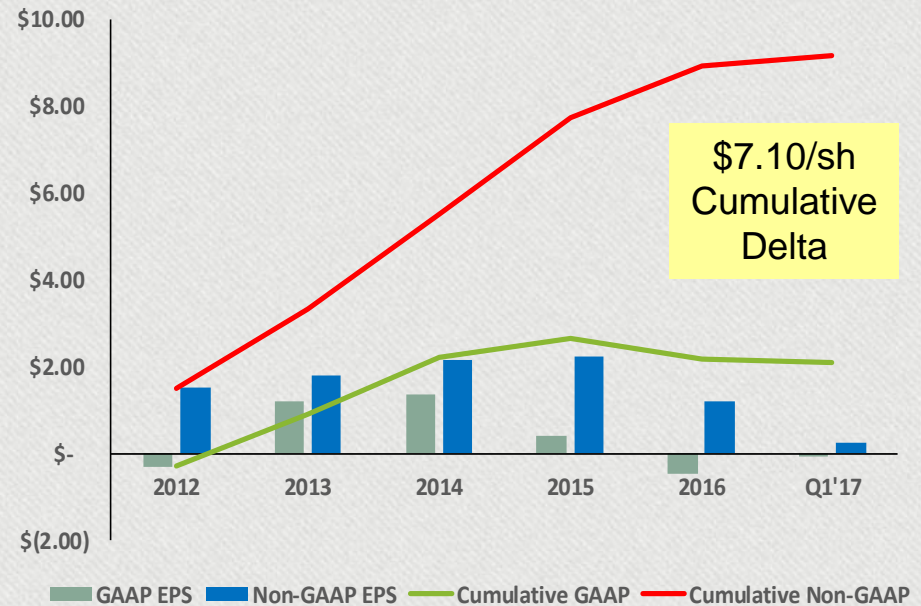
# Evidence of a Strained Financial Model (Cont'd)

Spruce Point has evaluated the long-term financial performance of PTC on a GAAP vs. Non-GAAP basis. The delta is staggering, with almost \$1bn of EBIT and \$7.10 of EPS from 2012 to present. Our report will critically analyze PTC's recurring restructuring program, which is the main culprit of the divergence.

GAAP/Non-GAAP EBIT Divergence Over Time



GAAP/Non-GAAP EPS Delta Over Time



Source: PTC Financials



# Signs of a Non-Economic Financial Model

For highly acquisitive companies effecting a roll-up strategy, Spruce Point has consistently advocated to evaluate financial performance by looking at cash flow after recurring acquisitions (see reports on our website: AMETEK, LKQ and ECHO). At the moment, it's clear that PTC is on a non-economic path with declining operating cash flow, and no evidence it can earn back the \$1bn+ its paid for 11 acquisitions. It's also worrisome that PTC's liquidity is at an all-time low while its debt is at a high. PTC recently disclosed that just \$40m of capital was available to borrow on its revolver due to covenant restrictions. (1)

\$ in mm	2011	2012	2013	2014	2015	2016	Q1'17	Cumulative
Operating Cash Flow	\$78.7	\$218.0	\$224.7	\$304.6	\$179.9	\$183.2	(\$48.0)	\$1,141.0
Less: Withholding for Employee Taxes	(\$22.5)	(\$21.0)	(\$15.0)	(\$26.9)	(\$29.2)	(\$20.9)	(\$18.6)	(\$154.1)
Less: Capital Expenditures	(\$27.8)	(\$31.4)	(\$29.3)	(\$25.3)	(\$30.6)	(\$26.2)	(\$7.1)	(\$177.8)
Free Cash Flow	\$28.4	\$165.6	\$180.4	\$252.4	\$120.1	\$136.0	(\$73.7)	\$809.1
Less: Cash for acquisitions	(\$280.0)	(\$0.2)	(\$245.8)	(\$323.5)	(\$98.4)	(\$165.8)	\$0.0	(\$1,113.8)
Less: Cash for earn-outs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	(\$10.6)	(\$2.7)	(\$13.3)
<b>Spruce Point Adj. FCF</b>	<b>(\$251.7)</b>	<b>\$165.4</b>	<b>(\$65.5)</b>	<b>(\$71.1)</b>	<b>\$21.7</b>	<b>(\$40.4)</b>	<b>(\$76.4)</b>	<b>(\$318.0)</b>
Total Debt	\$200	\$370	\$258	\$612	\$668	\$747	\$728	
Cash and Equivalents	(\$168)	(\$490)	(\$242)	(\$294)	(\$273)	(\$328)	(\$223)	
<b>Net Debt</b>	<b>\$32</b>	<b>(\$120)</b>	<b>\$16</b>	<b>\$318</b>	<b>\$395</b>	<b>\$420</b>	<b>\$505</b>	
Cash Trapped Abroad	16%	60%	85%	75%	72%	90%	77%	
Revolver Capacity	\$300	\$300	\$300	\$1,000	\$1,000	\$900	\$900	
Borrowing Ability	\$100	\$70	\$184	\$408	\$155	\$40 (1)	?	



# Financial Results Deteriorated All Year..

PTC's cadence of FY2016 guidance shows progressive deterioration (explained away by management by bookings outperformance). Yet, Spruce Point is concerned about the rise in operating expenses, drain of cash flow, and a plunging tax rate.

\$ in mm	<u>Q4'15</u>	<u>Q1'16</u>	<u>Q2'16</u>	<u>Q3'16</u>	<u>FY16A</u>
Sub ACV	\$40 – \$45	\$50 – \$55	\$79 – \$84	\$90 – \$92	\$114
License/Sub Booking	\$320 – \$320	\$334 – \$364	\$357 – \$377	\$370 – \$380	\$401
Sub % Bookings	25% – 25%	30% – 30%	44% – 44%	48% – 48%	56%
Subscription Revenue	\$90 – \$90	\$100 – \$100	\$115 – \$116	\$120 – \$120	\$118.3
Support Revenue	\$670 – \$670	\$665 – \$665	\$649 – \$650	\$649 – \$649	\$651.8
Perpetual License	\$240 – \$260	\$235 – \$255	\$200 – \$212	\$193 – \$198	\$173.5
<b>Total Software Revenues</b>	<b>\$1,000 – \$1,020</b>	<b>\$1,000 – \$1,020</b>	<b>\$964 – \$978</b>	<b>\$962 – \$967</b>	<b>\$943.6</b>
Pro Services Revenue	\$200 – \$200	\$200 – \$200	\$196--\$197	\$198 -- \$198	<b>\$196.9</b>
<b>Total Revenue</b>	<b>\$1,200 – \$1,220</b>	<b>\$1,200 --\$1,220</b>	<b>\$1,160--\$1,175</b>	<b>\$1,160--\$1,165</b>	<b>\$1,140.5</b>
Opex (GAAP)	\$714 – \$729	\$776 – \$789	\$798 – \$802	\$809 – \$811	\$851.8
Opex (Non-GAAP)	\$627 – \$642	\$643 – \$656	\$656 – \$660	\$667 – \$669	\$606
Op. Margin (Non-GAAP)	23% – 23%	22% – 22%	18% –19%	17% – 17%	15.1%
Tax Rate (GAAP)	20% – 20%	14% –14%	10% --0%	(5%) – (5%)	(19%)
Tax Rate (Non-GAAP)	20% – 15%	15% – 12%	10% --8%	8% –7%	5%
Shares Outstanding	116 –116	116 – 116	116—116	115—115	114.6
EPS (GAAP)	\$0.95 – \$1.05	\$0.57 – \$0.62	\$0.11 – \$0.18	(\$0.11) – (\$0.07)	(\$0.48)
EPS (Non-GAAP)	\$1.80 – \$1.90	\$1.80 – \$1.90	\$1.52 – \$1.62	\$1.36 – \$1.41	\$1.19
Free Cash Flow	\$215 – \$225	\$215 – \$225	\$215 – \$225	\$153 – \$153	\$157
Adjusted Free Cash Flow	--	--	--	\$236 --\$239	\$240

Cheerleading analysts want investors to focus on subscription bookings and ACV and ignore everything else.

Only a **-5.7%** total sales decline from initial forecast

Rise in operating expenses, blame it on "restructuring"

GAAP results would have been worse if not for plunging tax rate

5.7% sales miss wiped out GAAP earnings and **-35%** decline in Non-GAAP EPS

**-28%** decline in cash flow from forecast despite all the "cost savings" from years of restructuring



# Plenty of Failed SaaS and Cloud Model Transitions

Before we get into PTC specifics, investors should take a step back and consider that there are more examples of failed subscription and cloud conversion stories, than success stories. PTC would like investors' to believe it is executing a flawless transition to a subscription model and that it still has a long runway of opportunity. Everyone cites Adobe as the model success story, but fails to point out the struggles and failures of many.

## Examples of Recent Troubled Software “Transition” Stories

Company	Transition Struggle
Oracle	<i>“Oracle Sales Miss Estimates on Slow Transition to Cloud”</i> – <a href="#">Bloomberg</a> , Sept 2016 <i>“Oracle Drops 4%: Cloud Transition Bumpy, Bulls Say Stay the Course”</i> – <a href="#">Barrons'</a> , Dec 2016
IBM	<i>“IBM Cloud Transition Keeps Showing Pains”</i> – <a href="#">Marketwatch</a> , Jan 2016 <i>“IBM Falls Despite Cloud Growth: Margins Undermine ‘The Transition’”</i> – <a href="#">Barrons'</a> , Oct 2016
SAP	<i>“SAP Is Struggling To Adapt To Life In The Cloud”</i> – <a href="#">Fortune</a> , Jan 2015
Interactive Intelligence	<i>“Interactive Intelligence Makes Unprofitable Transition To The Cloud”</i> – <a href="#">Forbes</a> , June 2016
Actuate	<i>“Actuate: The Pain of Transitioning To Subscription Models”</i> – <a href="#">Diginomics</a> , – May 2014
PROS Holdings	<i>“PROS Plummets 20% as Cloud “Transition” Hits Bookings”</i> – <a href="#">Barrons'</a> Jan 2016
Sabre Corp	<i>“Sabre takes to the cloud and announces collaboration”</i> <a href="#">PR</a> , May 2016 <i>“Why Sabre Corp. Stock Plunged Today”</i> <a href="#">The Fool</a> , Feb 2017
FireEye	<i>“FireEye’s year of transition ends with another stock plunge and yet more change”</i> <a href="#">Marketwatch</a> – Feb 2017



# PTC's "Unusual" Subscription Transition

PTC's transition to a subscription model looks nothing like other transition models we've analyzed. In particular, we should expect deferred revenue to grow meaningfully during the implementation phase. Curiously, we find that PTC's short and long-term deferred revenue balance declined in Q1'17 and its cash flow went negative. PTC claims that shortfall is a result of a two day calendar shift impacting the timing of fiscal quarter ends and billing schedules. (1) Color us skeptical, but this just sounds like a convenient way to explain away a \$64m shortfall.

## Recent Software Subscription Transitions – Sequence of Key Financials

\$ in mm	2011	2012	2013	2014	2015	2016	Q1'17
<b>Adobe (FY Dec 2)</b>							
Sales	\$4,216.3	\$4,403.7	\$4,055.2	\$4,147.1	\$4,795.5	\$5,854.4	\$1,681.6
Short-Term Deferred	\$476.4	\$561.5	\$775.5	\$1,097.9	\$1,434.2	\$1,945.6	\$1,988.0
Long-Term Deferred	\$55.3	\$58.1	\$53.3	\$57.4	\$51.1	\$69.1	\$72.2
Operating Cash Flow	\$1,543.3	\$1,499.6	\$1,151.7	\$1,287.5	\$1,469.5	\$2,199.7	\$730.4
<b>Autodesk (FY Jan 31)</b>						9m Oct 16	
Sales	\$2,215.6	\$2,312.2	\$2,273.9	\$2,512.2	\$2,504.1	\$1,552.2	--
Short-Term Deferred	\$582.3	\$647.0	\$696.2	\$900.8	\$1,068.9	\$1,099.1	
Long-Term Deferred	\$136.9	\$187.6	\$204.4	\$256.3	\$450.3	\$433.9	
Operating Cash Flow	\$573.5	\$559.1	\$563.5	\$708.1	\$414.0	\$154.1	
<b>PTC (FY Sept 30)</b>							Dec 31, 2016
Sales	\$1,166.9	\$1,255.7	\$1,293.5	\$1,357.0	\$1,255.2	\$1,140.5	\$286.3
Short-Term Deferred	\$279.9	\$315.3	\$326.9	\$369.3	\$368.2	\$400.4	\$364.9
Long-Term Deferred	\$14.4	\$12.2	\$9.7	\$13.3	\$18.6	\$13.2	\$10.1
Operating Cash Flow	\$78.7	\$218.0	\$224.7	\$304.6	\$179.9	\$183.2	(\$47.9)

Note: Year of Transition boxed in red

Source: Company financials

(1) [Financial analyst sourcebook](#), slide 23



# PTC's Fuzzy Breakeven Math

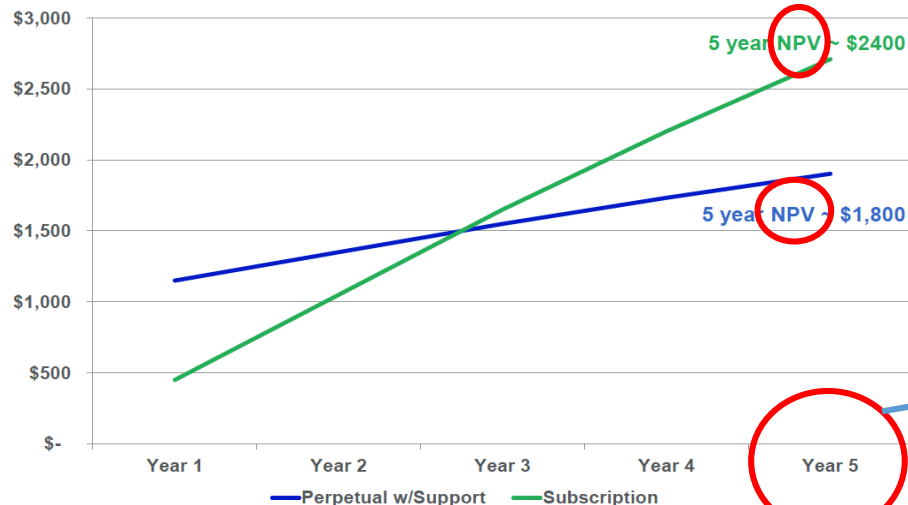
PTC's transition is not a guaranteed success. According to its 2015 Analyst Day Presentation (bottom right), it must retain its customers on subscription for at least 4 years to breakeven. However, the current average customer contract length is 2 years according to the FY16 10-K. Ironically, the 2014 slide the year before (bottom left) showed a less than 3 year breakeven. PTC did not use the breakeven slide at all at its 2016 Analyst Day. Also, notice that in 2014 PTC's "Lifetime Value" would be 33% over 5 years. On an apples-to-apples basis, the Lifetime Value over 5 years in the 2015 slide would be just 12.5%! (1). These slide changes appear to reflect a lower expectation for subscription pricings vs. perpetual with support pricing.

## Breakeven Illustration 2014

### Perpetual & Subscription Software Revenue Models

PTC™

Illustrative Example: Cumulative revenue over 5 years



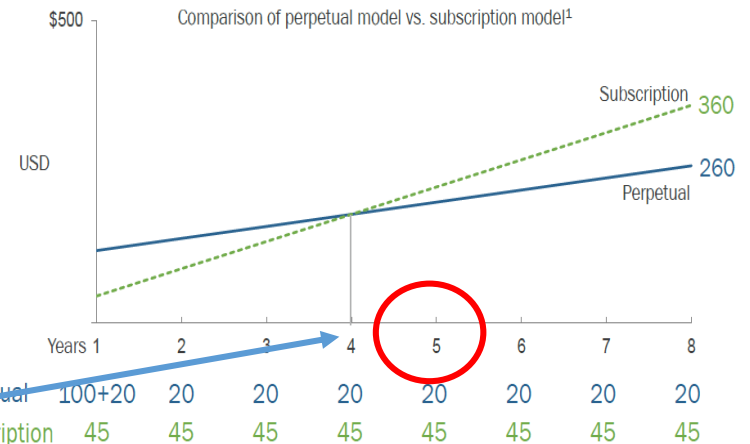
PTC 2014 Analyst Day

- 1) PTC shows an NPV in 2014 and doesn't NPV the analysis in 2015.

## Breakeven Illustration 2015

### 40% HIGHER LIFETIME VALUE

PTC™



<sup>1</sup> Assumes no churn for both type of contracts; License price: \$100 upfront; Maintenance \$20 /year; Subscription price: \$45/year

FY16 Investor Day

PTC 2015 Analyst Day

**Read Fine Print. Is No Churn Assumption Reasonable?**



## PTC's Organic Growth Hard To Discern

PTC does not give investors any disclosure about what exactly is driving its subscription revenue growth; is it coming from simply pushing maintenance customers into subscriptions, or is it truly growing organically by acquiring new customers? PTC's key peers do a much better job describing their revenue attribution.

### Dassault

Dassault Systèmes benefits from a high level of recurring software revenue, at the core of its financial model. Recurring software revenue represented 70% of non-IFRS total software revenue in 2015, **and grew 10% in constant currencies, of which 7% was organic;**

IFRS new licenses revenue increased 23.7% and 12% in constant currencies in 2015. **Non-IFRS new licenses revenue of €735.6 million increased 26.5% and 15% in constant currencies, benefiting from organic growth estimated at 11% in constant currencies** and 2014 acquisitions. New licenses revenue represented 28.6% and 28.5% of total software revenue for 2015 and 2014, respectively.

Source: [Dassault Annual Report](#)

### AutoDesk

Subscription revenue remained flat during the three months ended October 31, 2016, as compared to the three months ended October 31, 2015, **primarily due to a 40% increase in new model subscription revenue**, offset by a 4% decrease in maintenance revenue. **The 40% increase in new model subscription revenue was due to a 158% increase in product subscription revenue and a 25% increase in revenue from flexible enterprise business agreements**. The 4% decrease in maintenance revenue was attributable to the business model transition, as we expect maintenance revenue will slowly decline as perpetual license sales have ended, and customers adopt our new model subscription offerings. Maintenance revenue from perpetual software products represented 86% and 90% of subscription revenue for the three months ended October 31, 2016 and 2015, respectively. **New model subscription revenue represented 14% and 10% of subscription revenue for the three months ended October 31, 2016 and 2015, respectively**.

Source: Autodesk [10-Q](#)



# We Estimate No Real Organic Revenue Growth

We attempted to recast PTC's current financials to isolate what they would look like as if the current transition to a subscription model had not occurred. In our view, there's no real underlying growth.

\$ in mm	Recast Financials Under Old License Model			New Subscription Model (Current Presentation)		
	FY 2014	FY 2015	FY 2016	FY 2014	FY 2015	FY 2016
Subscriptions	\$0.0	\$0.0	\$0.0	\$22.3	\$35.6	\$75.4
Perpetual License	\$414.5	\$347.1	\$525.1	\$362.0	\$268.3	\$154.2
Support	\$688.1	\$687.1	\$668.1	\$688.1	\$676.4	\$641.6
Professional Services	\$278.7	\$222.1	\$189.0	\$278.4	\$221.1	\$189.0
Total Solutions Group	\$1,382.0	\$1,256.3	\$1,382.1	\$1,351.8	\$1,202.4	\$1,060.2
Solutions Bookings				\$26.7	\$39.4	\$185.4
Subscription				<u>\$362.3</u>	<u>\$271.4</u>	<u>\$155.7</u>
License				\$389.0	\$310.8	\$341.1
IoT Bookings				\$5.0	\$20.5	\$40.9
Subscription	--	--	--	<u>\$0.6</u>	<u>\$14.5</u>	<u>\$19.3</u>
Licenses				\$5.6	\$35.0	\$60.2
Total Bookings				\$31.7	\$59.9	\$226.3
Subscription	--	--	--	<u>\$362.9</u>	<u>\$285.9</u>	<u>\$175.0</u>
Licenses				\$394.6	\$345.8	\$401.3

Flat Revenues FY14-FY16

Notes: Management indicated mid teens % of bookings are IoT (Nov 4, 2016 webcast); we assume 15%; license sales estimated at 2x bookings; support revenues are 20% of licenses sales; total Solutions Group also includes an estimated \$15m of Atego revenues which are inorganic contributions

# Investors Are Giving Too Much Credence To PTC's Oddly Defined Bookings Metric

Despite progressively worse financial results, investors seem enamored with PTC's bookings. However, PTC's bookings and associated Annualized Contract Value (ACV) should be taken with a grain of salt. Their terms are non-standardized and we cannot find any other companies using similar definitions. Even PTC warns clearly that "it does not represent actual revenue that will be recognized with respect to subscription sales or that would be recognized if the sales were perpetual licenses, nor does the annualized value of monthly software rental bookings represent the value of any such booking." We even asked PTC's former Head of Sales and he could not explain to us what they mean!

**PTC's ACV Calculation As Explained, With Little Support or Justification and Unknown Values For Variables:** *"In order to normalize between perpetual and subscription licenses, we define subscription bookings as the subscription annualized contract value (subscription ACV) of new subscription bookings multiplied by a conversion factor of 2. We arrived at the conversion factor of 2 by considering a number of variables including pricing, support, length of term, and renewal rates. We define subscription ACV as the total value of a new subscription booking divided by the term of the contract (in days) multiplied by 365. If the term of the subscription contract is less than a year, the ACV is equal to the total contract value. License and subscription bookings equal subscription bookings (as described above) plus perpetual license bookings plus any monthly software rental bookings during the period. Total ACV equals subscription ACV (as described above) plus the annualized value of incremental monthly software rental bookings during the period."* (Source: [10K](#), p. 26)

## PTC's Increasing Subscription ACV and Bookings Above Guidance Excites Investors Although The Metrics Are Based On Opaque Formulas:

\$ in mm	Q1'16	Q2'16	Q3'16	Q4'16	FY16	Q1'17	Q2'17
Subscription ACV	\$6-\$6	\$10-\$10	\$22-\$24	\$25-\$28	--	\$19-\$22	\$24-\$27
Estimated Quarterly	\$11	\$23	\$30	\$50	--	\$29	--
Actual Quarter	\$40-\$45	\$50-\$55	\$79-\$85	\$90-\$92	--	\$130-\$136	\$130-\$136
Estimated Annual	--	--	--	--	\$114	--	--
Actual Annual	--	--	--	--	--	--	--
Subscription Bookings %							
Estimated Quarterly	18%	26%	48%	46%	--	55%	60%
Actual Quarterly	28%	54%	58%	70%	--	65%	--
Estimated Annual	25%	30%	44%	48%	--	65%	65%
Actual Annual	--	--	--	--	56%	--	--



## An Example: Low Quality Monthly “Bookings”

Some PTC customers require bespoke subscription periods to accommodate shorter duration software needs. As explained by a PTC community user below, his project lifecycles range from 2 to 6 weeks, not 12 months. Thus, a traditional PTC annual subscription model does not accommodate his needs. However, PTC takes full credit for these short duration customers in its bookings and annualizes them to report ACV. In Q1’16, PTC amended its Bookings metrics to reference monthly software rental bookings. We believe it is a highly aggressive tactic by management to include annualized monthly rentals in ACV.

### PTC User Quote – December 2015

*“Subscription terms are currently 12 months. This seems too long. I would be more interested if I could add capability in one month increments. Imagine only having to purchase Creo Simulate or the Reverse Engineering Extension when you have a project that needs them, and then be able to stop when that project is complete. Our project lifecycles are typically 2 - 6 weeks, not 12 months long.” [Source](#)*

### Starting in Q1’16 - Bookings Now Include “Monthly Rentals”

*“In order to normalize between perpetual and subscription transactions, we define bookings as either the annualized contract value (ACV) of a new subscription multiplied by a conversion factor of 2, **the annualized value of incremental monthly software rental bookings**, or the contract value of a new perpetual license. We arrived at the conversion factor of 2 by considering a number of variables including pricing, support, length of term, and renewal rates. We define ACV as the total value of a new subscription solutions booking divided by the term of the contract (in days) multiplied by 365, unless the term is less than one year, in which case the contract value equals the ACV. **For monthly rentals, bookings equals revenue in the period, and ACV equals the annualized value of the rentals.**” Source: [10-Q](#), p.23*



# Another Booking Inflation Example: “Win-Back Support”

There is ample evidence to suggest PTC has had difficulty convincing customers to pay money for its maintenance/support. This is a high margin revenue stream that customers can easily opt-in / out of as they see necessary. PTC has often used variations of a “Win-Back” program to entice customers. The customer commentary below gives good insight into the waning value proposition of maintenance costs.

MCAD Central Discussion Board, September 2011 -- [Source](#)

**Biff:** *“I held my maintenance with PTC for approx 8 years, the expense for 1 licence with ASX & AAX was ridiculous but i kept it going. I then decided to purchase Solidworks. It seemed that more customers were moving to it & to be honest, from a commercial point of view it was the best decision I have made.*

**DGS:** *“You have to watch what they're offering. They want to 'win back' you business, so they are going to offer a better price. What they will do often is offer to renew you at a lower function seat than you had, thus a lower price. Plus, part of the renewal is paying a year of back mainenance, per PTC's policy.”*

**Erik Gifford:** *“These scenarios probably sound familiar to all of us who are responsible for managing all the CAD/CAM/CAE maintenance contracts. We've dropped modules that weren't getting used, repackaged licenses and done multi-year maintenance contracts to try to realize a reduced price from PTC. The best deal we ever got was on a three-year contract when Rand was our VAR and PTC wasin a legal battle with them. I think Rand knew they weren't going to be a PTC VAR much longer and didn't care if they didn't get the usual cut of the maintenance pie. There have been several times where in hindsight I've questioned the actual value the maintenance contract and wondered if we'd be better off dropping it and rebuying when a major shift occurs (i.e. Creo 2?). Always interesting to read the transcript of PTC's quarterly meeting with investment bankers. Although PTC has certainly made some recent investments in their product and made improvements, after you read the transcripts you can't help but feel that it's the investment bankers they're worried about keeping happy. Really interesting when you see the numbers and business plans they discuss. PTC isn't willing to give you a discount on buying the software (or winning you back) to be your friend, it's to get you back into the maintenance revenue stream where the margins are huge.”*

PTC User Community Discussion September 2015 -- [Source](#)

**Doug Schaefer:** *“Our VAR is telling us that PTC is discontinuing the Winback program at the end of the month. After 9/30, to reinstate inactive seats all back maintenance will have to be paid, not just the 12 months back as it is now. The alternatives are a monthly subscription plan or purchasing new seats. Has anyone else been told the same thing?”*

**TomUminn:** *“I just checked with our VAR and they confirmed the same thing. On the other hand, PTC has done this same thing multiple times in the past and eventually they start it back up again. I think after awhile they get too desperate for the lost maintenance dollars...”*

**Doug Schaefer:** *“Back in 2009 we elected to allow our maintenance to lapse simply because PTC wouldn't budge on downgrading our seats to something more affordable and more in line with what we were actually using. When we came back in 2012, they gave us exactly what we had asked for in 2009. They missed out on a couple of years of our money as a result. Plus, we learned that we could service our customers just fine without paying maintenance every year, hence why we let it drop again.”*

**MarcoTosin:** *“What is changing NOW is that PTC is kicking customer from maintenance to subscription.”*

**Doug Schaefer:** *“It see(m)s that this is exactly what they are doing now. I agree with Tom, it won't last forever. If you get punitive about people returning to the fold, they are simply less likely to return.”*



# Management's Spin on "Win-Back Support"

From the commentary below, PTC reinstituted the Win-Back program in Q3'16, but created a gimmick that pushed customers into taking a subscription, which includes the maintenance. A customer that is looking to add maintenance already has a perpetual license. Therefore, the optics of just reclassifying a customer who needs maintenance that was accounted for as support revenue as now subscription revenue appears questionable. It appears this tactic will also allow PTC to further inflate its bookings metrics. Our research suggests that PTC may have angered its customers in the process – not a recipe for long-term business success.

## CFO Quote – Q2'16 Earnings Call

*"I'll remind you that the long-term business model we presented at our Investor Day did not include any assumption that our large support revenue base would transition to subscription. So this could represent a big upside to our long-term business model. And at the beginning of April, we announced a support win-back program in the channel that converts customers to subscription."*

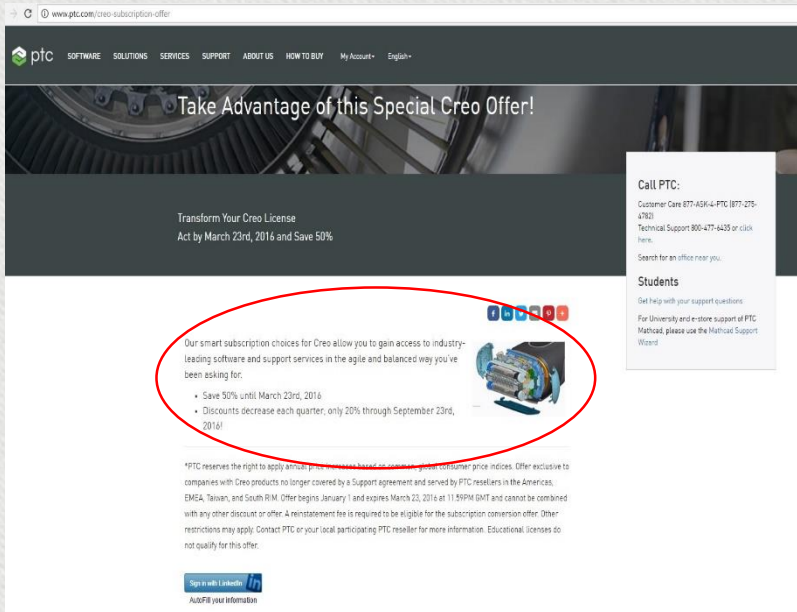
*"The one thing we do have that's new starting in Q3 is the win-back program in the channel. So especially, with our CAD customers, there were some that would go off maintenance, and then, just before they wanted to upgrade, they would come back on. And in the past, we charged them a fee to come back live. And then, they would directly go back off again after they got their upgrade. We would recognize that win-back in our support revenue, but we'd recognize it all at one. So what we now have is a program that's more attractive that gets them to move on to subscription. So it's actually a little cheaper to move on to subscription than to just do a one-time win-back. And we'll be recognizing that revenue moving forward. But the thing is, once they move to subscription, they can't use the software unless they stay on subscription. So that's the benefit for us. So it's a benefit for them, it's probably easier to come back on, benefit for us is once they're on subscription, they have to stay on it to use the software. And so you heard me refer to the notes that's one of the things that is a change in our support guidance. We used to get about \$20 million a year on those win-backs that we would have in the support, and now that's going to be recognized forward as opposed to upfront."* [Source](#)

# Bookings By Heavy Discount Promotions

PTC offered heavy promotions starting at 50% in Q2'16, which incentivized customers (no longer covered by support) to move fast by narrowing the discount to 20% through the end of FY16. Certain foreign resellers were advertising savings up to 80% off (but failing to mention that in the long-run that a subscription will cost more than perpetual). While investors might be excited about bookings exceeding expectations, they might be disappointed when planned margin increases don't materialize.

**CEO on Q2'16 Conference Call:** *"Along with our subscription program, our support conversion program and our discounting and pricing initiatives, we believe our strong Q2 results are a promising indicator that our early efforts are beginning to show results"*

## PTC Direct Promotion Starting @ 50% down to 20%



Source: [PTC](#)

## PTC's Misleading Reseller Promotion "Save up to 80%"

### Special Offer Until 30 September 2016 - Upgrade Your 3D CAD Software: New Subscription License

It happens. You find yourself with outdated software, inactive support, and plenty of product development challenges. Who needs that annoyance? Not you.

Trade in your old PTC CAD license today against a new subscription license. You'll **save up to 80%\***, have the latest version of PTC Creo Parametric, free training and support.

**FIND OUT MORE - CONTACT US**

Source: [Concurrent Engineering](#)

**\*\*In your first year spend 80% less than the cost of a new perpetual PTC Creo Parametric license plus one year Support. Offer exclusive to companies with PTC Creo products no longer covered by a Support agreement and served by authorized PTC Channel Advantage Partners. Offer begins April 1, 2016 and expires Sept 30, 2016 at 11:59PM GMT and cannot be combined with any other discount or offer. Other restrictions may apply. Contact PTC or your local participating PTC Channel Advantage Partner for more information. Educational licenses do not qualify for this offer.**



# Evidence To Suggest Bookings Sleight-of-Hand

Evidence of management promoting bookings on conference calls that they say closed and then three months later announcing a deal with a strong disclaimer about the timing of the related booking.....

**CEO on [Q4'16 Conf Call](#) (October 2016):** ***"Late in the quarter we recorded an SLM subscription booking of \$20 million that was not in our guidance due to deal timing uncertainty, but please take note that even without this transaction, we still would have exceeded the high end of our bookings guidance" and later....*** "Speaking of mega deals, I'd like to circle back and provide some additional color on the strategic SLM engagement that we won in Q4, which capped off a strong year for our SLM business. Following a comprehensive commercial and technical evaluation, a U.S. government customer in the aerospace and defense sector selected a PTC-based solution to help transform its legacy part forecasting system to our cloud-based Service Parts Management solution. This customer has one of the most complex supply chains in the world with over 5,000 large assets and support systems in 1,500 locations around the globe consuming upwards of 1 billion spare parts. This validates our solution as being the best in breed and clearly illustrates that we're able to solve large complex service logistics issues for the most demanding supply chains and reinforces PTC's leading position in the Federal Aerospace and Defense segment.

**CFO on [Q1'16 Conf Call](#) (Jan 2017)** *With this in mind, despite the FX headwinds for the full year fiscal 2017 we are maintaining our bookings guidance range of \$400 million to \$420 million. This represents 5% to 10% growth **excluding the \$20 million SLM megadeal we closed in Q4, 2016.***

Fine Print At The End of The Air Force Contract Formal Announcement: Jan 31, 2017 (3 Months Later)

"The announcement of a customer's selection of PTC software **is not necessarily indicative of the timing of the related booking,** recognition of related revenue, or the amount of revenue for any particular period, or that any related applicable implementation and deployment activities are complete."

**Spruce Point Observation:** If it already has closed as the CFO says, why are they disclaiming the booking

Notice A Prior Press Release A Month Earlier Doesn't Disclaim The Term "Booking" – Dec 15, 2016

"The announcement of any particular selection of PTC software **is not necessarily indicative of the timing of recognition of revenue** there from or the amount of revenue for any particular period. In addition, in many cases PTC's software must be successfully implemented and deployed to enable the customer to achieve its business objectives. The announcement of a customer's selection of PTC software does not indicate that applicable implementation and deployment activities are complete."

# Where Is The Air Force Deal?

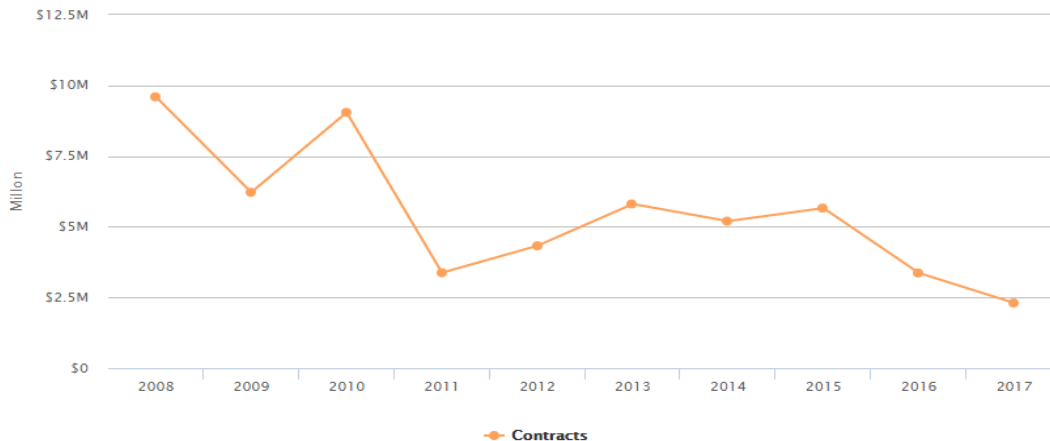
According to government sources, PTC's government awards have been in steady decline. There is no evidence of a \$20m contract award after we conducted a thorough search of Defense.gov and USSpending.gov (1)

FY16 Awarding Agency For Prime	Funds Awarded	Number of Transactions
Dept. of Defense (includes Air Force)	\$1,941,222	28
Treasury	\$544,151	3
NASA	\$36,905	6
Dept. of Agriculture	\$6,050	2
Dept. of Homeland Security	\$0	1

Where's the  
"Mega"  
Award?

PTC Inc. Total Awards As a Prime and a Subcontractor Have Been In Steady Decline for Nearly 10 years.....

TOTAL FUNDS AWARDED AS PRIME AND AS SUB



[Text View and More Details of Total Funds Awarded](#)

Year	Funds Awarded \$mm	Number of Transactions
2008	\$9.6	102
2009	\$6.2	52
2010	\$9.0	61
2011	\$3.4	54
2012	\$4.3	37
2013	\$5.8	53
2014	\$5.2	25
2015	\$5.6	56
2016	\$3.5	46
2017	\$2.3	8

1) [USASpending.gov](https://www.usaspending.gov) and [Defense.gov](https://www.defense.gov) Note: If PTC is just a subcontractor it may earn significantly lower margins than as prime contractor



# Stagnant Product Interest Suggested By Google Trends....

Stagnant interest level from Google Trends across PTC's core CAD, SLM and PLM solutions further supports our belief that PTC is at best a no growth business, and at worst in decline.

## CAD Solution: PTC Creo



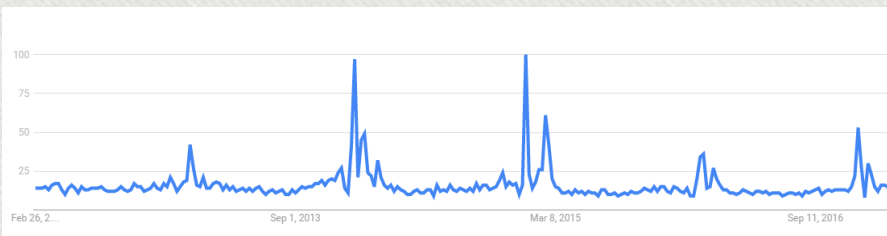
Source: [Google Trends](https://www.google.com/trends/explore?q=PTC+Creo)

## CAD Solution: Mathcad



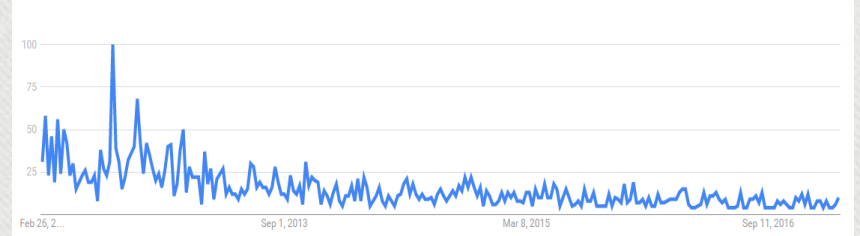
Source: [Google Trends](https://www.google.com/trends/explore?q=Mathcad)

## PLM Solution: Windchill Software



Source: [Google Trends](https://www.google.com/trends/explore?q=Windchill+Software)

## SLM Solution: Servigistics Software



Source: [Google Trends](https://www.google.com/trends/explore?q=Servigistics+Software)

## SLM Solution: Arbortext



Source: [Google Trends](https://www.google.com/trends/explore?q=Arbortext)

## Corporate Search for PTC Inc.



Source: [Google Trends](https://www.google.com/trends/explore?q=PTC+Inc.)



## *Declining Transparency, Reclassifications and Obfuscation*



# PTC's Financial Troubles

Before we look closely at PTC's recent financial obfuscation, it's important to consider the recent troubles the Company has had from a financial management perspective. The most significant issue was the recent settlement with the Department of Justice and SEC in 2016. None of this should inspire much shareholder confidence.

	Foreign Corrupt Practices Act (FCPA) Violation (Feb 2016)	Korea Tax Audit (July 2016)	Forecast Restatement (October 2016)
What Happened	PTC effectively bribed Chinese officials by paying their travel expenses to secure business. <i>"PTC failed to stop illicit payments despite indications of potential corruption by agents working with its Chinese subsidiaries, and the misconduct continued unabated for several years,"</i> said Kara Brockmeyer, Chief of the SEC Enforcement Division's FCPA Unit.	In July 2016, PTC received an assessment from the tax authorities in Korea related to an ongoing tax audit	PTC issued financial guidance for Q1'17 and FY17. Although GAAP operating expense guidance and GAAP operating margin guidance were presented as intended for both periods, as was Non-GAAP EPS guidance, the GAAP EPS guidance included in the October 26, 2016 press release and prepared remarks inadvertently omitted interest expense for both the Q1'17 and FY'17 periods, which requires revisions to the GAAP EPS guidance for both periods.
Cost to Shareholders	PTC agreed to pay \$11.858 million in disgorgement and \$1.764 million in prejudgment interest to settle the SEC's charges and its two China subsidiaries agreed to pay a \$14.54 million fine in a non-prosecution agreement	\$12m	N/A
Source	<a href="#">Justice Dept</a> And <a href="#">SEC</a>	<a href="#">10-Q</a>	<a href="#">8-K</a> SEC filing



# Rules Are Made To Be Broken.....

**Warning:** PTC started giving a “rule of thumb” for investors to track the change in its sales and Non-GAAP EPS for every 1% shift in subscription mix. Curiously, it changed its estimate from \$3m in sales / \$0.02c Non-GAAP EPS to \$4m / \$0.03c between Q3 and Q4 without any specific reason. This change coincided with a large miss relative to expectations, which of course PTC explained away by substantial bookings outperformance, as well as escalated restructuring charges in Q4. PTC even went so far to say that “We cannot estimate the effect on GAAP EPS due to the number of unknown items, including tax items, included in GAAP EPS.” The last company Spruce Point evaluated that could not reconcile its estimates to GAAP was Sabre Corp, which has cut its guidance twice in recent earnings periods. (1)

## FY'16 Business Outlook

For the quarter and fiscal year ending September 30, 2016, the company expects:

In millions except per share amounts

Operating Measures <sup>(1)</sup>	Q4'16 Low	Q4'16 High	FY'16 Low	FY'16 High
Subscription ACV	\$ 25	\$ 28	\$ 90	\$ 92
License and Subscription Bookings	\$111	\$121	\$370	\$380
Subscription % of Bookings	46%	46%	48%	48%

<sup>(1)</sup>An explanation of the metrics included in this table is provided below.

Financial Measures	Q4'16 Low	Q4'16 High	FY'16 Low	FY'16 High
Subscription Revenue	\$ 40	\$ 40	\$ 120	\$ 120
Support Revenue	155	155	649	649
Perpetual License Revenue	61	66	193	198
Total Software Revenue <sup>(2)</sup>	256	261	962	967
Professional Services Revenue	49	49	198	198
Total Revenue <sup>(2)</sup>	\$ 305	\$ 310	\$ 1,160	\$ 1,165

Operating Expense (GAAP)	\$ 196	\$ 198	\$ 809	\$ 811
Operating Expense (Non-GAAP)	170	172	667	669
Operating Margin (GAAP)	8%	9%	2%	2%
Operating Margin (Non-GAAP)	19%	20%	17%	17%
Tax Rate (GAAP)	(13%)	(13%)	(5%)	(5%)
Tax Rate (Non-GAAP)	10%	8%	8%	7%
Shares Outstanding	116	116	115	115
EPS (GAAP)	\$ 0.11	\$ 0.16	(\$ 0.11)	(\$ 0.07)
EPS (Non-GAAP) <sup>(3)</sup>	\$ 0.36	\$ 0.41	\$ 1.36	\$ 1.41
Free Cash Flow			\$ 153	\$ 153
Adjusted Free Cash Flow <sup>(3)</sup>			\$ 236	\$ 239

<sup>(2)</sup>As a rule of thumb, our model indicates that, on an annual basis, every 1% change in subscription mix will impact annual revenue by \$3 million, and annual non-GAAP EPS by \$0.02.

<sup>(3)</sup>Adjusted Free Cash Flow guidance is net cash provided by (used in) operating activities less capital expenditures, and excludes restructuring payments of approximately \$55 million to \$58 million and a \$28 million legal settlement with the SEC and DOJ regarding a China FCPA investigation.

## FY'17 Business Outlook

For the quarter ending December 31, 2016 and fiscal year 2017, the company expects:

In millions except per share amounts

Operating Measures <sup>(1)</sup>	Q1'17 Low	Q1'17 High	FY'17 Low	FY'17 High
Subscription ACV	\$ 19	\$ 22	\$ 130	\$ 136
License and Subscription Bookings	\$ 70	\$ 80	\$ 400	\$ 420
Subscription % of Bookings	55%	55%	65%	65%

<sup>(1)</sup>An explanation of the metrics included in this table is provided below.

Financial Measures	Q1'17 Low	Q1'17 High	FY'17 Low	FY'17 High
Subscription Revenue	\$ 54	\$ 54	\$ 250	\$ 260
Support Revenue	153	153	605	605
Perpetual License Revenue	32	37	140	150
Total Software Revenue <sup>(2)</sup>	239	244	995	1,015
Professional Services Revenue	46	46	195	195
Total Revenue <sup>(2)</sup>	\$ 285	\$ 290	\$ 1,190	\$ 1,210

Operating Expense (GAAP)	\$ 192	\$ 194	\$ 765	\$ 775
Operating Expense (Non-GAAP)	169	171	680	690
Operating Margin (GAAP)	3%	4%	7%	7%
Operating Margin (Non-GAAP)	15%	16%	17%	18%
Tax Rate (GAAP)	25%	25%	25%	25%
Tax Rate (Non-GAAP)	12%	10%	12%	10%
Shares Outstanding	117	117	116	116
EPS (GAAP)	\$ 0.06	\$ 0.08	\$ 0.51	\$ 0.58
EPS (Non-GAAP) <sup>(3)</sup>	\$ 0.23	\$ 0.28	\$ 1.20	\$ 1.35
Free Cash Flow			\$ 131	\$ 141
Adjusted Free Cash Flow <sup>(3)</sup>			\$ 170	\$ 180

<sup>(2)</sup>We estimate that, on an annual basis, every 1% change in subscription mix will impact annual revenue by \$4 million, and annual non-GAAP EPS by \$0.03. We cannot estimate the effect on GAAP EPS due to the number of unknown items, including tax items, included in GAAP EPS.

<sup>(3)</sup>Adjusted Free Cash Flow Guidance is net cash provided by (used in) operating activities less capital expenditures, and excludes restructuring payments of approximately \$36 million and a legal accrual of approximately \$3 million.

\$ in mm	Q3'16	Q4'16
Software Sales Guidance	\$238 - \$243	\$256 - \$261
Actual Software Sales	\$238.4	\$239.6
Miss relative to midpoint	-0.9%	-7.3%
Sub Bookings vs. expectations	58% vs 48%	70% vs 46%

Source: [Q3'16 earnings release](#)

Source: [Q4'16 earnings release](#)



# Less and Less Important Disclosure Covering Up Pricing Deflation

We also caution investors' that PTC no longer discloses key supplemental data and the reason appears to be that PTC doesn't want investors to see its pricing power is rapidly deflating. In particular, upon reviewing previous supplemental financial data tables, we find that PTC no longer discloses quota-carrying reps (as of Q4'16), active seats (as of Q4'15), and average deal size. Next we will show that resellers have been in structural decline and now it looks like direct sales reps and revenue per rep are too.

Trended PTC Supplementary Data															
	FY'13					FY'14					FY'15				
	Quarter Ended				Yr Ended 30-Sep	Quarter Ended				Yr Ended 30-Sep	Quarter Ended				Yr Ended 30-Sep
	29-Dec	30-Mar	29-Jun	30-Sep		28-Dec	29-Mar	28-Jun	30-Sep		3-Jan	4-Apr	4-Jul	30-Sep	
Large deals (\$ in millions):															
Large deal bookings (1)	\$ 23	\$ 23	\$ 26	\$ 38	\$ 109	\$ 28	\$ 38	\$ 63	\$ 50	\$ 179	\$ 26	\$ 29	\$ 21	\$ 40	\$ 116
Number of large deals	9	11	10	19	49	14	17	21	18	70	15	13	8	21	57
Average deal size	2.5	2.1	2.6	2.0	2.2	2.0	2.2	3.0	2.8	2.6	1.7	2.2	2.6	1.9	2.0
Sales capacity and productivity (\$ in millions):															
Quota-carrying sales reps	347	339	336	343	343	330	345	358	357	357	338	343	328	329	329
Sales efficiency (2)	0.94	0.96	0.96	0.99	0.99	1.01	1.05	1.14	1.14	1.14	1.13	1.12	1.04	1.06	1.06
Active support seats:															
CAD	241	239	244	246	246	244	243	245	249	249	249	245	245	250	250
ePLM	1,507	1,532	1,564	1,592	1,592	1,579	1,581	1,647	1,721	1,721	1,722	1,617	1,616	1,646	1,646
SLM	55	56	71	94	94	96	96	97	112	112	119	117	122	124	124
Total	1,803	1,826	1,879	1,931	1,931	1,920	1,920	1,988	2,081	2,081	2,090	1,979	1,982	2,020	2,020

Source: Compare above with current PTC FY'17 [Financial Data Tables](#)

Sales/Active Seat (1)	2013	2014	2015	CAGR
CAD	\$2,246	\$2,336	\$2,046	-4.5%
ePLM	\$359	\$348	\$319	-5.7%
SLM	\$1,815	\$1,532	\$1,340	-14.1%

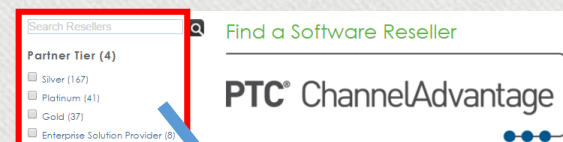
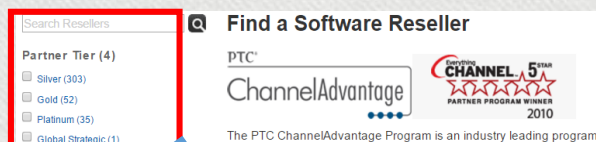
1) Defined simply as revenues divided by active seats

Core Sales / Avg. Quota Reps	2013	2014	2015	2016
Core Sales (1)	\$1,293.5	\$1,351.8	\$1,202.4	\$1,062.2
% Direct (2)	77.4%	77.7%	76.9%	74.9%
Direct Core Sales	\$1,001.2	\$1,050.3	\$924.7	\$795.7
Avg. Quota Rep (3)	341	348	335	330
Avg. Sales Per Rep	\$2.9	\$3.0	\$2.7	\$2.4

1) CAD, ePLM and SLM revenues (ex: IoT which is sold indirectly) 2) We assume correct though we will show it appears overstated 3) Quarterly avg. rep over the fiscal year

# PTC's Vanishing Resellers...

PTC wants investors' to believe that sales are temporarily under pressure from a change to a subscription model. However, Spruce Point believes that the problem is more structural in nature. We've conducted a forensic analysis of PTC's reseller partners. PTC stopped disclosing exact indirect sales in its SEC filings in 2013, but has continued to claim 20%-25% of revenues come from this channel (1). ChannelAdvantage resellers must pay a fee, are required to make annual revenue commitments, and cannot sell competitive products among other requirements (2). From our analysis it is clear that software resellers are in structural decline and that PTC is no longer emphasizing status levels. With both sales and marketing employees and software resellers in decline, how exactly is PTC able to sustain revenue growth momentum? PTC has also said that all of its "high growth" IoT goes through resellers, and not direct, so this should be a major concern for the growth story. (3)



\$ in mm	2011	2012	2013	2014	2015	2016	Current
Silver	338	303	219	201	176	167	0
Gold	67	52	42	49	47	41	1
Platinum	35	35	39	35	36	37	5
Other	--	1	--	--	8	8	258
<b>Total Software Resellers</b>	<b>440</b>	<b>390</b>	<b>300</b>	<b>285</b>	<b>267</b>	<b>253</b>	<b>264</b>
Total Indirect Sales	\$313.5	\$337.4	Stopped 10-K Disclosure	Stopped 10-K Disclosure	Stopped 10-K Disclosure	Stopped 10-K Disclosure	--
% of Total Sales	27%	27%	"Approximately 20%-25%"	"Approximately 20%-25%"	"Approximately 20%-25%"	"Approximately 20%-25%"	--
Sales/Marketing Employees	1,508	1,508	1,362	1,481	1,416	1,442	--
Wayback Machine Source To Verify Resellers	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>





# Channel Sales Reporting Discrepancy

Our concerns about channel revenues are supported by the fact that PTC's own financial information doesn't reconcile. We illustrated that PTC no longer puts specific indirect channel revenues in its SEC filings. On its investor relations website, PTC provides an excel file with a tab "Supplemental Data" (bottom left table) – it lists "Channel" Revenue of 23% / 23% in FY11/12, but these figures do not reconcile with historical SEC filings at 27.3% / 26.9% (bottom right table). Direct revenue % also don't add up and are 72% / 73% in FY 11/12 vs. 77% in the left table below. The discrepancy suggests approximately \$35 - \$50m of irreconcilable revenues.

## Historical Channel Sales of 23% in FY11 – FY12



	FY'11	FY'12	FY'13	FY'14	FY'15	FY'16	FY'17
<b>Supplementary Data</b>	Yr Ended 30-Sep	Yr Ended 30-Sep	Yr Ended 30-Sep	Yr Ended 30-Sep	Yr Ended 30-Sep	Yr Ended 30-Sep	Qtr End 31-Dec
Sales efficiency (1)	0.99	0.94	0.99	1.11	1.04	1.14	1.17
<b>Revenue % by distribution type:</b>							
Direct	77%	77%	77%	78%	77%	75%	76%
Channel	23%	23%	23%	22%	23%	25%	24%
Total Revenue	100%	100%	100%	100%	100%	100%	100%
<b>Revenue % by industry</b>							
Automotive	12%	13%	12%	14%	14%	14%	14%
Electronics & High Tech	17%	17%	18%	16%	18%	16%	15%
Federal, Aerospace & Defense	20%	18%	18%	19%	16%	15%	14%
Industrial Products	31%	30%	31%	31%	31%	32%	31%
Life Sciences	5%	4%	4%	5%	5%	5%	5%
Retail & Consumer	7%	7%	8%	8%	7%	8%	8%
Other	9%	11%	9%	8%	8%	10%	12%
Total Revenue	100%	100%	100%	100%	100%	100%	100%

(1) Sales efficiency = trailing 12-month license and subscription bookings divided by trailing 12-month sales and marketing expenditure

Source: PTC FY'17 [Financial Data Tables](#)

## SEC Filings Indicate 27% Channel Sales

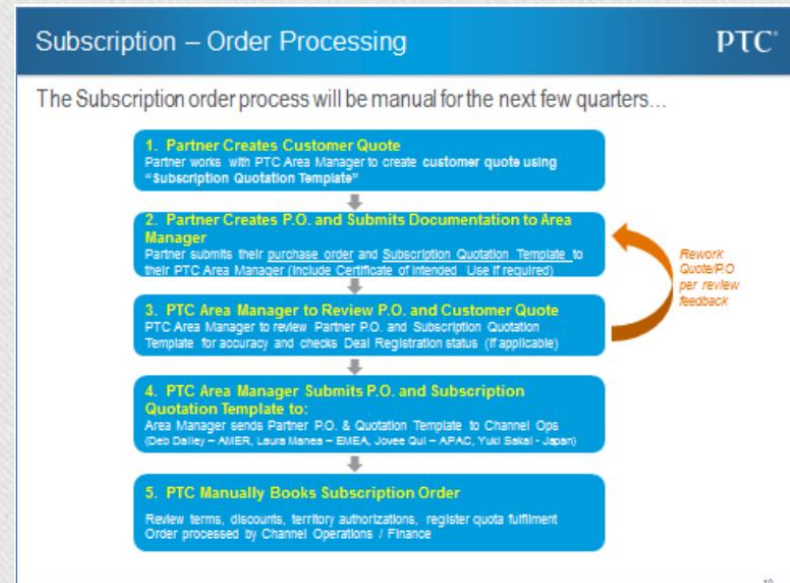
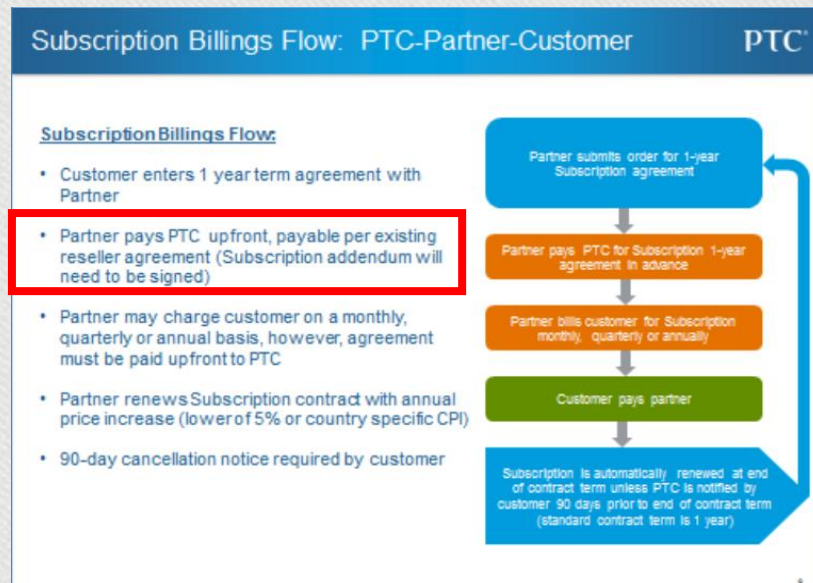
		Total Revenue Year Ended September 30,				
		2012	Percent Change	2011	Percent Change	2010
Direct						
License revenue	\$	250.3	—%	251.2	13%	222.1
Service revenue:						
Consulting and training service revenue		278.5	9%	255.2	25%	203.6
Maintenance revenue		389.4	12%	347.1	14%	303.8
Total service revenue		668.0	11%	602.3	19%	507.4
Total revenue	\$	918.3	8%	853.5	17%	729.4
Indirect						
License revenue	\$	98.1	8%	90.9	23%	73.9
Service revenue:						
Consulting and training service revenue		16.8	41%	11.9	(15)%	14.0
Maintenance revenue		222.5	6%	210.6	9%	192.6
Total service revenue		239.3	8%	222.5	8%	206.7
Total revenue	\$	337.4	8%	313.5	12%	280.6
Total Revenue						
License revenue	\$	348.4	2%	342.1	16%	296.0
Service revenue:						
Consulting and training service revenue		295.3	11%	267.2	23%	217.6
Maintenance revenue		611.9	10%	557.7	12%	496.4
Total service revenue		907.3	10%	824.8	16%	714.0
Total revenue	\$	1,255.7	8%	1,166.9	16%	1,010.0

Source: PTC FY'12 [10-K](#) Annual Report, p. 16

# PTC Reseller Economics Stink

From PTC's Channel Partner guide, it appears that its resellers are effectively financing PTC, which we suspect resellers cannot possibly be happy about. The billing flow schematic below shows that PTC gets paid upfront, while the reseller bears responsibility for billing and collecting from the end user. Note PTC's reseller revenue recognition, while described differently, appears analogous to its peer ANSYS's policy.




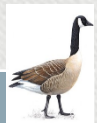
	Revenue Recognition From Resellers
PTC	"Revenue arrangements with resellers are generally recognized on a sell-through basis; that is, when we deliver the product to the end-user customer. We record consideration given to a reseller as a reduction of revenue to the extent we have recorded revenue from the reseller. We do not offer contractual rights of return, stock balancing, or price protection to our resellers, and actual product returns from them have been insignificant to date. As a result, we do not maintain reserves for reseller product returns"
ANSYS	In sales facilitated by channel partners, the channel partner bears the risk of collection from the end-user customer. The Company recognizes revenue from transactions with channel partners when the channel partner submits a written purchase commitment, collectibility from the channel partner is probable, a license agreement signed by the end-user customer is received and delivery has occurred, provided that all other revenue recognition criteria are satisfied. Revenue from channel partner transactions is the amount remitted to the Company by the channel partners





# Which Duck Looks Different?

PTC's revenue and reseller arrangements look even more unusual in light of the fact that it accrues almost no allowance for doubtful accounts against its accounts receivable. ANSYS again is an illustrative example. It reports nearly an identical % of revenues from channel partners, yet accrues 10x more for its receivables allowances. Recall also that ANSYS describes almost identical revenue recognition and that its channel partner bears the risk of collection. The difference could be explained by our prior observation that PTC asks its resellers for upfront payment. We reiterate that all else equal, why would resellers want to sell for PTC if they are effectively being asked to finance it. Another possibility is that PTC is incorrectly accounting for Partner Allowances, a practice that Autodesk does a good job disclosing in its financial reports.


Figures in millions	Dassault 		Autodesk 		ANSYS 		PTC (1) 	
	FY 14	FY 15	FY 15	FY 16	FY 15	FY 16	FY 15	FY 16
Gross Accounts Receivables	EUR 648.7	EUR 759.6	\$495.4	\$700.1	\$96.8	\$112.9	\$198.3	\$162.4
Partner Allowance (2)	--	--	(\$27.6)	(\$37.3)	--	--	--	--
Other Allowances	(21.1)	(20.5)	(\$8.9)	(\$9.2)	(\$5.2)	(\$5.7)	(\$1.0)	(\$1.0)
Accounts Receivable, net	EUR 627.7	EUR 739.2	\$458.9	\$653.6	\$91.6	\$107.2	\$197.3	\$161.4
<b>Allowances % of Gross A/R</b>	<b>3.2%</b>	<b>2.7%</b>	<b>7.4%</b>	<b>6.6%</b>	<b>5.4%</b>	<b>5.0%</b>	<b>0.5%</b>	<b>0.6%</b>
Partner Program	<a href="#">Source</a>		<a href="#">Source</a>		<a href="#">Source</a>		<a href="#">Source</a>	
% Sales From Channel	41%		79%		24.4%		20%-25%	

- When adjusted to include PTC's billed but uncollected support and subscription related amounts included in Other Current Assets of \$129.3m and \$126.3m in 2015/16, the allowance % of gross receivables falls to just 0.31% and 0.35% in 2015/16, respectively. Figures disclosed in PTC's [10-K](#), p. F-10
- Autodesk has a partner incentive program that uses quarterly attainment of monetary rewards to motivate distributors and resellers to achieve mutually agreed upon business goals in a specified time period. A portion of these incentives reduce license and other revenue in the current period. The remainder, which relates to incentives on our Subscription Program, is recorded as a reduction to deferred revenue in the period the subscription transaction is billed and subsequently recognized as a reduction to subscription revenue over the contract period. These incentive balances do not require significant assumptions or judgments. The reserves associated with the partner incentive program are treated on the balance sheet as either contra account receivable (when due to distributors and direct resellers) or accounts payable (when due to indirect resellers).

# Misleading DSO Also Supports Our Case That Something “Doesn’t Look Right”

Upon reviewing PTC’s deferred revenue disclosures, we noticed something unusual. The Company cites “*Billed but uncollected support and subscription-related amounts in other current assets.*” To us, this certainly sounds like a receivable. Upon further inspection, we notice that PTC discloses its DSO in its financial spreadsheet. The trend makes it look as if DSOs have been rapidly improving. We decided to see what would happen if we included the billed and uncollected receivables into the DSO calculation. Not surprisingly we’ve found almost no improvement from FY 2013 – 2016.

## Company Shows DSO Declining....

						
	FY'11	FY'12	FY'13	FY'14	FY'15	FY'16
<b>Consolidated Balance Sheets</b>	<b>Yr Ended 30-Sep</b>	<b>Yr Ended 30-Sep</b>	<b>Yr Ended 30-Sep</b>	<b>Yr Ended 30-Sep</b>	<b>Yr Ended 30-Sep</b>	<b>Yr Ended 30-Sep</b>
<b>LIABILITIES AND SHAREHOLDERS' EQUITY</b>						
Current liabilities:						
Accounts payable, accrued expenses and other current liabilities	\$ 77	\$ 66	\$ 66	\$ 77	\$ 111	\$ 102
Accrued compensation and benefits	92	92	113	145	82	146
Accrued income taxes	12	1	7	9	4	6
Deferred tax liabilities	4	0	1	1	2	-
Current portion of long term debt	-	8	15	25	50	-
Deferred revenue	280	315	327	369	368	400
Total current liabilities	465	482	529	627	617	655
Long term debt, net of current portion	200	363	243	587	618	758
Deferred tax liabilities	26	32	42	37	42	14
Deferred revenue	14	12	10	13	19	13
Other liabilities	101	106	79	83	53	70
Total liabilities	807	994	902	1,346	1,350	1,510
Shareholders' equity:						
Common stock	1	1	1	1	1	1
Additional paid-in capital	1,805	1,823	1,787	1,597	1,553	1,599
Accumulated deficit	(919)	(954)	(810)	(650)	(603)	(657)
Accumulated other comprehensive income (loss)	(65)	(73)	(51)	(94)	(92)	(100)
Total shareholders' equity	823	797	926	854	860	843
Total liabilities and shareholders' equity	\$ 1,630	\$ 1,792	\$ 1,829	\$ 2,200	\$ 2,210	\$ 2,352
<b>Days Sales Outstanding</b>	<b>61</b>	<b>61</b>	<b>62</b>	<b>60</b>	<b>56</b>	<b>50</b>

## ....But In Reality DSOs Stubbornly High

\$ in mm	2013	2014	2015	2016
Accounts Receivable, Net	\$229.1	\$235.7	\$197.3	\$161.4
(+) Billed But Uncollected Amounts in Other Current Assets	\$108.6	\$116.2	\$129.3	\$126.3
= Adjusted Receivables	\$337.7	\$351.9	\$326.6	\$287.6
<b>Adjusted DSO (1)</b>	<b>95</b>	<b>95</b>	<b>95</b>	<b>92</b>



# Loose Use of Non-GAAP Terms

Spruce Point believes that PTC's evolving versions of Backlog are becoming increasingly distorted. To illustrate, PTC now tries to present "Unbilled Deferred Revenue" along with Deferred Revenue in a table and wants investors' to evaluate the total amounts. However, Unbilled Deferred Revenue does not appear on PTC's balance sheet! While "contractually committed" sounds like a strong assurance, it's entirely possible that customers can cancel their contracts with limited/no penalty. PTC should also clearly specify that Unbilled Deferred Revenue is a "Non-GAAP" figure.

**Backlog (2014) – Early Part of Transition:** *"We generally ship our products within 30 days after receipt of a customer order. A high percentage of our license revenue historically has been generated in the third month of each fiscal quarter, and this revenue tends to be concentrated in the latter part of that month. Accordingly, orders may exist at the end of a quarter that have not been shipped and not been recognized as revenue. We do not believe that our backlog at any particular point in time is material or indicative of future sales levels."* (Source: [10-K](#), p.4)

**Backlog (2015):** *"We define backlog as contractually committed orders for license, subscription and support with a customer for which the associated revenue has not been recognized and the customer has not been invoiced. Deferred revenue primarily relates to software support agreements invoiced to customers for which the revenue has not yet been recognized. Customer commitments for amounts that are not in deferred revenue and have not yet been invoiced to customers related to multi-year support and subscription contracts totaled approximately \$210 million at September 30, 2015 (compared to approximately \$185 million at September 30, 2014), of which we expect to invoice customers approximately \$140 million within the next twelve months."* (Source: [10-K](#), p.5)

**Deferred Revenue and Backlog (Unbilled Deferred Revenue):** *"We define unbilled deferred revenue as contractually committed orders for license, subscription and support with a customer for which the associated revenue has not been recognized and the customer has not been invoiced. We do not record unbilled deferred revenue on our Consolidated Balance Sheet until we invoice the customer. Deferred revenue primarily relates to software agreements invoiced to customers for which the revenue has not yet been recognized. Of the unbilled deferred revenue balance at September 30, 2016, we expect to invoice customers approximately \$210 million within the next twelve months. The increase in unbilled deferred revenue is primarily due to the increase in our subscription bookings, which are generally billed annually at the start of each annual subscription period."* (Source: [10-K](#), p. 17)

	December 31, 2016	September 30, 2016	January 2, 2016
	(Dollar amounts in millions)		
Unbilled deferred revenue	\$ 450	\$ 369	\$ 188
Deferred revenue	375	414	389
Total	\$ 825	\$ 783	\$ 577



PTC wants to divert investor attention from Deferred Revenue, to Unbilled Deferred Revenue. We view this presentation as potentially misleading since Unbilled Deferred Revenue does not appear on PTC's balance sheet

# Many Reclassifications

**PTC's frequent reclassifications are nothing more than ways to put a shine on a struggling business. We will illustrate how recent actions serve to bolster the IoT business and enhance segment profit presentation.**

Period	Reclassification
<a href="#">Q1'17</a> p.27	In 2016, we launched Navigate, a ThingWorx-based PLM solution. In 2017, revenue and bookings for Navigate are being allocated 50% to Solutions and 50% to IoT; 2016 reported amounts have been reclassified to conform to the current presentation. The impact of the reclassification on 2016 revenue was immaterial.
<a href="#">Q3'16</a> p.5	Through the second quarter of 2016, we had two operating and reportable segments: (1) Software Products, which included license and related support revenue (including updates and technical support) for all our products except training-related products; and (2) Services, which included consulting, implementation, training, cloud services, computer-based training products, including support on these products, and other services revenue. With a change in our organizational structure in an effort to create more effective and efficient operations and to improve customer and product focus, during the three months ended July 2, 2016, we revised the information that our chief executive officer, who is also our chief operating decision maker ("CODM"), regularly reviews for purposes of allocating resources and assessing performance. As a result, effective with the beginning of the third quarter of 2016, we changed our operating and reportable segments from two to three: (1) the Solutions Group, which includes license, subscription, support and cloud services revenue for our core CAD, SLM and PLM products; (2) the IoT Group, which includes license, subscription, support and cloud services revenue for our IoT, analytics and augmented reality solutions; and (3) Professional Services, which includes consulting, implementation and training revenue.
<a href="#">Q1'16</a> p. 5	In 2015, we classified revenue and cost of revenue in three categories: 1) license and subscription, 2) support and 3) professional services. Effective with the beginning of the first quarter of 2016, we are reporting perpetual license revenue separately from subscription revenue and are presenting revenue in four categories: 1) subscription, 2) support, 3) perpetual license and 4) professional services. Effective with the beginning of the first quarter of 2016, we are combining cost of license and subscription revenue with cost of support revenue and reporting it as cost of software revenue. As a result, we are presenting cost of revenue in two categories: 1) cost of software revenue and 2) cost of professional services revenue. The discussion that follows reflects our revised reporting structure.
<a href="#">Q1'16</a> p. 5	Effective with the beginning of the first quarter of 2016, we reclassified certain expenses related to management of our product lines from general and administrative to marketing.
FY15 <a href="#">10K</a> , p.15	Through 2014, we classified revenue in three categories: 1) license; 2) service; and 3) support. Because we introduced subscription-based licenses in 2015, we have revised our revenue reporting. Effective with the beginning of the first quarter of 2015, we report revenue as follows: 1) license and subscriptions (L&S); 2) support; and 3) professional services. L&S revenue includes perpetual license revenue, subscription revenue and cloud services revenue. Cloud service offerings were previously reflected in service revenue and cost of service revenue. Consulting and training service revenue and consulting and training cost of service revenue are now referred to as professional services revenue and cost of professional services revenue. The discussion that follows reflects our revised reporting structure.



# Meaningless Tax Rate

We believe PTC's GAAP/Non-GAAP earnings should be viewed skeptically. Just witness how PTC's GAAP and Non-GAAP tax estimate centered around 20% going into FY16 and by year end the GAAP tax rate was -19% and Non-GAAP rate was 5%. PTC cited a FY16 "tax benefit" of \$0.11c per share. PTC doesn't make it easy for investors to see how much they actually pay in cash taxes. Most companies disclose these figures at the bottom of the cash flow statement, whereas PTC buries the figures in the footnotes of its Annual Report. The general trend of flat cash taxes mirrors our view that PTC isn't really growing.

## On The Surface, PTC's GAAP Income Tax Benefiting EPS

	Year ended September 30,		
	2016	2015	2014
	(in millions)		
Pre-tax income	\$ (67.2)	\$ 26.5	\$ 186.1
Tax (benefit) provision	(12.7)	(21.0)	25.9
Effective income tax rate	(19)%	(79)%	14%

## Actual Cash Taxes Buried Deep In PTC's Annual Report, p. F-24

*"At September 30, 2016 and 2015, income taxes payable and income tax accruals recorded in accrued income taxes, other current liabilities, and other liabilities on the accompanying Consolidated Balance Sheets were \$18.7 million (\$6.3 million in accrued income taxes, \$5.5 million in other current liabilities and \$6.9 million in other liabilities) and \$14.7 million (\$4.0 million in accrued income taxes, \$2.2 million in other current liabilities and \$8.5 million in other liabilities), respectively. At September 30, 2016 and 2015, prepaid taxes recorded in prepaid expenses on the accompanying Consolidated Balance Sheets were \$9.9 million and \$8.2 million, respectively. **We made net income tax payments of \$25.5 million, \$30.1 million and \$25.5 million in 2016, 2015 and 2014, respectively.**" ([Source](#))*



## *Critical Look At PTC's Never-Ending Restructuring*



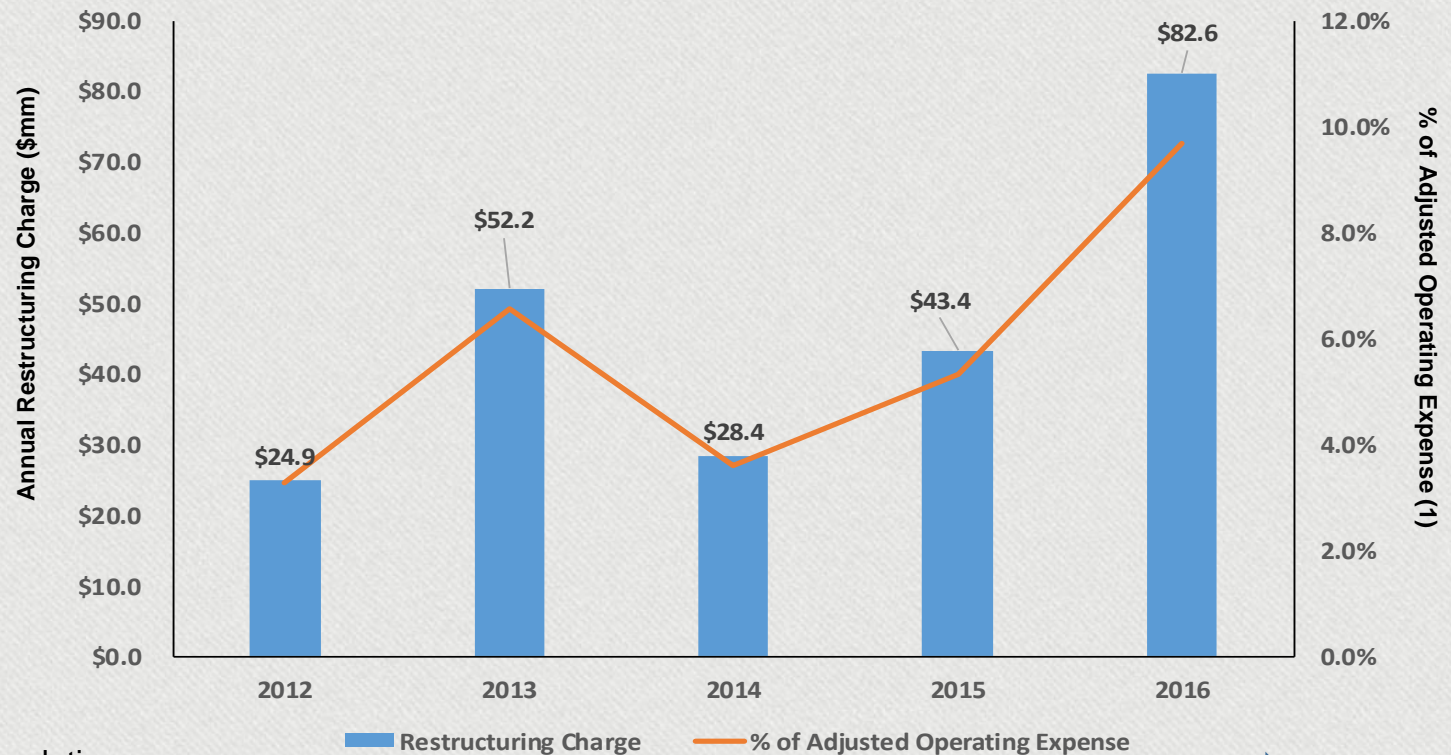


# Recurring and Growing Restructuring Charges Merit Scrutiny

PTC would like investors' to ignore its restructuring expenses and evaluate its Non-GAAP results.

The problem we see is that PTC's restructuring charges have been recurring now for 5 years and keep increasing in size.

The cumulative restructuring charges since 2012 are \$231m. Charges accelerated in 2016 and amount to 10% of Adjusted Operating Expenses and 7% of sales.



Cumulative  
Terminated  
Employees



Source: Company filings

(1) 2015 adjusted to remove pension settlement cost

# Charges Grew Heavily During FY 2016

PTC made frequent increases to its restructuring plan during FY 2016 and spent \$83m in actual cash costs to execute its program (\$30-\$40m more than originally planned). PTC's restructuring program has all the trappings of earnings management. The SEC will be keen to see our analysis in light of its own Accounting Bulletin 100 that says companies must be able to make "reliable estimates"

[SEC on Restructuring](#): "Repeated material changes in the nature, timing, or amount of the estimated exit costs and involuntary termination benefits subsequent to the commitment date may also indicate an inability to make reliable estimates."

\$ in mm	Q1'16	Q2'16	Q3'16	Q4'16	Q1'17
Press Release Source	<a href="#">1/20/16 Press Release</a>	<a href="#">4/20/16 Press Release</a>	<a href="#">7/20/16 Press Release</a>	<a href="#">10/26/16 Press Release</a>	<a href="#">1/18/17 Press Release</a>
Estimated Annual Restructuring Cost	\$40 - \$50	Up to \$50	Up to \$50 ( <a href="#">10Q</a> says \$50-\$70)	\$75 - \$80	Total: \$82.6
Period Charge	\$37.1	\$4.6	\$2.8	\$31.7	\$6.3 (1)
Estimated Annual Cash Costs	\$40 - \$50	--	--	--	\$70.8 Actual Annual
Realized Cash Costs	\$16.7	\$25.1	\$8.1	\$5.1	\$15.8
Net Estimated Fiscal Yr Cost Savings	\$17.0	--	--	--	\$0 (2)
Cumulative Employees	432	481	518	<b>810</b>	<b>795</b>

Why did this change?  
Does PTC have trouble tracking headcount?

- 1) \$3.9m related to closure of excess facilities. Total charges exceed high end \$80m due to "incremental efficiencies" identified in Q4
- 2) [10-K](#) p.16 says the following: "We expect that the cost savings associated with the headcount and facility reductions will be offset by certain planned cost increases and investments in our business. As a result, we do not expect net operating expense reductions in 2017, as compared to 2016 levels"





# Diminishing Returns To Restructuring

PTC's recurring restructuring programs is showing severe signs of diminishing returns on investment. We have analyzed the ratio of cash costs spent vs. estimated savings and savings per employee. Both metrics are in rapid decline. In light of PTC's 2016 restructuring program being repeatedly increased, and its plunging efficacy, it suggests potential earnings manipulation.

\$ in millions

Year	Restructure Charge	Charge split employee severance / facility costs	Estimated Savings	Cash Costs Spent	Savings / Cash Cost Ratio	Terminated Employees	Estimated Savings / Employee	EPS Impact
2012	\$24.9	98% / 2%	\$24.0	\$20.9	1.15x	209	\$114,832	\$0.21
2013	\$52.2	98% / 2%	\$40.0	\$37.2	1.08x	553	\$72,332	\$0.43
2014	\$28.4	98% / 2%	\$30.0	\$20.6	1.46x	283	\$106,007	\$0.24
2015	\$43.4	98% / 2%	\$30.0	\$53.6	0.56x	411	\$72,992	\$0.37
2016 (1)	\$82.6	98% / 2%	\$17.0	\$70.8	0.24x	810	\$20,987	\$0.66

1) Management did not update its estimated savings of \$17m in 2016 despite frequent increases to the restructuring program and is now guiding to zero savings  
Source: PTC 10-K Annual Reports

# A Closer Look At Restructuring Charges

PTC's restructuring charges don't align with its reported employee count. It's worth focusing on the sales and marketing restructuring charges which comprise the majority of the restructuring. PTC's sales and marketing headcount was reported at 1,508 (2012) vs. 1,442 (2016), which represents a decline of just 66 people in four years. Over the same period, total charges have represented \$80.1m or an astronomical \$1.2m per net terminated employee

## Restructuring Charge Analysis vs. Employees By Function

\$ in mm	<u>Restructuring Charge By Group</u>				<u>% of Total Restructuring Charges</u>				<u>% of Total Employee Headcount</u>			
	Software	Services	Sales/Mktg.	G&A	Software	Services	Sales/Mktg.	G&A	Prod Dev.	Support	Sales/Mktg.	G&A
2012	\$4.1	\$4.0	\$15.2	\$1.6	16%	16%	61%	6%	33%	32%	26%	10%
2013	\$17.7	\$11.3	\$18.1	\$5.1	34%	22%	35%	10%	33%	33%	23%	11%
2014	\$2.8	\$9.8	\$13.9	\$1.8	10%	35%	49%	6%	33%	33%	23%	11%
2015	\$11.6	\$10.4	\$16.3	\$5.1	27%	24%	38%	12%	33%	31%	24%	12%
Q1'16	\$13.0	\$3.4	\$15.9	\$3.4	35%	13%	43%	9%	--	--	--	--
Q2'16	\$3.7	\$0.0	\$0.7	\$0.0	80%	4%	15%	0%	--	--	--	--
Q3'16 to current	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	32%	31%	25%	12%

Source: PTC Financial statements

Note: Employee breakdown reported annually. Support employees described as "customer support, training and consulting"



# Indicator of Potential Financial Misstatement

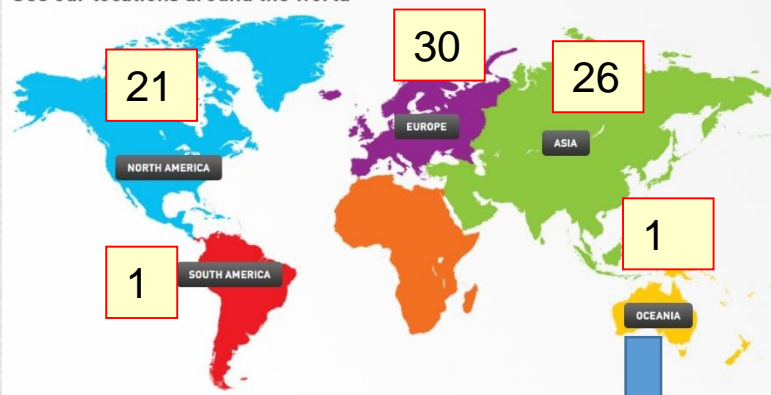
PTC says in its 10-K, p.13: “On October 23, 2015, we initiated a plan to restructure our workforce and consolidate select facilities to reduce our cost structure to enable us to invest in our identified growth opportunities.”

However, according to its 10-K discussion of its properties, **PTC’s office locations and total square footage of leased space increased in between FY 2015 and 2016**. It’s operating lease obligations also increased from \$144m to \$156m

**There’s a significant discrepancy in office locations reported in PTC’s current 10-K at 107 vs. 79 offices listed on its website. On the next slide we illustrate a systemic pattern of overstatement**

## Current PTC Offices on Company’s Website = 79

See our locations around the world



Source: [PTC Website](#)

FY Sept 30th	2011	2012	2013	2014	2015	2016
Total Offices Per SEC 10-K Filing	125	118	113	117	99	107
Total Square Footage	1,329,000	1,333,000	1,371,000	1,422,000	1,369,000	1,396,000
U.S.	573,000	572,000	581,000	609,000	579,000	586,000
Needham Office	329,000	329,000	321,000	321,000	321,000	321,000
India	186,000	183,000	195,000	220,000	220,000	260,000
Operating Lease Obligations (\$m)	\$214	\$217	\$199	\$173	\$144	\$156

Source: Company 10-K Annual Reports



# Indicator of Potential Business Misrepresentation (Cont'd)

Using the Wayback Machine, we find systematic overstatement of office locations in SEC filings, which could suggest business misrepresentation.

## Website Snapshot – Aug 2011

**PTC**  
the product development company

Products | Solutions | Consulting & Training | Partners | Communities | About PTC | Support

Home > Contact PTC > Office Locations

**Office Locations**

Search Results

Here are your search results based on the following parameters:

Compose New Search

**PTC Offices**

PTC Offices	Country	State/Province
China WFOE - Beijing	China (PRC)	
China WFOE - Chengdu	China (PRC)	
China WFOE - Guangzhou	China (PRC)	
China WFOE - Shanghai	China (PRC)	
China WFOE - Shenzhen	China (PRC)	
India Private Limited - Bangalore	India	
India Private Limited - Chennai	India	
India Private Limited - Mumbai	India	
India Private Limited - New Delhi	India	
India Private Limited - Pune	India	
Parametric Korea Co., Ltd. - Changwon	Korea, Republic of (South)	
Parametric Korea Co., Ltd. - Seoul	Korea, Republic of (South)	

## Website Snapshot – Sept 2015

Find one of our 77 offices globally



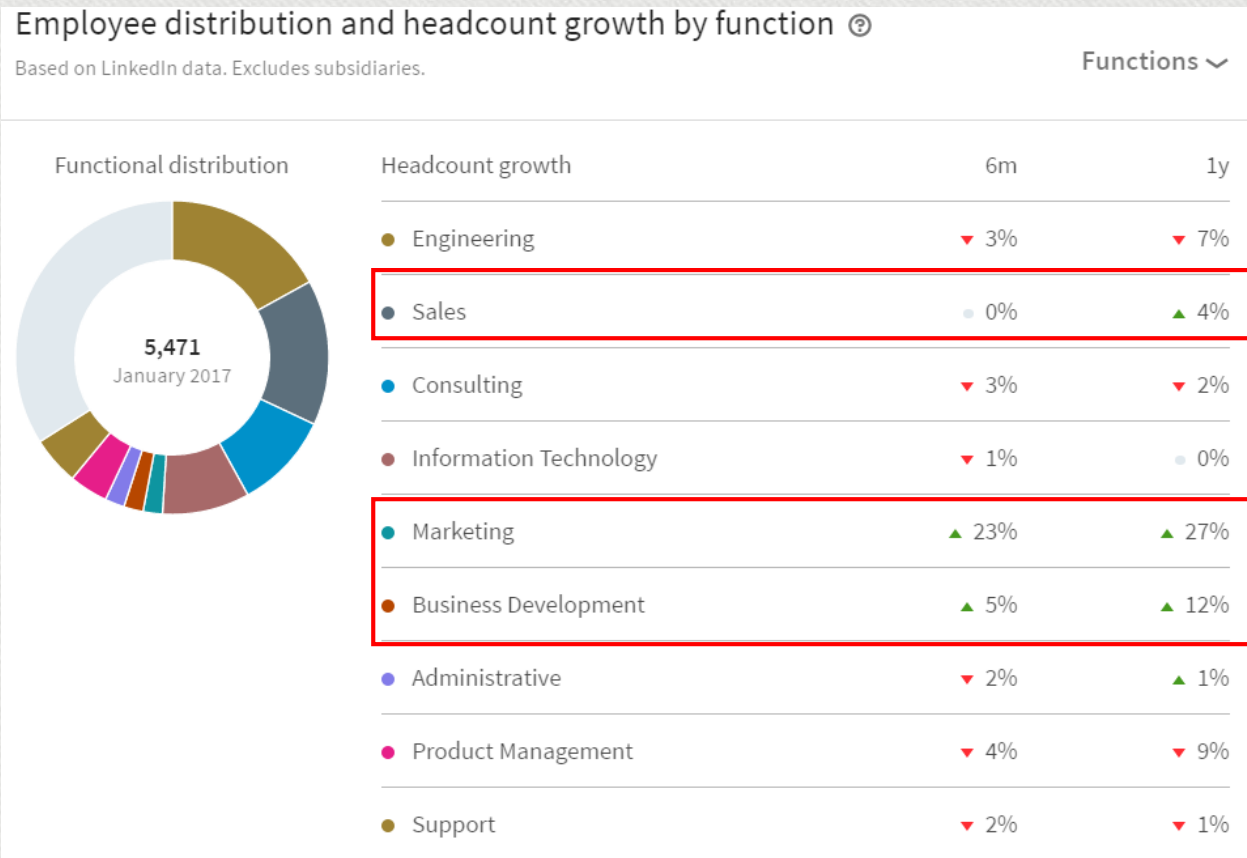
	2011	2012	2013	2014	2015	2016
Total Offices Reported to SEC in Form 10-K	125	118	113	117	99	107
Global Locations on PTC Website	91	95	91	77	77	81
Potential Overstatement	+34	+23	+22	+40	+22	+26
Wayback Source	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>

Note: Where practical we analyzed office location snapshots near September to coincide with PTC's fiscal year September reporting



# With All The Sales and Marketing Charges, Why Are Employees Rising?

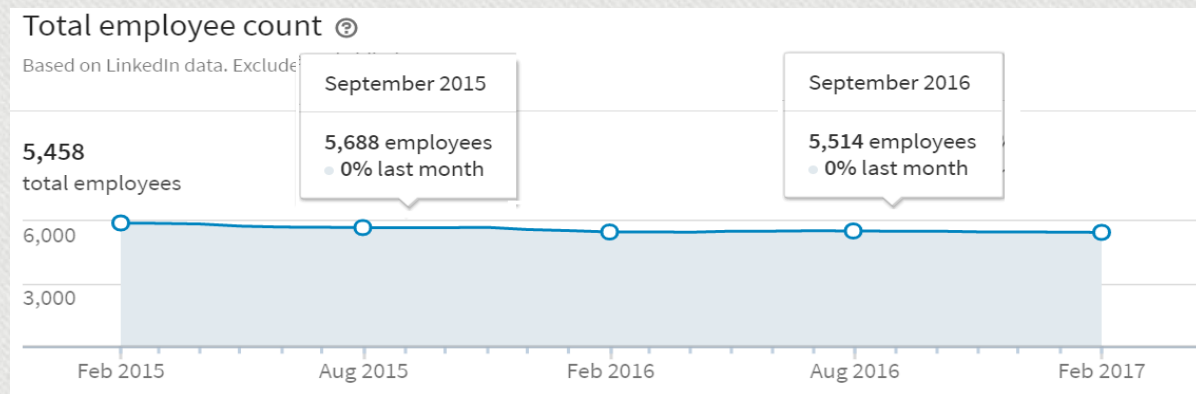
According to recent LinkedIn data, employee headcount is now rising the fastest in sales, marketing and business development. This seems awfully strange for a company that has spent years showing restructuring charges in sales and marketing and says it is dependent on achieving lower sales and marketing expenses to achieve its operating margin targets!



# Employee Counts Not Reconciling, Supports Our Case of Questionable Restructuring Charges

Something is not adding up that calls into question the accuracy of the 810 employees PTC claims to have terminated. We estimate FY16 ending employees of 5,367 = FY15 employees + FY16 employees added from acquisitions – FY16 terminated employees. PTC reported 5,800 employees, which suggests that PTC hired 433 employees in FY16 (more than half it claims to have terminated).

Data from LinkedIn for PTC Inc. shows a 174 decline in employees, close to the 182 decline implied from the changes in the 10-K (5,982-5,800)



Employee Classification	PTC: 9/30/15	+ Acquisitions	- Restructured	PTC: 9/30/16
Product Development	1,998			1,875
Support, Training, Consulting, Cloud Services and Product Distribution	1,857			1,810
Sales and Marketing	1,416			1,442
General / Admin	711			673
<b>Total Employees</b>	<b>5,982</b>	<b>+80 Vuforia</b> <b>+115 Kepware</b>	<b>(810)</b>	<b>5,800</b>





# If PTC's Restructuring Is Complete, Why Is There Still A Large Accrual?



PTC describes its restructuring activity to be “materially complete”; however, according to its restructuring accrual accounts, it still has a \$25.6m accrual amount. When comparing this amount with the total \$83m of charges taken, it would appear that the accrual outstanding is material and not completed!

*“We continue to proactively manage our cost structure and invest in what we believe are high return opportunities in our business. Our goal is to drive continued margin expansion over the long term. **To that end, we restructured our workforce in 2016, and we completed facility-related restructuring actions in the first quarter of 2017. As of December 31, 2016, we were materially complete with those actions and had incurred total restructuring charges of approximately \$83 million.** Of that amount, \$6 million was recorded in the first quarter of 2017.”* (Source: [10-Q](#), p. 25)

## PTC's Restructuring Accrual Activity Does Not Suggest It Is Complete....

The following table summarizes restructuring accrual activity for the three months ended December 31, 2016:

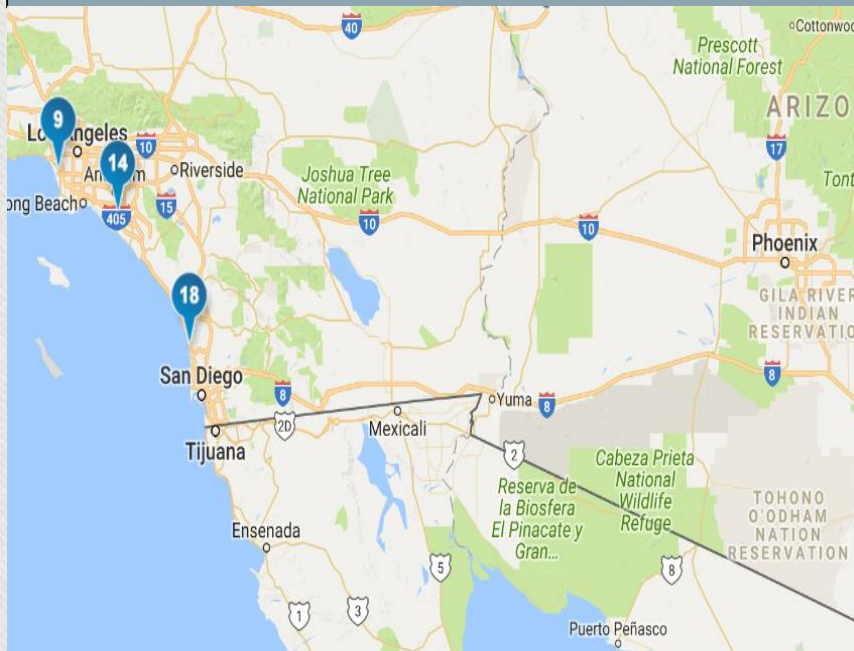
	Employee severance and related benefits	Facility closures and related costs	Total
	(in thousands)		
October 1, 2016	\$ 35,177	\$ 1,431	\$ 36,608
Charge to operations, net	2,399	3,886	6,285
Cash disbursements	(15,537)	(278)	(15,815)
Other non-cash charges	—	(260)	(260)
Foreign exchange impact	(1,143)	(26)	(1,169)
Accrual, December 31, 2016	\$ 20,896	\$ 4,753	\$ 25,649

# What's Going On With Atego?

Here's more evidence of either sloppiness or outright deception. PTC acquired Atego (UK) on July 1, 2014 for \$50m. PTC appears to have liquidated and sold its Intellectual Property according to [UK filings](#), yet continues to maintain Atego's website and promote its extensive presence and office locations almost 3yrs later. However, some quick checks reveal that Atego no longer maintains offices at certain sites. Even PTC's corporate website does not show offices in Arizona or Oregon!

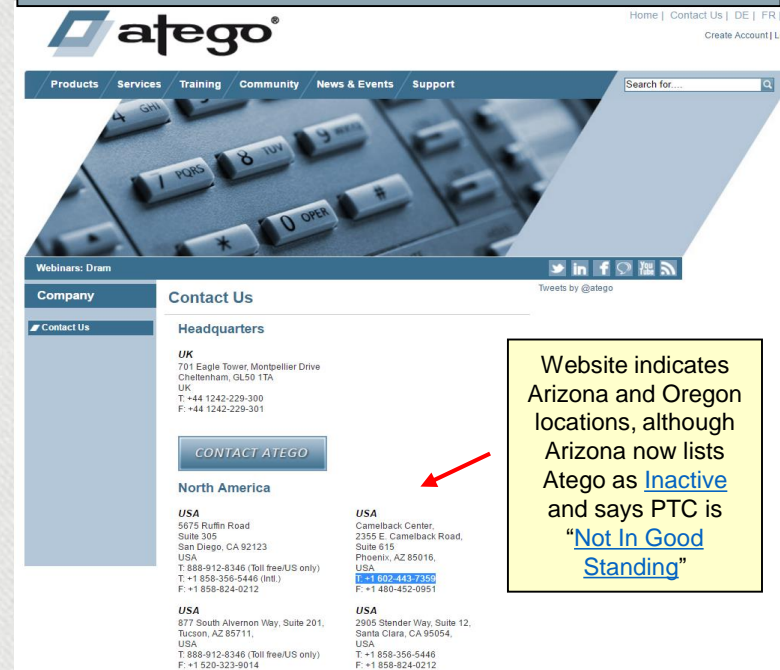
From ICANN, [Atego.com](#) is registered to Ash Anderson, an Atego Group Ltd. employee who no longer is with the company according to his [Linkedin](#) profile. You would think that PTC would make the effort to update the contact info

## Office Locations Don't Exist According to PTC



Source: [PTC Website](#)

## Contact Atego!



**UK**  
701 Eagle Tower, Montpellier Drive  
Cheltenham, GL50 1TA  
UK  
T: +44 1242-229-300  
F: +44 1242-229-301

**USA**  
5675 Ruffin Road  
Suite 305  
San Diego, CA 92123  
USA  
T: 888-912-8346 (Toll free/US only)  
T: +1 858-356-5446 (intl.)  
F: +1 858-824-0212

**USA**  
Camelback Center,  
2355 E. Camelback Road,  
Suite 615  
Phoenix, AZ 85016,  
USA  
T: +1 602-419-2700  
F: +1 480-452-0951

**USA**  
877 South Alvernon Way, Suite 201,  
Tucson, AZ 85711,  
USA  
T: 888-912-8346 (Toll free/US only)  
F: +1 520-323-9014

**USA**  
2905 Stander Way, Suite 12,  
Santa Clara, CA 95054,  
USA  
T: +1 858-356-5446  
F: +1 858-824-0212

Website indicates Arizona and Oregon locations, although Arizona now lists Atego as [Inactive](#) and says PTC is "Not In Good Standing"

Source: [Atego.com](#)



# Employee Reviews Bolster Our Suspicion

Recent employee feedback on Glassdoor support our view that PTC's business and recent financial performance should be heavily scrutinized, and that frequent restructurings appear to be used to hit quarterly numbers. We don't find any evidence that its transition to a subscription model is a wild success, or that employees believe the IoT story is a rapid growth engine.

**Be Careful What You Wish For:** *"The executives are slaves to the quarterly results. They lay people off at the slightest hint of a miss. The longer you are there, the bigger the target on your back becomes."* ([Source](#))

**Management Doesn't Care About Employees:** *"Environment is still somewhat toxic. CEO can be emotional. CFO is self-absorbed and doesn't care about the employees. Management work ethic is weak."* ([Source](#))

**High Tech, High Turnover:** *"High turnover, achieve earnings numbers maintain stock price through regular layoffs. Company made too many acquisitions between 2014 and 2016."* ([Source](#))

**It's a Big Company With Some Focus Issues:** *"Lack of trust in the long term direction of the company. They regularly acquire companies and seem to change focus every few years. Regular layoffs across the organisation. Don't get complacent. If you are not working on 'the new shiny' then you might find your project cancelled or moved to India."* ([Source](#))

**PTC:** *"Has bet the farm on IOT like all the big boys but has achieved very little revenue to show for it. Enterprise CAD/PLM/ALM/SLM getting gutted to the bone to fund the IOT bet."* ([Source](#))

**Senior Application Architect:** *"The direction of the company and many M&A acquisitions eliminated many software products from previous M&A. If the company does not put the marketing, sales and training on a product or segment then it will simply die. As a result consultants are not billable hence let go and existing customers suffer."* ([Source](#))

**Constant Layoffs:** *"Upper management is clueless and fickle. A mid-sized company that long aspired to be a large company (and at least achieved the ridiculous layers of bureaucracy thereof) now want to re-invent itself as a hot new start-up. No idea or patience on how to achieve reform except to lay people off at random."* ([Source](#))

**Change Is Not A Joke:** *"I should have known it was a bad sign when my recruiter joked that PTC stands for Prepare To Change. But the reality is that change is not funny. PTC lays off anyone and everyone - from upper management to the lowest minions - every quarter. And this is all done under the guise that we are 'changing' for the better. What a bunch of BS. We cut people in order to make our number. Happy investors = happy upper management."* ([Source](#))

**Searching For Growth Engine:** *"Brain drain in progress - many great colleagues were laid off over the last few years and more recently, many are leaving. Acquisitions since 2011 have failed to drive growth. Strategy changes monthly- Lower investment in CAD and PLM core solutions is causing lack of competitiveness in market."* ([Source](#))






*Segment Reporting Gimmicks Also  
Support Our Restructuring Concerns*



# PTC's Segment Reporting Does Not Conform To ASC 280 Requirements



PTC's segment reporting disclosures do not conform to best practices as dictated by "ASC 280 Segment Reporting" which has been effective for several years.

PTC has shuffled its segment reporting multiple times, and upon each iteration, its disclosures are becoming less and less transparent. We consider this to be a major red flag for investors.

- A fundamental principal of ASC 280 is that a company's segment disclosures should be consistent with management's reporting structure. The objective is to allow users to "see through the eyes of management" a company's business
- ASC 280 requires certain components of segment profit or loss that are reported to the CODM to be separately reported for each reportable segment, including revenue, depreciation, interest revenue and expense, income taxes and significant noncash items
- Under ASC 280, a public entity reports a measure of assets for each reportable segment for those assets that are included in the measure of the segment's assets provided to the CODM. If no asset information is provided for a reportable segment, disclosure of segment assets is not required, but that fact and the reason for its exclusion should be disclosed. In addition, an entity is required to disclose its equity investments and capital expenditures if these items are included in the measure of segment assets reviewed by the CODM
- **In the next few slides, we will illustrate that PTC is on a path of less and less disclosures, and does not conform ASC 280 reporting guidelines. For example:**
  - Significant non-cash items such as restructuring charges by segment are now no longer disclosed
  - No reporting of depreciation by segment on a quarterly basis
  - No reporting of segment capital expenditures (annual or quarterly)
  - No reporting of segment assets reported on a quarterly basis

# Segment Reporting Q2'16

PTC's quarterly segment reporting in FY 2016 regularly disclosed restructuring charges by segment (see footnote 1). The company does not disclose segment depreciation or amortization on a quarterly basis.

	Three months ended		Six months ended	
	April 2, 2016	April 4, 2015	April 2, 2016	April 4, 2015
Revenue:				
Total Software Products segment revenue	\$ 210,061	\$ 240,951	\$ 435,598	\$ 487,942
Total Services segment revenue	62,566	73,168	128,046	151,619
Total revenue	<u>\$ 272,627</u>	<u>\$ 314,119</u>	<u>\$ 563,644</u>	<u>\$ 639,561</u>
Operating income (loss): (1)				
Software Products segment	\$ 109,165	\$ 134,580	\$ 216,811	\$ 283,625
Services segment	14,321	3,178	33,640	16,378
Sales and marketing expenses	(87,850)	(94,942)	(186,180)	(182,549)
General and administrative expenses	(33,878)	(38,828)	(75,806)	(75,835)
Total operating income (loss)	1,758	3,988	(11,535)	41,619
Interest and other expense, net	(5,327)	(3,601)	(11,580)	(6,825)
Income (loss) before income taxes	<u>\$ (3,569)</u>	<u>\$ 387</u>	<u>\$ (23,115)</u>	<u>\$ 34,794</u>

- (1) We recorded restructuring charges of \$4.6 million and \$41.7 million in the second quarter and first six months of 2016. Software Products included \$3.7 million and \$16.8 million, respectively; Services included \$0.2 million and \$5.0 million, respectively; sales and marketing expenses included \$0.7 million and \$16.6 million, respectively; and general and administrative expenses included \$0.0 million and \$3.3 million, respectively, of these restructuring charges

Source: [10-Q](#), p.16



# Change in Segment Reporting in Q3'16

Notice that PTC changed its segment reporting in Q2'16, but still reported restructuring charges by segment to investors. Also, notice that Professional Services is listed as a separate operating segment. We will show in the next few slides why to pay close attention to these items.

	Three months ended		Nine months ended	
	July 2, 2016	July 4, 2015	July 2, 2016	July 4, 2015
(in thousands)				
Solutions Group				
Revenue	\$ 217,673	\$ 229,157	\$ 652,985	\$ 726,679
Direct costs	44,882	54,583	140,465	174,109
Profit	172,791	174,574	512,520	552,570
Technology Platform Group				
Revenue	20,678	20,456	51,034	38,213
Direct costs	22,255	7,479	61,478	20,340
Profit (loss)	(1,577)	12,977	(10,444)	17,873
Professional Services				
Revenue	50,301	53,500	148,277	177,782
Direct costs	42,393	44,703	124,832	151,521
Profit	7,908	8,797	23,445	26,261
Total segment revenue	288,652	303,113	852,296	942,674
Total segment costs	109,530	106,765	326,775	345,970
Total segment profit	179,122	196,348	525,521	596,704
Other unallocated operating expenses	168,711	170,348	484,919	490,853
Restructuring charges	2,815	4,393	44,541	42,625
Total operating income (loss)	7,596	21,607	(3,939)	63,226
Interest and other expense, net	8,300	3,668	19,880	10,492
Income (loss) before income taxes	\$ (704)	\$ 17,939	\$ (23,819)	\$ 52,734

*“With a change in our organizational structure in an effort to create more effective and efficient operations and to improve customer and product focus, during the three months ended July 2, 2016, we revised the information that our chief executive officer, who is also our chief operating decision maker (“CODM”), regularly reviews for purposes of allocating resources and assessing performance. As a result, effective with the beginning of the third quarter of 2016, we changed our operating and reportable segments from two to three: (1) the Solutions Group, which includes license, subscription, support and cloud services revenue for our core CAD, SLM and ePLM products; (2) the Technology Platform Group, which includes license, subscription, support and cloud services revenue for our IoT, analytics and augmented reality solutions; and (3) Professional Services, which includes consulting, implementation and training revenue”*

We recorded restructuring charges of \$2.8 million and \$44.5 million, respectively, in the third quarter and first nine months of 2016. Solutions Group included \$1.4 million and \$16.3 million, respectively; Technology Platform Group included \$0.6 million and \$1.3 million, respectively; Professional Services included \$0.3 million and \$4.8 million, respectively; and unallocated departments included \$0.5 million and \$22.1 million, respectively, of these restructuring charges. We recorded restructuring charges of \$4.4 million and \$42.6 million, respectively, in the third quarter and first nine months of 2015. Solutions Group included \$1.0 million and \$8.5 million, respectively; Technology Platform Group included \$0.1 million and \$0.3 million, respectively; Professional Services included \$0.3 million and \$10.9 million, and unallocated departments included \$3.0 million and \$22.9 million, respectively, of these restructuring charges. (10-Q, p.19)



# Revenue By Two Groups?

Recall on the previous slide, we showed that PTC's recent segment reclassification resulted into three groups  
1) Solutions Group, 2) IoT Group, and 3) Professional Services.

However, when presenting its results to investors elsewhere in the 10-K, Professional Services are not separated, but incorporated into the previous two operating segments. Therefore, it appears management is saying one thing, but doing another when it comes to evaluating and presenting its financial results.

## Revenue by Group

Year ended September 30,

	2016	Percent Change		2015	Percent Change		2014
		Actual	Constant Currency		Actual	Constant Currency	
(Dollar amounts in millions)							
Solutions Group							
Subscription	\$ 75.4	112 %	115 %	\$ 35.6	52 %	66 %	\$ 23.3
Support	641.6	(5)%	(3)%	676.4	(2)%	6 %	688.1
Total recurring software revenue	717.0	1 %	3 %	712.0	— %	8 %	711.5
Perpetual license	154.2	(43)%	(41)%	268.3	(26)%	(19)%	362.0
Total software revenue	871.2	(11)%	(9)%	980.3	(9)%	(1)%	1,073.4
Professional services	189.0	(15)%	(12)%	222.1	(20)%	(13)%	278.4
Total revenue	\$ 1,060.2	(12)%	(10)%	\$ 1,202.4	(11)%	(4)%	\$ 1,351.8
IoT Group							
Subscription	\$ 42.9	45 %	45 %	\$ 29.7	680 %	685 %	\$ 3.8
Support	10.2	99 %	100 %	5.1	1,272 %	1,297 %	0.4
Total recurring software revenue	53.1	53 %	53 %	34.8	733 %	740 %	4.2
Perpetual license	19.3	33 %	33 %	14.5	2,161 %	2,206 %	0.6
Total software revenue	72.4	47 %	47 %	49.2	923 %	934 %	4.8
Professional services	7.9	120 %	121 %	3.6	928 %	962 %	0.4
Total revenue	\$ 80.3	52 %	52 %	\$ 52.9	923 %	936 %	\$ 5.2

Source: PTC 2016 [10-K](#), p.18



# Obfuscating Disclosures in the Last Annual Report

Pay very close attention to the footnotes.

PTC no longer provides disclosure about the restructuring charges per business segment!  
Under the new presentation unallocated expenses are significantly higher, which flatters segment profits.

	Year ended September 30,		
	2016	2015	2014
	(in thousands)		
<b>Solutions Group</b>			
Revenue	\$ 871,225	\$ 980,274	\$ 1,073,426
Direct costs	186,174	224,042	244,020
Profit	685,051	756,232	829,406
<b>IoT Group</b>			
Revenue	72,371	49,249	4,815
Direct costs	83,747	28,998	8,534
Profit (loss)	(11,376)	20,251	(3,719)
<b>Professional Services</b>			
Revenue	196,937	225,719	278,726
Direct costs	165,325	193,397	237,689
Profit	31,612	32,322	41,037
Total segment revenue	1,140,533	1,255,242	1,356,967
Total segment costs	435,246	446,437	490,243
Total segment profit	705,287	808,805	866,724
Other unallocated operating expenses (1)	666,028	723,780	641,742
Restructuring charges	76,273	43,409	28,406
Total operating income (loss)	(37,014)	41,616	196,576
Interest and other expense, net	30,178	15,091	10,464
Income (loss) before income taxes	\$ (67,192)	\$ 26,525	\$ 186,112

Take a look at last year's [10-K](#) to see its segment presentation. The G&A and Sales/Marketing expense (ex: restructuring) was just \$571m in 2015

(1) The Solutions Group segment includes depreciation of \$5.4 million, \$5.6 million and \$5.7 million in 2016, 2015 and 2014, respectively. The IoT Group segment includes depreciation of \$1.6 million, \$1.0 million and \$0.1 million in 2016, 2015 and 2014, respectively. The Professional Services segment includes depreciation of \$2.0 million, \$2.2 million and \$2.3 million in 2016, 2015 and 2014, respectively. Unallocated departments includes depreciation of \$19.7 million, \$20.1 million and \$19.0 million in 2016, 2015 and 2014, respectively. Source: PTC 2016 [10-K](#), F-42

# Less and Less Disclosure

PTC's latest segment disclosure still provides no restructuring breakdown by segment, and now omits any footnotes related to the breakdown of unallocated expenses.

	Three months ended	
	December 31, 2016	January 2, 2016
	(in thousands)	
Solutions Group		
Revenue	\$ 218,736	\$ 228,594
Direct costs	45,932	49,744
Profit	172,804	178,850
IoT Group		
Revenue	21,483	13,101
Direct costs	23,450	16,437
Loss	(1,967)	(3,336)
Professional Services		
Revenue	46,108	49,322
Direct costs	37,824	42,014
Profit	8,284	7,308
Total segment revenue		
	286,327	291,017
Total segment costs		
	107,206	108,195
Total segment profit		
	179,121	182,822
Other unallocated operating expenses		
	168,275	158,967
Restructuring charges		
	6,285	37,147
Total operating income (loss)		
	4,561	(13,292)
Interest and other expense, net		
	11,064	6,253
Loss before income taxes		
	\$ (6,503)	\$ (19,545)

What Happened  
To The Footnote  
With Details?

Source: Q1'17 [10-Q](#), p.19





## *IoT Hype vs. Reality*

# PTC Expensive IoT Acquisition Hype...

PTC has gone on an expensive acquisition spree to build its IoT dream. The Company has announced 5 deals totaling ~\$585m and paid an average of 7.5x revenues or >\$1.2m per employee. Our concern about overpayment appears to be mirrored by ThingWorx's CEO in the quote below.

**Commenting on the acquisition of ThingWorx by PTC by CEO Rick Bullotta:** "Our CFO put out a real stretch number, and we all said, 'Wow, that's ambitious, Not so for PTC'" ([Source](#))

\$ in millions

Announced / Closed	Target	Description	Deal Value / Terms	Estimated Sales	Sales Multiple	Employees
<a href="#">12/30/13</a>	ThingWorx	Platform for building and running applications for the IoT	\$112 (\$130 inc. earnout)	\$10	13.0x	50
<a href="#">7/23/14</a> / <a href="#">8/12/14</a>	Axeda Corp	Solutions to securely connect machines and sensors to the cloud	\$170	\$25-\$30	6.2x	160
<a href="#">5/5/15</a> / <a href="#">5/7/15</a>	ColdLight	Big data machine learning and predictive analytics	\$98.6 (\$103.6 inc. earnout)	\$8	13.0x	60
<a href="#">10/12/15</a> / <a href="#">11/3/15</a>	Vuforia	Augmented reality (AR) technology platform	\$64.8	NM	NM	80
<a href="#">12/23/15</a> / <a href="#">1/12/16</a>	Kepware	Software development company that provides communications connectivity to industrial automation environments	\$99.4 (\$117.4 inc. earnout)	\$20 (1)	5.9x	115
<b>Deal Summary</b>			<b>\$585.8</b>	<b>\$65.5</b>	<b>7.5x</b>	<b>465</b>

1) Upon researching Kepware, we found an [article](#) listing Kepware's 2013 sales at \$30m+ and 85 employees. With \$10m less in sales and more employees, it's likely that Kepware's profitability has declined



# PTC's IoT Hype Machine

**CEO Heppelmann:** "Industrial IoT is going to be big and PTC is now clearly the lead dog—we are the thought leader"

According to Goldman Sachs research, the IoT market is growing 40% and PTC's bookings should be expected to grow 30%-40% (bottom left table). That's not surprising given that PTC repeatedly cites many boutique research firms that flatter it with awards and claims it has market share leadership (bottom right table).  
One would naturally expect the market leader to grow at or above the market's growth rate.

## Goldman Sachs Expecting 30-40% Growth For PTC IoT

### As the market evolves, PTC is positioning for evolution as well

At the November 2015 analyst day, PTC detailed its view of its TAM and market growth rates. Using industry analysts' estimates, PTC sees its core Solutions Group market (92% of FY15 bookings) growing at 7%, while its emerging IoT market is growing 40%.

**Exhibit 31: PTC's total addressable market**  
(\$ in bns)

	TAM		PTC's Bookings CAGR targets	
	2015	Market growth	FY15-18	FY18-21
CAD	\$4.5	4%		
PLM	\$5.2	6%		
SLM	\$3.7	10%		
ALM	\$3.5	8%		
Solutions Group	\$16.9	7%	3%	6%
<b>IoT</b>	<b>\$1.1</b>	<b>40%</b>	<b>30-40%</b>	<b>30-40%</b>
<b>Total TAM</b>	<b>\$18.0</b>	<b>9%</b>	<b>10%</b>	

Source: Company reports, Goldman Sachs Global Investment Research.

See Next Slide: TAM Shrinking to \$900m

Research Firm	Report	Tout
<a href="#">Experton Group</a>	"Industry 4.0/Internet of Things Vendor Benchmark 2016"	<a href="#">"IoT Platform Market Leader"</a>
<a href="#">IoT Analytics</a>	"IoT Platforms Market Report 2015-2021"	<a href="#">"With 18% market share, PTC is the IoT platform provider market share leader"</a>
<a href="#">Forrester Research</a>	"The Forrester Wave™: IoT Software Platforms, Q4 2016,"	
<a href="#">BCC Research</a>	"Technology Platforms for the Internet of Things"	"BCC Research Ranks ThingWorx IoT Platform First with 27% Market Share"
<a href="#">Ventana Research</a>		Thingworx Technology Innovation Award
<a href="#">McKinsey</a>	"How the Internet of Things could transform the value chain"	Heppelmann interview

# PTC's Market Share Spin

PTC cannot seem to get its market share data straight. According to a recent slide (bottom right) from March 2017, management says its attractive target markets are \$900m today. With just \$90m of LTM sales, we estimate PTC's market share is just 10%. This is well below the other research reports that PTC touts on the previous slides of 18% - 27% share. Also, PTC's TAM has apparently shrunk from \$1.1bn to \$900m in the past two years (bottom left), despite more acquisitions that are supposed to add to their solution and selling capabilities.

## FY15 Investor Day, Nov 2014

### \$17B Addressable Market

PTC

End Market	Total Addressable Market Size	Market Growth Rate	PTC Assumed L&SS Growth Rate
Computer-Aided Design (CAD)	\$4.3B	~4%	3%-5%
Product Lifecycle Management (PLM)	\$5.2B	~6%	6%-8%
Application Lifecycle Management (ALM)	\$3.5B	~8%	7%-9%
Service Lifecycle Management (SLM)	\$4.0B	~11%	10%-15%
Internet of Things (IoT)	\$1.1B	~38%	~40%

PTC estimates informed by composite of industry analysts

29

Source: PTC FY15 Investor Day, Nov 2014

## IoT Presentation – March 2017

### TARGETING ATTRACTIVE, GROWING MARKETS



Source: [PTC presentation](#), March 2, 2017



PTC loves to promote itself and its ThingWorx platform as a “Thought Leader” citing the Harvard Business Review and quotes from research analysts. (1) We wanted to test these claims by looking at thought leadership from an independent angle. We view Twitter followers as a reasonable gauge of who’s thoughts are being followed. Sadly, we find that PTC’s ten thousand Thingworx followers ranks #15 on our list, well behind many technology heavyweights that compete with PTC in the IoT space.

## THOUGHT LEADER



*“PTC continues to exemplify excellence and innovation in the IoT market, and the successful growth trajectory into multiple industries and the enterprise is a testament to its overall market leadership.”*

Stephanie Atkinson  
Chief Executive Officer

COMPASS INTELLIGENCE  
A Division of Compass Group USA, Inc.



9

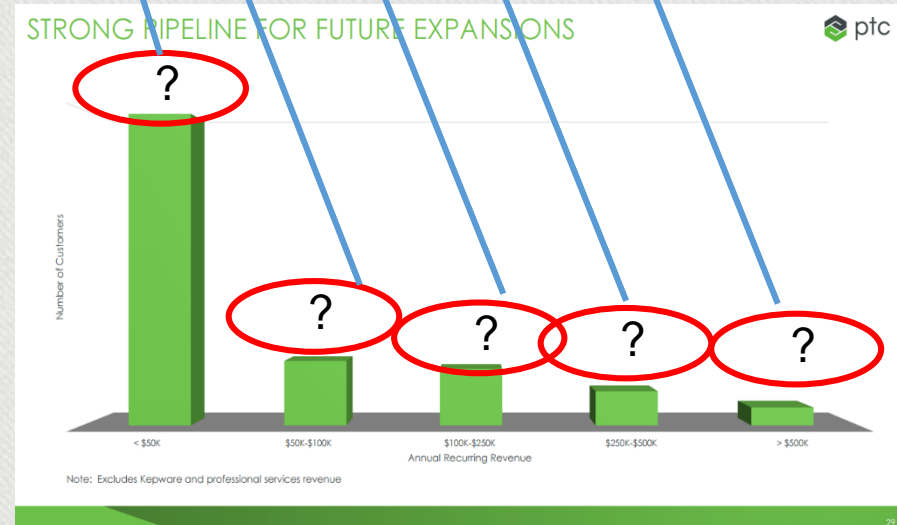
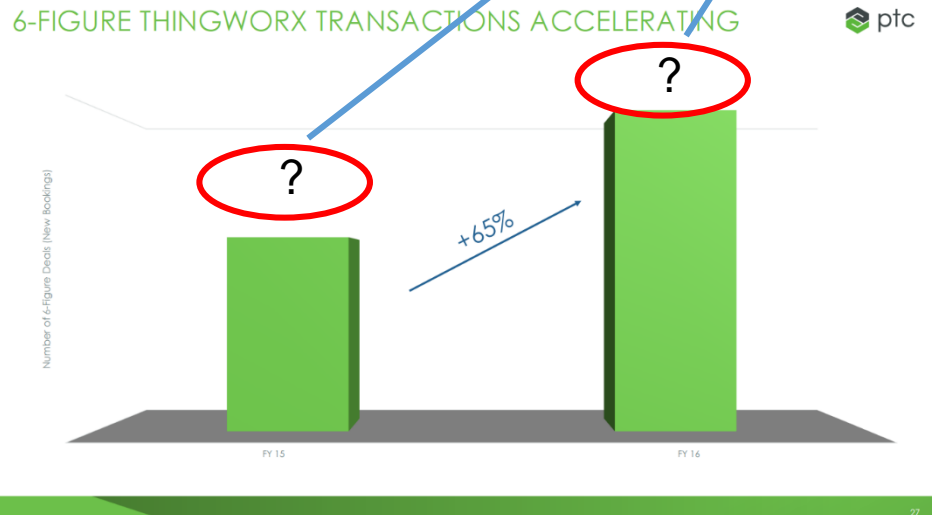
PTC Investor Presentation, Nov 8<sup>th</sup>

1) See our [slide](#) about the issues citing Harvard research

Company	Twitter Followers
<a href="#">Amazon AWS</a>	1.1M
<a href="#">Google Cloud</a>	536K
<a href="#">Microsoft Azure</a>	513K
<a href="#">Salesforce</a>	327K
<a href="#">Arduino</a>	222K
<a href="#">Intel IoT</a>	101K
<a href="#">Xively</a>	93K
<a href="#">IBM Watson IoT</a>	66K
<a href="#">Cisco IoT</a>	64K
<a href="#">Samsung IoT</a>	42K
<a href="#">Zebra Tech</a>	23K
<a href="#">PubNub</a>	22K
<a href="#">Aeris</a>	20K
<a href="#">Gemalto</a>	15K
<a href="#">Thingworx</a>	10K
<a href="#">Thingspeak</a>	7K
<a href="#">Telit</a>	6K
<a href="#">GE Predix</a>	4K

# Vague Metrics and Charts Promote IoT

PTC promotes its IoT business with vague charts referencing acceleration of transactions and expansion opportunities. The problem is if you look carefully, many of the charts have no scale or no hard numbers to support its claims.



Source: [PTC presentation](#), March 2, 2017



## Is The CEO Misleading Investors?

Brace yourself carefully. PTC's CEO either doesn't know his business well or appears to be making misleading statements. At the recent Goldman Sachs Technology and Internet Conference, the CEO said that PTC's organic growth in IoT was 53% and that its license revenue crossed \$100m.

On the next slide, we'll illustrate true organic growth of just 8.6% and LTM revenues of \$90m. It's not surprising the CEO chooses the more aggressive interpretation of its revenues (annualizing the last quarter of IoT revenues) to claim it has \$100m of sales.

**CEO Heppelmann:** *"We have a lot of momentum. More than 1,200 customers. We put out a press release talking about our calendar 2016 results so that all the analysts could compare us to other people. **The business grew more than 100% overall. But on an organic basis, grew 53%, and the revenue--license revenue crossed \$100 million.** So we're basically talking about a--if it were a standalone business, a unicorn--\$100 million business growing more than 50%, 1,200 customers, and more than 250 partners who help us take it to market--resellers, system integrators, some OEM people who build it into some solution they sell, and so forth. So quite a large ecosystem--I'd argue the largest in the world of IoT, and a lot of momentum"*

Source: [PTC](#)

# PTC's IoT Business Sadly Disappoints....

For all of the hype and PTC promotion of its IoT business, we estimate true organic sales growth of just 8.6% from FY15-FY16. This is significantly below the 30%-40% market growth rate touted by research experts and management. Now management is trying to allocate more sales to IoT such as Navigate on a go forward basis to boost growth (1)

\$ in mm

Acquisition	Q1'15	Q2'15	Q3'15	Q4'15	FY15	Q1'16	Q2'16	Q3'16	Q4'16	FY16	Est Growth
Thingworx	--	--	--	--	\$18.6	--	--	--	--	--	--
Axeda	--	--	--	--	\$32.5	--	--	--	--	--	--
<b>Thingworx + Axeda</b>	<b>\$9.5</b>	<b>\$9.4</b>	<b>\$21.2</b>	<b>\$11.0</b>	<b>\$51.1</b>	<b>\$13.0</b>	<b>\$12.3</b>	<b>\$14.5</b>	<b>\$15.6</b>	<b>\$55.5</b>	<b>8.6% (2)</b>
ColdLight (3)	--	--	\$0.2	\$1.5	\$1.7	\$2.2	\$2.2	\$2.2	\$2.2	\$8.7	8.7%
Vuforia (4)	--	--	--	--	--	--	--	--	--	--	--
Kepware (5)	--	--	--	--	--	--	\$4.7	\$5.6	\$5.8	\$16.1	13.5%
<b>Total IoT Segment</b>	<b>\$9.5</b>	<b>\$9.4</b>	<b>\$21.4</b>	<b>\$12.5</b>	<b>\$52.9</b>	<b>\$15.2</b>	<b>\$19.2</b>	<b>\$22.3</b>	<b>\$23.6</b>	<b>\$80.3</b>	

Notes: 1) Q1'17 [10-Q](#), p. 27 2) Compares IOT segment in FY15 (ex: ColdLight) vs. FY16 (ex: ColdLight and Kepware) 3) Assumes equal quarterly revenue contribution from ColdLight in 2016; growth rate based on \$8m of annual sales per [10-Q](#); 4) Vuforia contribution described as immaterial; 5) Growth rate based on LTM 12/31 sales of \$22.7m vs \$20m of annualized sales at [deal announcement](#).

Quarter	Contribution From Acquisitions Disclosure
<a href="#">Q1'14</a> (p. 24)	In 2014, we completed the acquisitions of Axeda, Atego and ThingWorx. The results of operations of these acquired businesses have been included in our consolidated financial statements beginning on their respective acquisition dates. Axeda, Atego and ThingWorx collectively added \$14.2 million
<a href="#">Q2'15</a> (p. 26)	The results of operations of these acquired businesses have been included in our consolidated financial statements beginning on their respective acquisition dates. Axeda and Atego collectively added 3% and 4%, respectively, to our revenue in the second quarter and first six months of 2015.
<a href="#">Q3'15</a> (p. 27)	The results of operations of these acquired businesses have been included in our consolidated financial statements beginning on their respective acquisition dates. Axeda and Atego collectively added 4% to our revenue in both the third quarter and first nine months of 2015.
<a href="#">FY 2015</a> (p. 18)	In 2015, we acquired ColdLight (on May 7). In 2014, we acquired ThingWorx (on December 30), Atego (on June 30) and Axeda (on August 11). These acquisitions collectively added \$69.2 million of revenue in 2015 and \$9.8 million of revenue in 2014.
<a href="#">Q2'16</a> (p. 28)	The Technology Platform group delivered revenue growth in the second quarter and first six months of 2016, including a \$4.7 million contribution from Kepware, which we acquired on January 12, 2016.
<a href="#">Q3'16</a> (p. 29)	Kepware contributed approximately \$5.6 million to our revenue in the third quarter of 2016 and approximately \$10.3 million in the first nine months of 2016.
<a href="#">FY 2016</a> (p. 16 and p.18)	Revenue from Kepware, which we acquired on January 12, 2016, totaled \$16.1 million in 2016, and revenue from ThingWorx and Axeda totaled \$18.6 million and \$32.5 million, respectively, in 2015. In 2016 we acquired Vuforia (on November 3) and Kepware (January 12). In 2015, we acquired ColdLight (on May 7). These acquisitions collectively added \$24.8 million of revenue in 2016 and \$1.7 million of revenue in 2015



# PTC's IoT Business Will Be A Money Loser For A Long Time....

Single digit revenue growth and a money losing operation that isn't scaling should not get any investors excited about PTC's promotional IoT business. At the ~8% organic growth rate, it will take PTC 10.5 years to achieve \$200m in revenue, a run rate the CFO claims is the breakeven point. Are investors willing to wait this long? Management's equity will vest and can cash out well in advance we suspect.

## Q1'2017 Earnings Conference Call

**Analyst:** "Okay, for Andy just two things. One, how are you thinking now about the profitability or eventual profitability of the IoT business. When you look at your numbers in fiscal 2016 according to the 10-K on a direct cost basis, IoT for the year had 116% of revenue in cost but for the fourth quarter it was only 104% which suggest you are getting a lot closer, on that basis the profitability for the IoT business, so if you could comment on that?"

**CFO Miller:** "So the profitability of IoT you know we basically think that as a software business exceeds that roughly \$200 million in revenue, that's really the point in time that assuming it's still very high growth, that's the point in time you tend to cross over into profitability"

	Year ended September 30,		
	2016	2015	2014
	(in thousands)		
Solutions Group			
Revenue	\$ 871,225	\$ 980,274	\$ 1,073,426
Direct costs	186,174	224,042	244,020
Profit	685,051	756,232	829,406
IoT Group			
Revenue	72,371	49,249	4,815
Direct costs	83,747	28,998	8,534
Profit (loss)	(11,376)	20,251	(3,719)

IoT business not scaling well with losses increasing with more revenue.

## Less Transparency and Model Pivot..

Investors should be cautioned that PTC abruptly changed its focus on the logo metric to evaluate its IoT business in 2016. Initially the CEO touted how important it was to evaluate, but quickly started back-tracking and cited a move towards a freemium program which makes it less meaningful.

CEO on [Q1'16 Conference Call](#): “We grew our IoT new logo count 55% year-over-year, landing 65 new IoT customers in the quarter...I think if you look at IoT, you know, you can look at it from two perspectives. **The main perspective that we think about is new logos. It's an early market and in an early market, market share is everything. And so we've been running a land-and-expand type of go-to-market program which is a little new for us, quite frankly. And so we've really pushed on new logo acquisition. And that's where you see the most impressive data. New logo is up 55%, I think it was.**”

CEO on [Q2'16 Conference Call](#): So coming back to the core of ThingWorx offering, we landed 66 new logos in the quarter, bringing our first half total to 131, which is a 26% increase year-over-year. We'll continue to update you on this new logo metric as it's currently defined throughout the balance of the fiscal year. **But at that point, the metric will need to be remodeled a bit, because it does not reflect customers who start with Kepware or Vuforia of which there are many, nor does it now reflect the new way we engage accounts via the premium program that we recently put in place.** So while we want to report a metric that reflects momentum, this metric, as currently defined, is starting to fall out of alignment with how we run the Technology Platform business

CEO on [Q4'16 Conference Call](#): “We landed 81 new ThingWorx logos in the quarter, bringing our full year total to 275. As we've discussed in the last few quarters, we've provided this new logo metric – over the past two years actually – as a way to help gauge market traction with new customers. While I'm pleased with our new logo success rate, **our pivot towards a freemium program as a more efficient way to engage new accounts makes this new logo metric a bit less meaningful. So we'll also begin to share a few other key metrics around our freemium program moving forward.**”



# With Decreasing Revenue Quality

PTC would like investors to believe its IoT business is primarily subscription sales and high quality revenue. However, looking closely we see that “recurring revenues” as a % of total IoT sales has been declining along with average revenue per IoT customer.

## IoT Revenue Composition

\$ in mm	2014	2015	2016	Q1'17
“Recurring Software Revenue”	\$4.2	\$34.8	\$53.1	\$15.2
Total IoT Revenue	\$5.2	\$52.9	\$80.3	\$23.9
% Recurring	80.8%	65.8%	66.1%	63.6%

Decreasing % of Recurring Revenue

## IoT Revenue Per Client

Revenues in \$mm	2014	2015	2016
IoT Customers, Ending	200	490	765
Yr Avg IoT Customers	--	345	628
IoT Revenues	\$5.2	\$52.9	\$80.3
Avg Revenue / IoT Customer	NM	\$153,478	\$127,968

Significant Decrease

## *And Founders and Executives Fleeing...*

Only two business leaders remain currently affiliated with PTC post-acquisition.  
That's the risk that's run when overpaying for technology companies.  
It's easy for founders and executives to set sail and leave behind a managerial void for the acquirer.

### Only Two Executives Left

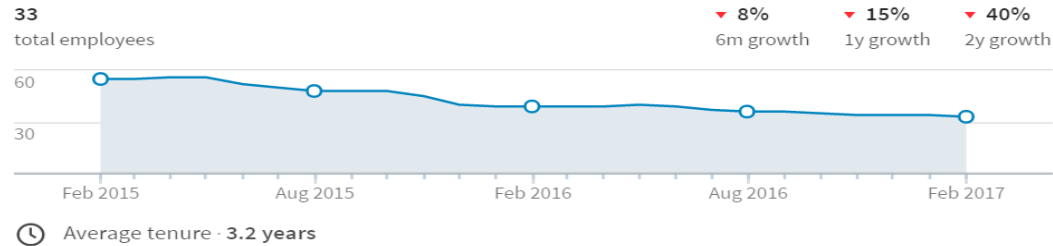
	Kepware	ColdLight	Axeda	Vuforia	ThingWorx		
Individual	Corky Ellis	Ryan Caplan	Dale Calder	Jay Wright	Russ Fadel	Rick Bullotta	John Richardson
Title At Acquired Company	Founder/Chairman	CEO	Founder/CEO	VP, Qualcomm Vuforia	President	Co-Founder/CTO	COO/Founder
Current Title	Investor, Former Chairman of Kepware	President ColdLight & GM Analytics	Founder/CEO RevTwo	President & GM, Vuforia at PTC	Entrepreneur & Angel Investor	Entrepreneur, Investor, Advisor, Mentor	Chief Entertainment Officer of fishing and travel
Source	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>	<a href="#">Source</a>



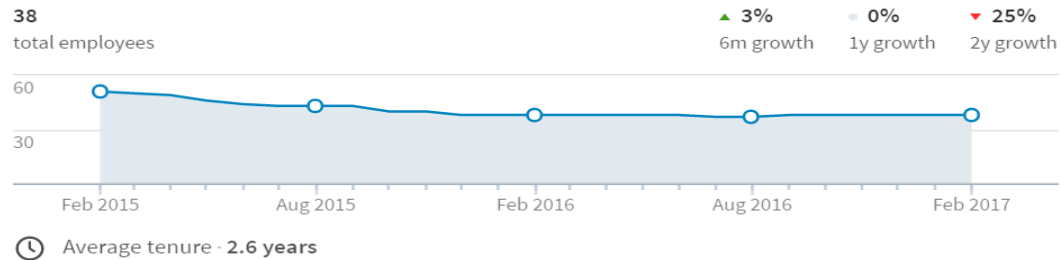


# Employment Shrinking Across A Majority of Recent IoT Acquisitions

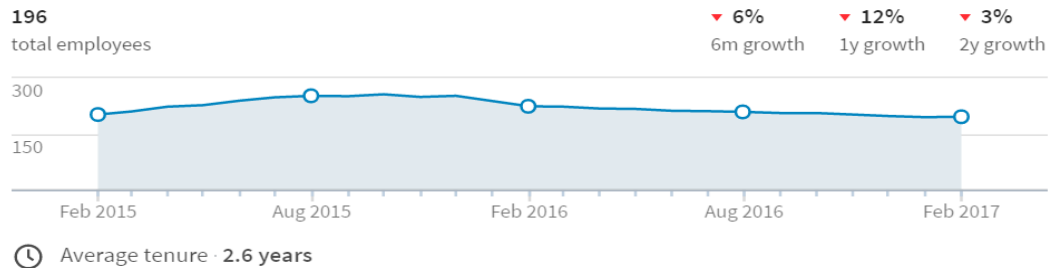
## ColdLight



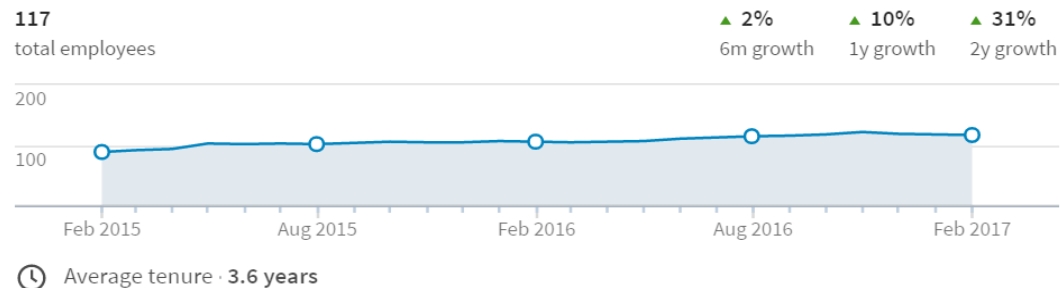
## Axeda



## ThingWorx



## Kepware



Source: LinkedIn  
Note: No data available on Vuforia and doesn't capture employees which may be reclassified as PTC employees

When your business growth relies on hiring an “Evangelist” things aren’t good.....

## Job details

Job 1 of 1

[Submit to job](#) [Send to friend](#) [Save to cart](#) [Post to my Social Network\(s\)](#)

### PTC Company Description

About PTC (NASDAQ: PTC)

PTC has the most robust Internet of Things technology in the world. In 1986 we revolutionized digital 3D design, and in 1998 were first to market with Internet-based PLM. Now our leading IoT and AR platform and field-proven solutions bring together the physical and digital worlds to reinvent the way you create, operate, and service products. With PTC, global manufacturers and an ecosystem of partners and developers can capitalize on the promise of the IoT today and drive the future of innovation.

### Region

The Americas

### Subregion

North America

### Country-City

USA-San Diego (Vuforia)

### Business Title

Evangelist

### PTC Org

STR

### Job Description for Advertising Purposes

Are you passionate about augmented reality and virtual reality? Do you have what it takes to work with the best in brightest minds in the world? Do you get excited about solving ridiculously hard problems? If so, we want to meet you.

We are an incredibly hard working team within PTC that is ushering in the era of augmented reality. By making AR extremely easy for developers, Vuforia has become the world's leading augmented reality software platform. The Vuforia ecosystem now includes more than 250,000 developers who have developed more than 30,000 applications for phones, tablets, VR Viewers, and a whole new generation of digital eyewear. They are building new experiences that change the way we learn, play, shop and work.

We have offices in some of the most beautiful cities in the world, including San Diego, CA; Vienna, Austria; Cambridge, UK; Zurich, Switzerland; and Modi'in Israel. In addition to the great scenery, PTC also has competitive benefits packages, and we do our best to play as hard as we work.

### EVANGELIST

You are passionate about cutting edge technology, APIs and particular on gaming, graphics, VR and AR. You are looking for an exciting role that will allow you to combine your technical insight with your communication skills and love for apps, games and content development. Your role at Vuforia is to engage with the broad community of developers, industry groups and other influential individuals to show them what's possible with Vuforia. You will work in close collaboration with the Vuforia's engineering, product and business teams globally. Expect 10%+ of your role to involve travel to customer sites, industry events and seminars with developers.

Win the hearts of our developers and customers. Your main focus will be to engage and build relationships with the developer community with both existing and prospective customers. This means that you deliver articulate, effective presentations, documentation and demos with technical content to small and large audiences. In other words, your job is to win the hearts of developers, and customers by helping them realize the full value of Vuforia.





## *Management and Governance*

# Management Background Is Controversial

PTC's current CEO and CFO have been affiliated with controversial companies in the past.

Executive	Current Role at PTC	Prior Company / Role	What Happened
James Heppelmann	CEO	Metaphase Technology / CTO 1992 - 1997	In 1992, SDRC and Control Data Systems, Inc. established a JV, Metaphase Technology, to market product data management software. <u>From 1992-1994, executives at SDRC inflated revenue and earnings through fictitious revenues. A material amount of the improperly recognized revenue was based on purchase orders containing conditional language ("conditional purchase orders") from SDRC's Far East Operations.</u> Neither of the Heppelmann's were named in the complaint. (Source: <a href="#">SEC Litigation</a> , April 1997)
Howard Heppelmann Brother of CEO	Divisional Manager, Manufacturing Solutions	Metaphase Technology / Channel Manager 1994-96 SDRC 1996 -1998	
Andrew Miller CFO		Autodesk / VP Finance and Chief Accounting Officer and Controller 2003 – <a href="#">2008</a>	On August 17, 2006, Autodesk announced that its Audit Committee was conducting a voluntary review of Autodesk's historical stock option granting practices and related accounting issues. The SEC also investigated Autodesk. As a result of the findings, Autodesk's balance sheet, income and cash flow statements from 2002-2006 could no longer be relied upon and were restated. <u>During the review, Autodesk also determined that it incorrectly recorded certain credits to resellers. As a result, adjustments were made to increase net revenues and decrease deferred revenue by \$14.0 million in fiscal 2006 and \$5.1 million in fiscal 2005</u> (Source: Autodesk <a href="#">10-K</a> )
		Silicon Graphics / Director of Finance 1991-1998	A Securities complaint and litigation commenced that in 1995 Silicon Graphics executives operated as a fraud and issued false and issued misleading statements which enabled insiders to exercise options and sell stock at inflated prices before disappointment emerged due to serious problems with: 1) recently reorganized North American sales force 2) weak demand in Europe 3) weak sales to OEM customers 4) sluggish gov't sales and 5) a shortage of ASIC chips for use in its new products. The case was eventually dismissed, Miller wasn't named in the dispute (Source: <a href="#">Case filing</a> )





# CEO Seems Like A Self-Promotion Expert

In our opinion, the resume of PTC's CEO is littered with self-aggrandizement, including references to himself as a "dynamic speaker" and "thought leader." However, what shocks Spruce Point the most is that he cites "highly influential" articles co-authored with Michael Porter, a well known strategy professor from Harvard who served on PTC's Board from 1995 - 2015. Porter also received special consulting fees for attending events sponsored by PTC for existing and potential clients.(1) Viewed from this context, it appears to us that PTC effectively paid a Harvard Professor to burnish the CEO's image.

## CEO's Bio Touts A Not-So-Independent Article



James E.  
Heppelmann

President and Chief  
Executive Officer

Download press  
package >  
(\*.zip)

### James E. Heppelmann

James (Jim) Heppelmann is the president and chief executive officer (CEO) of PTC, responsible for driving the company's global business strategy and operations. During Mr. Heppelmann's leadership tenure, PTC has assembled the industry's most comprehensive technology capabilities to enable companies to create, connect, analyze, operate, and service the products and systems that comprise the Internet of Things. He also serves on PTC's Board of Directors.

Mr. Heppelmann has emerged as a driver and thought leader in the Internet of Things (IoT) space. Together with Harvard Professor Michael E. Porter, he has co-authored two highly influential articles regarding the transformational impact of the Internet of Things on business, including the November 2014 Harvard Business Review cover story "How Smart, Connected Products are Transforming Competition," and the companion "How Smart, Connected Products are Transforming Companies" published in the October 2015 Harvard Business Review.

Source: [PTC website](#)

## The Ultimate Irony: PTC Flunks Porter's Five Forces In Our Opinion

Very High  
Threat of New  
Entrants.  
Onshape Has  
EmergEd As A  
Disruptor

Threat of  
New Entry

Customers Are  
Large Gov't  
Organizations  
and Corporates  
With Significant  
Leverage

Supplier  
Power

Competitive  
Rivalry

Buyer  
Power

Biggest  
Suppliers Are Its  
Employees.  
Very High  
Competition For  
Tech Talent

Threat of  
Substitution

Many And Varied  
Competitors.  
Switching Costs  
Decline Over  
Time in  
Software

(1) PTC 2014 [Proxy](#), p.48

# Management Likes “Fake News”

In our opinion, PTC’s management makes heavy use of self-promotional news it creates to fill space on its website. Unfortunately, all of its ‘news’ about winning awards, being named a leader in its space, and forming partnerships is not resulting in much revenue, GAAP earnings, or operating cash flow growth

Date ▼	Title	View
Dec 15, 2016	ZF Friedrichshafen Selects PTC PLM Enterprise Solutions and ThingWorx Technology	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Dec 6, 2016	PTC Named One of CRN’s Internet of Things 50	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Dec 1, 2016	The VELUX Group to Drive Smart Product Innovation with Implementation of PTC Windchill Across the Enterprise	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 29, 2016	PTC Achieves AWS IoT Competency Status	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 16, 2016	PTC and GE Digital to Expand Strategic Alliance	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 15, 2016	PTC to Participate in Two Upcoming Investor Conferences	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 15, 2016	PTC Named a Leader in IoT Software Platforms by Top Independent Research Firm	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 15, 2016	PTC Announces Creo 4.0 for Smarter Design	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 14, 2016	PTC Demonstrates Industry Leadership in Smart Cities at Smart City Expo World Congress 2016	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 10, 2016	PTC’s ThingWorx Application Enablement Platform Chosen by Vodafone for Rapid IoT Application Development	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 9, 2016	PTC Announces LiveWorx® 2017; Call for Presenters Open Through November 28	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 1, 2016	PTC and Unity Announce Strategic Collaboration to Accelerate Augmented Reality Development with Vuforia	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Nov 1, 2016	PTC Partners with Etisalat Digital to Bring ThingWorx Internet of Things Platform to Middle East Region	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Oct 27, 2016	PTC to Host Investor Webcast on Tuesday, November 8th, 2016	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>
Oct 26, 2016	PTC Navigate Fuels Windchill Sales, Helps Company Outpace PLM Market Growth	<a href="#">Link</a> <a href="#">PDF</a> <a href="#">Briefing</a>

Source: PTC [website](#)



# PTC Makes Financial Targets Easy For Management To Collect Cash Bonuses

We will illustrate that PTC's cash bonus for management is a constant moving target of esoteric financial metrics rarely used by peers in its industry. The bar appears to keep getting lower and lower.

## 2013 Performance-Based Cash Bonus Plan Design and Achievement

Performance Criteria	Threshold (50% Earned)	Target (Up to an Additional 50% Earned)	Actual Achievement(2)	Actual Bonus Percentage Earned
Non-GAAP Operating Margin Percent Growth(1)	2% Growth 20% Non-GAAP Operating Margin	10% Growth 21.6% Non-GAAP Operating Margin	13.2% Growth 22.2% Non-GAAP Operating Margin	100%

(1) FY2012 Non-GAAP Operating Margin Percent was 19.6%.

(2) A reconciliation between the Non-GAAP compensation measures and GAAP results is located in [Appendix A](#) at the end of this proxy statement.

Source: 2014 [Proxy Statement](#)

## 2014 Performance-Based Cash Bonus Plan Design and Achievement

Performance Criteria	Portion of Target Bonus	Threshold (25% Earned)	Target (100% Earned)	Upside Target (Up to an Additional 15% of Target Bonus Earned)	Actual Achievement(3)	Actual Bonus Percentage Earned
Non-GAAP Operating Margin(1)	70%	23.2%	25.0%	N/A	26.1%	100%
License Revenue(2)	30%	\$351.1 Million	\$365.0 Million	\$378.6 Million	\$364.78 Million	98.4%
<b>Total Bonus Percentage Earned</b>						<b>99.52%</b>

(1) FY2013 Non-GAAP Operating Margin was 22.1%.

(2) FY2013 License Revenue was \$344.2 million.

(3) A reconciliation between the Non-GAAP compensation measures and GAAP results is located in [Appendix A](#) at the end of this proxy statement.

Source: 2015 [Proxy Statement](#)



# If At First You Don't Succeed, Try Changing The Bonus Metrics Again

When management failed to hit its target in 2015, it changed the target yet again and re-scaled its ACV target lower (next slide). The Comp Committee also gave the CEO a pass for failing to hit Non-GAAP EPS targets defined at his promotion to CEO in 2010 and covering periods through 2013-2015. It allowed 49.7% of the unearned award to vest. In our opinion, this practice has created moral hazard, and given PTC's executives additional confidence to inflate financial performance to realize value for its considerable "free" equity grants. It's also noteworthy that PTC ties none of its executive cash bonuses to performance in IoT which it promotes as a significant growth driver. In fact, the latest proxy statement only mentions IoT once. Also notice the "3x" multiplier which differs from the 2x multiplier promoted to investors.

## 2015 Performance-Based Cash Bonus Plan Design and Achievement

Performance Measure	Threshold (25% Earned)	Target (100% Earned)	Upside Target (Up to an Additional 15% of Target Bonus Earned)	Actual Achievement	Actual Bonus Percentage Earned
New License and ACV Subscription Bookings <sup>(1)(2)</sup>	\$ 332.8 Million	\$ 399.7 Million	\$ 439.7 Million	\$ 331.3 Million	0%

(1) ACV is Annualized Contract Value of bookings for subscription contracts, which is calculated by dividing the total contract value for the subscription contract by the number of days in the committed subscription contract term (as applicable) and multiplying by 365. However, if any contract duration is less than one year, then the ACV equals the TCV. Once the aggregate total ACV of bookings for new subscriptions for the year reached \$22.3 million, each subscription contract ACV thereafter was multiplied by 3x for the purpose of approximating the value of a perpetual license, which was then added to amount of subscription ACV for the year (up to a maximum of \$22.3 million) and perpetual license revenue for the year. The plan also fixed the foreign exchange rate at which non-U.S. revenue and bookings would be translated into U.S. dollars.

(2) FY2014 License and Subscription Revenue was \$389.7 million, of which only \$27.1 million was subscription revenue.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards \$(1)	Non-Equity Incentive Plan Compensation (\$)	All Other Compensation \$(2)	Total (\$)
James Heppelmann	2015	\$ 750,000	\$ —	\$ 10,253,701	\$ —	\$ 7,950	\$ 11,011,651
President and Chief	2014	\$ 750,000	\$ —	\$ 4,749,968	\$ 995,200	\$ 7,800	\$ 6,502,968
Executive Officer	2013	\$ 750,000	\$ —	\$ 4,749,990	\$ 1,000,000	\$ 7,650	\$ 6,507,640

(1) Amounts also include additional compensation expense associated with modification of the 2013 and 2014 performance-based awards as described above in Compensation Discussion and Analysis under "2013 and 2014 Performance-Based Equity" and "CEO Long-Term Performance-Based Equity Award" on page 33. The modification amounts for the executives were: Mr. Heppelmann, \$5,036,205; Mr. Glidden, \$780,123; Mr. Cohen, \$1,132,850; Mr. DiBona, 811,850; and Mr. Ranaldi, \$872,035.



# Highly Questionable Bonus Calculation

PTC's bridge to pay executives cash compensation on Non-GAAP operating expenses has Spruce Point concerned. First, PTC omits restructuring charges, which we've argued are suspect and have been reoccurring for 5 years. Secondly, PTC omits selected expenses related to acquisitions tied to its IoT strategy. Conveniently, PTC doesn't remove acquisition contributions to its other performance metric of Subscription ACV! Lastly, PTC uses a similar sleight-of-hand in removing excess incentive compensation. Again, PTC gets all the benefit to its Subscription ACV performance metric, but wants to exclude a portion of the costs. Not surprisingly, PTC's Non-GAAP operating expense of \$646.2m just barely beat its threshold target of \$648.2m!

## 2016 Performance-Based Annual Cash Bonus Plan Achievement

Performance Measure	Threshold	Target	Upside Target	Actual Achievement	Actual Bonus Percentage Earned(3)
Software Subscription ACV(1)	\$ 45.0 Million	\$ 53.3 Million	\$ 58.6 Million	\$ 111.4 Million	130%
Non-GAAP Operating Expense(2)	\$ 648 Million	\$ 642 Million	\$ 635 Million	\$ 646.2 Million	93%
Total Bonus					111.5%

(1) ACV is Annualized Contract Value of subscription contract bookings, which is calculated by dividing the total contract value for the subscription contract by the number of days in the committed subscription contract term (as applicable) and multiplying by 365. However, if any contract duration is less than one year, then the ACV equals the total contract value. The plan also fixed the foreign exchange rate at which non-U.S. revenue and bookings would be translated into U.S. dollars.

(2) A reconciliation between GAAP Operating Expense and Non-GAAP Operating Expense achieved for 2016 is set forth on [Appendix B](#).

(3) Upside was capped at 30% for the Subscription ACV portion and at 10% for the Non-GAAP Operating Expense portion. When considering the weighting between the measures, the maximum that could be earned under the plan in the aggregate was 120% of the target (only 20% upside).

## PTC Inc. Operating Expenses (Unaudited)

	Twelve Months Ended September 30, 2016 (in millions)
GAAP operating expenses	\$ 851.9
Stock-based compensation	(55.2)
Amortization of acquired intangible assets	(33.2)
Acquisition-related charges included in general and administrative expenses	(3.5)
Pending legal settlement accrual	(3.2)
Restructuring charges	(76.3)
Non-GAAP operating expenses	\$ 680.5
Operating expenses associated with our acquisition of Kepware(1)	(13.2)
Impact on changes in foreign currency exchange rates(2)	3.6
Incentive compensation expense(3)	(24.7)
Non-GAAP operating expenses for annual cash bonus plan	\$ 646.2

(1) Under the 2016 annual cash bonus plan, operating expenses from companies that we acquired on or after October 1, 2015, with the exception of the Vuforia business, were excluded from determining non-GAAP operating expenses.

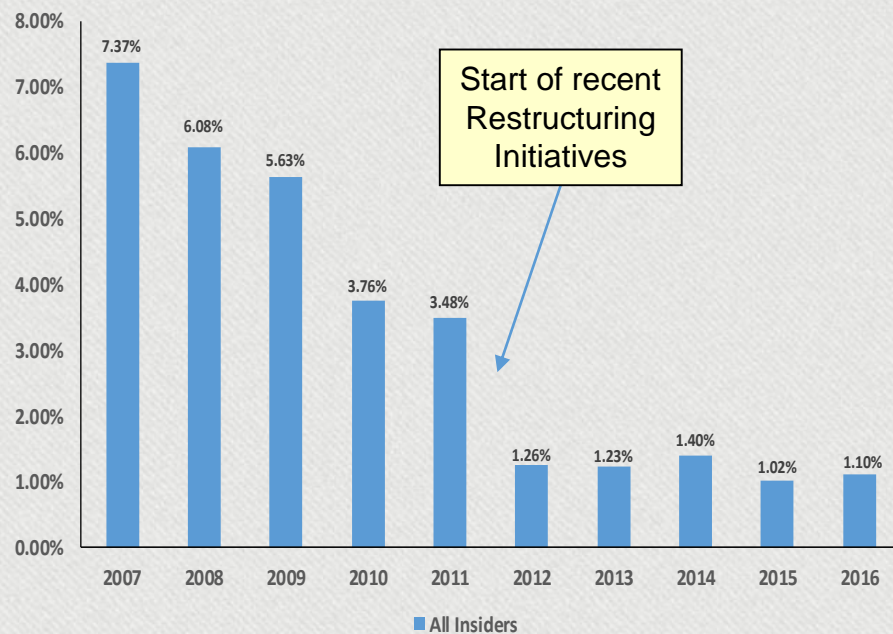
(2) Under the 2016 annual cash bonus plan, the impact of changes in foreign currency rates from the foreign currency rates used to establish the 2016 full year plan were excluded from determining non-GAAP operating expenses.

(3) Under the 2016 annual cash bonus plan, incentive-based compensation in excess of targeted expenses for 2016 were excluded from determining non-GAAP operating expenses. Such excess was attributed to subscription bookings in excess of our financial plan.

# Insiders Sell, Sell, Sell Stock All The Time

Insider ownership by management and directors is near an all-time low.  
It's noteworthy that ownership materially decreased in 2011 when the restructuring programs began.

## Aggregate Insider Ownership



Source: PTC Proxy Statements and Form 4 filings

## Recent Insider Sales

Executive or Director	Current 10b5-1 Sale Program In Effect	Open Market Sales
J. Heppelmann / CEO	<a href="#">YES</a>	--
Von Staats / CVP, GC and Secretary	<a href="#">YES</a>	--
Robert Gremley, EVP President TPG	<a href="#">YES</a>	--
Anthony Dibona / EVP, Renewal Sales	<a href="#">YES</a>	--
Paul Lacy / Director	<a href="#">YES</a>	--
Robert Schechter / Director	<a href="#">YES</a>	--
Barry Cohen / EVP and Chief Strategy Officer	NO	<a href="#">YES</a>
Don Grierson / Director	NO	<a href="#">YES</a>
Matt Cohen / EVP, Customer Services	NO	<a href="#">YES</a>





## *Valuation and Price Target*

# *Owning PTC Shares Currently Has An Unfavorable Risk / Reward*

Every analyst has a “Buy” or “Overweight” recommendation on PTC and have an average price target of \$60 per share. PTC’s shares are already up over 20% YTD, and the remaining implied upside of 12% doesn’t appear attractive relative to our expected downside of 50% - 60%

Analyst	Recommendation	Price Target
Barclays	Overweight	\$60.00
Berenberg	Buy	\$66.00
Brean Capital	Buy	\$62.00
Citigroup	Buy	\$60.00
Evercore	Buy	\$55.00
Goldman	Buy	\$58.00
Griffin Securities	Buy	\$55.00
JP Morgan	Overweight	\$60.00
Pacific Crest	Overweight	\$62.00
RBC Capital	Outperform	\$55.00
Seaport	Buy	\$69.00
Wedbush	Outperform	\$59.00
Average Price Target		\$60.00
% Implied Upside (1)		12%

1) Upside based on \$53.50 share price



# Promoter View Vs. Reality

## What The Stock Promoters Say

### Seaport Global (BUY \$69):

- *"The IIoT is still in early days, but PTC has already grown IIoT to \$100MM in sales, up organically 50% YoY in 2016"*
- *"PTC's transition to subscription pricing vastly exceeded expectations, pulling forward transition-related trough revenues/earnings ~2 years early (FQ1:17). Therefore, PTC is now at an inflection point as revenues/margins accelerate, in our view"*

### Goldman Sachs (Buy: \$58)

- *"A higher recurring revenue mix drives better FCF"*
- *"Synergies between the core CAD/PLM business and the IoT platform"*
- *"30-40% higher lifetime value of a customer"*

**Wedbush (Buy: \$59):** *Investment thesis (#1 point) PTC is proving its ability to control costs, even in a mixed macroeconomic environment.*

**Brean Capital (Buy: \$62):** *With the most comprehensive IoT platform offering in the marketplace and an early market leadership position, we believe PTC's IoT assets (which include its CAD and PLM product portfolio) could prove to be highly strategic for any large tech bellwethers who want to pursue this large market opportunity*

## Spruce Point's View

- [Check your math carefully](#). We calculate an anemic growth rate of just 8.6% and LTM sales of \$90m. A majority of the sales growth is acquired, and we don't believe PTC has done a great job extracting value.
- *"Pulling forward"* (aka stealing from the future) implies difficulty ahead because all of the easy gains have been made already. We believe PTC's bookings outperformance is due to moderate, and revenue acceleration and margin improvement is not guaranteed
- Then explain why Q1 cash flow was negative for the first time ever and why is % of recurring revenue in IoT declining?
- How exactly are synergies being derived when PTC runs each IoT business separately and revenue per IoT customer and % of recurring revenues are declining
- ...Life time value assuming they stick around and renew; PTC won't disclose churn

Is that so? We question the frequent and recurring restructuring charges. GAAP operating expenses were up \$159m with revenues down \$26m from FY11-16

Stoking the takeover angle huh? PTC has paid a whopping 7.5x sales multiple for a collection of disparate assets growing single digits, not making money, and not scaling. Why would anyone step in to acquire it now? All the large tech players (IBM, Google, MSFT, Amazon) have their own solutions

# Comparable Acquisitions Suggest Substantial Overvaluation of PTC's Share Price

We've reviewed comparable acquisitions in the technical software and electronic data automation over the past decade and find that average takeover multiples of NTM Sales and EBITDA are approximately 3.5x and 14x, respectively. Given that PTC's current multiples are 6x and 24x we find that its shares are richly valued and exceed any control premium multiple that a logical acquirer would pay.

\$ in millions

Announced	Acquiror	Target	Deal Value	EV/ NTM Sales	EV/ NTM EBITDA
<a href="#">Nov 2016</a>	Siemens	Mentor Graphics	\$4,500	3.4x	13.3x
<a href="#">Jan 2016</a>	Siemens	Computational Dynamics	\$970	4.8x	N/A
<a href="#">Jan 2014</a>	Dassault	Accelrys Inc.	\$750	3.7x	15.5x
<a href="#">July 2013</a>	Schneider Electric	Invensys	\$5,200	1.9x	11.9x
<a href="#">Dec 2011</a>	Synopsys	Magma Design	\$507	3.0x	10.4x
<a href="#">July 2010</a>	Hexagon	Intergraph	\$2,125	2.5x	10.4x
<a href="#">June 2009</a>	Intel	Wind River Systems	\$884	2.2x	15.5x
<a href="#">March 2008</a>	ANSYS	Ansoft Corp.	\$832	7.5x	19.2x
<a href="#">June 2007</a>	IBM	Teleogic AB	\$745	3.0x	14.5x
<b>Average Multiple</b>				<b>3.5x</b>	<b>13.8x</b>



# PTC Trading At An Unjustified Premium To Its Peers

PTC's overvaluation is easy to observe from its current relative valuation to peers. It cannot be explained by abnormal revenue growth or better cash flow margins. Investors' are overly fixated on PTC's Non-GAAP EPS growth, which we have illustrated is an unreliable measure of the Company's performance.

\$ in millions except per share amounts

	Stock	% of		2017E - 2018E		Price /		Enterprise Value						
	Price	52-wk	Enterprise	Revenue	EPS	Consensus EPS		EBITDA		Sales		LTM	Price /	Debt /
Company (Ticker)	3/22/2017	High	Value	Growth	Growth	2017E	2018E	2017E	2018E	2017E	2018E	Cash Flow	Book	Capital
Adobe (ADBE)	\$126.21	97%	\$60,450	19.4%	25.7%	33.0x	26.3x	21.7x	17.8x	8.5x	7.1x	27.5x	8.3x	20%
Dassault (DSY)	\$83.47	94%	\$19,621	7.9%	11.2%	28.8x	25.9x	16.2x	14.7x	5.5x	5.1x	31.5x	5.2x	20%
Synopsys (SNPS)	\$71.07	97%	\$10,021	5.3%	8.9%	21.9x	20.1x	13.7x	12.9x	3.8x	3.7x	16.7x	3.2x	9%
Cadence Sys (CDNS)	\$31.86	100%	\$9,085	5.5%	5.8%	23.1x	21.8x	16.5x	15.1x	4.7x	4.5x	20.4x	11.9x	48%
ANSYS (ANSS)	\$106.64	98%	\$8,255	5.2%	7.4%	28.4x	26.4x	16.2x	15.3x	8.0x	7.6x	23.1x	4.2x	0%
Mentor Graphics (MENT)	\$37.20	100%	\$4,091	5.7%	9.0%	24.0x	22.0x	14.6x	13.0x	3.4x	3.2x	12.7x	3.1x	17%
			Max	19.4%	25.7%	33.0x	26.4x	21.7x	17.8x	8.5x	7.6x	31.5x	11.9x	48%
			Average	8.2%	11.3%	26.5x	23.8x	16.5x	14.8x	5.6x	5.2x	22.0x	4.8x	19%
			Min	5.2%	5.8%	21.9x	20.1x	13.7x	12.9x	3.4x	3.2x	12.7x	3.1x	0%
PTC Inc (PTC)	\$53.60	94%	\$6,721	6.4%	32.6%	39.9x	30.1x	23.2x	19.2x	5.6x	5.3x	90.8x	7.5x	49%

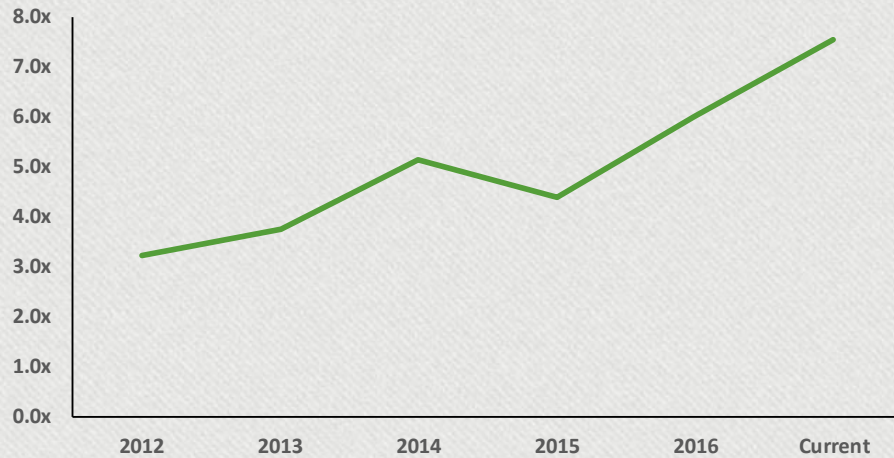
Source: Company financials, Wall St. estimates



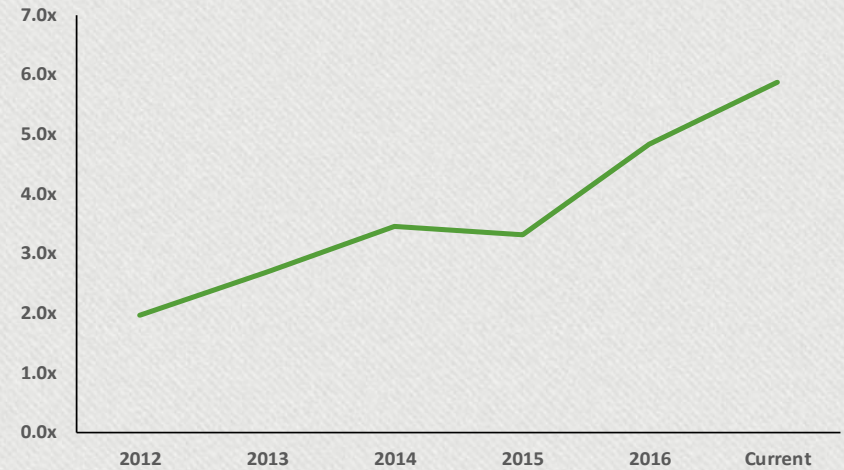
# PTC's Valuation From A Historical Trading Perspective...

Successful investing rarely involves buying a stock at peak multiples and unsustainable performance

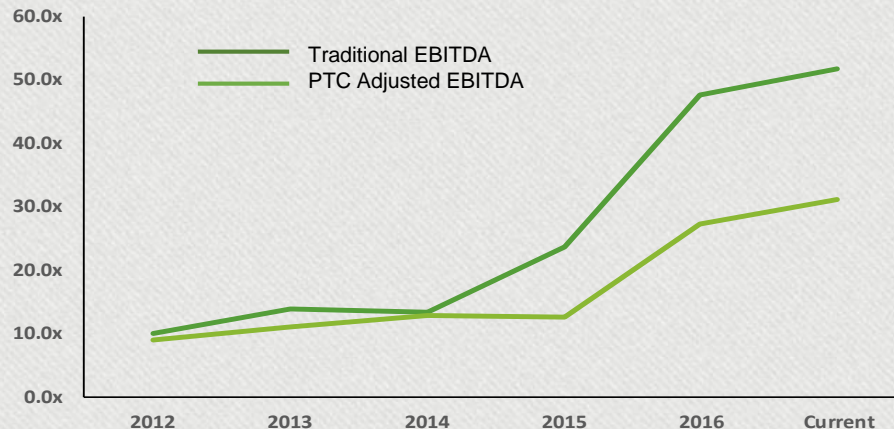
Price / Book Value



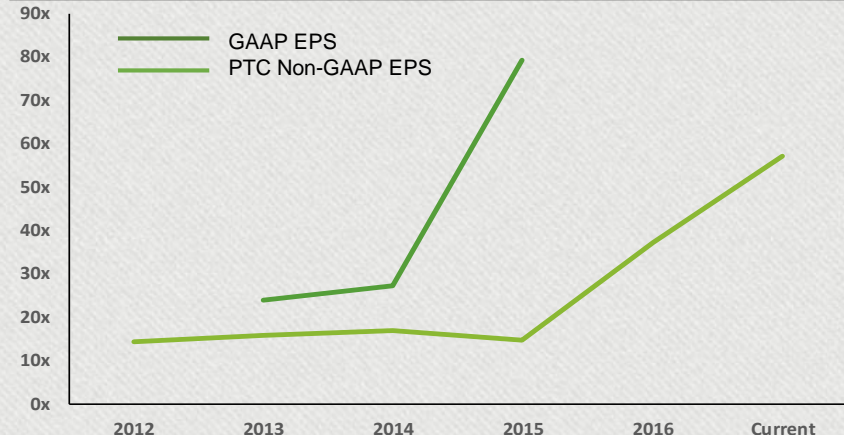
EV / Revenues



Enterprise Value / TTM EBITDA



Price / TTM EPS





# Spruce Point Estimates 50% – 60% Downside

By all measures, PTC's share price is overvalued. Given the numerous accounting distortions in PTC's reporting that affects EBITDA and EPS, we believe the best way to value its shares are on a multiple of revenues and operating cash flow. For the sake of argument, we assume management's 2017E figures, and apply a more realistic multiple to discount our concerns. We see approximately 50% – 60% downside risk

## Spruce Point Intermediate Term Price Reference Ranges

\$ in millions, except per share amounts

Valuation	Low Price	High Price	Note
<b>Sales Multiple</b> <b><u>2017E Sales</u></b> <b>Enterprise Value</b> <b>Plus: Cash (1)</b> <b>Less: Debt</b> <b><u>Dil. Shares</u></b> <b>Price Tgt.</b> <b>% Downside</b>	2.5x <u>\$1,165</u> \$2,912 \$237 (\$778) <u>115.3</u> \$21/sh -62%	3.5x <u>\$1,180</u> \$4,130 \$237 (\$778) <u>115.3</u> \$31/sh -42%	Low end of current peer valuations is around 3.5x as is the average takeover multiple. We believe 3.5x should be PTC's upper bound and at least a 1x multiple discount is warranted
<b>Operating Cash Flow Multiple</b> <b><u>2017E OCF (2)</u></b> <b>Enterprise Value</b> <b>Plus: Cash (1)</b> <b>Less: Debt</b> <b><u>Dil. Shares</u></b> <b>Price Tgt.</b> <b>% Downside</b>	18.0x <u>\$152</u> \$3,510 \$237 (\$778) <u>115.3</u> \$23/sh -57%	21.0x <u>\$162</u> \$4,305 \$237 (\$778) <u>115.3</u> \$29/sh -45%	Current peer average is 22x. We believe this should be PTC's upper bound, especially since a majority of PTC's cash and cash flow is international and subject to a maximum repatriation tax rate of 35%

1) 77% of PTC's cash is held outside of the U.S; it may be appropriate to discount its value assuming a 35% repatriation rate

2) Management has guided to \$127-\$137m of Free Cash Flow. We increase this figure by \$25m, PTC historical annual capital expenditures