LONG-TERM FINANCIAL MODEL UPDATE

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October 24, 2018

SAFE HARBOR STATEMENT

This presentation includes forward looking statements regarding PTC's future financial performance, strategic outlook and expectations, anticipated future operations, and products and markets. Because such statements deal with future events, actual results may differ materially from those projected in the forward-looking statements. Information concerning factors that could cause actual results to differ materially from those in the forward-looking statements can be found on page 13 and in PTC's Annual Report on Form 10-K, Forms 10-Q and other filings with the U.S. Securities and Exchange Commission.

IMPORTANT INFORMATION ABOUT OPERATING AND NON-GAAP FINANCIAL MEASURES

This presentation includes operating and non-GAAP financial measures and targets. All prior period financial results and future period financial expectations and targets are non-GAAP financial measures. These non-GAAP financial measures are not prepared in accordance with generally accepted accounting principles. Future period non-GAAP financial targets cannot be reconciled to GAAP targets as items that affect GAAP results cannot be predicted. An explanation of our subscription transition operating measures, including bookings, can be found on page 14. Important information about non-GAAP financial measures can be found on page 15.

ASC 606

Please note that this presentation does not take into consideration the impact of ASC 606, which for PTC was effective as of October 1, 2019 (fiscal year 2019).

BACKGROUND

- Given the strength of our FY'18 performance, and our guidance for FY'19, we believe PTC is well positioned to achieve the long-term financial targets that we shared at LiveWorx on June 18, 2018, subject to the following modifications. There are two changes to our modeling assumptions and targets that we are providing in this update.

- First, we are updating our long-term subscription bookings mix guidance to 95% beginning in FY'20 (88% to 90% in FY'19), reflecting that substantially all our new bookings will be subscription after January 1, 2019, except for Kepware. The revised subscription mix guidance reduces FY'21 non-GAAP EPS and free cash flow targets, but it does not impact FY'23 non-GAAP EPS or free cash flow targets, and the increase in subscription mix is expected to benefit the business over the long term.

- The second change reflects tax regulations issued by the U.S. Treasury in late September 2018. This change does not impact our free cash flow targets for FY'21 or FY'23, but it does impact our financial statement income tax expense, raising our non-GAAP effective tax rate to the 18-20% range, thus lowering our non-GAAP EPS targets.

FY'21 TARGETS

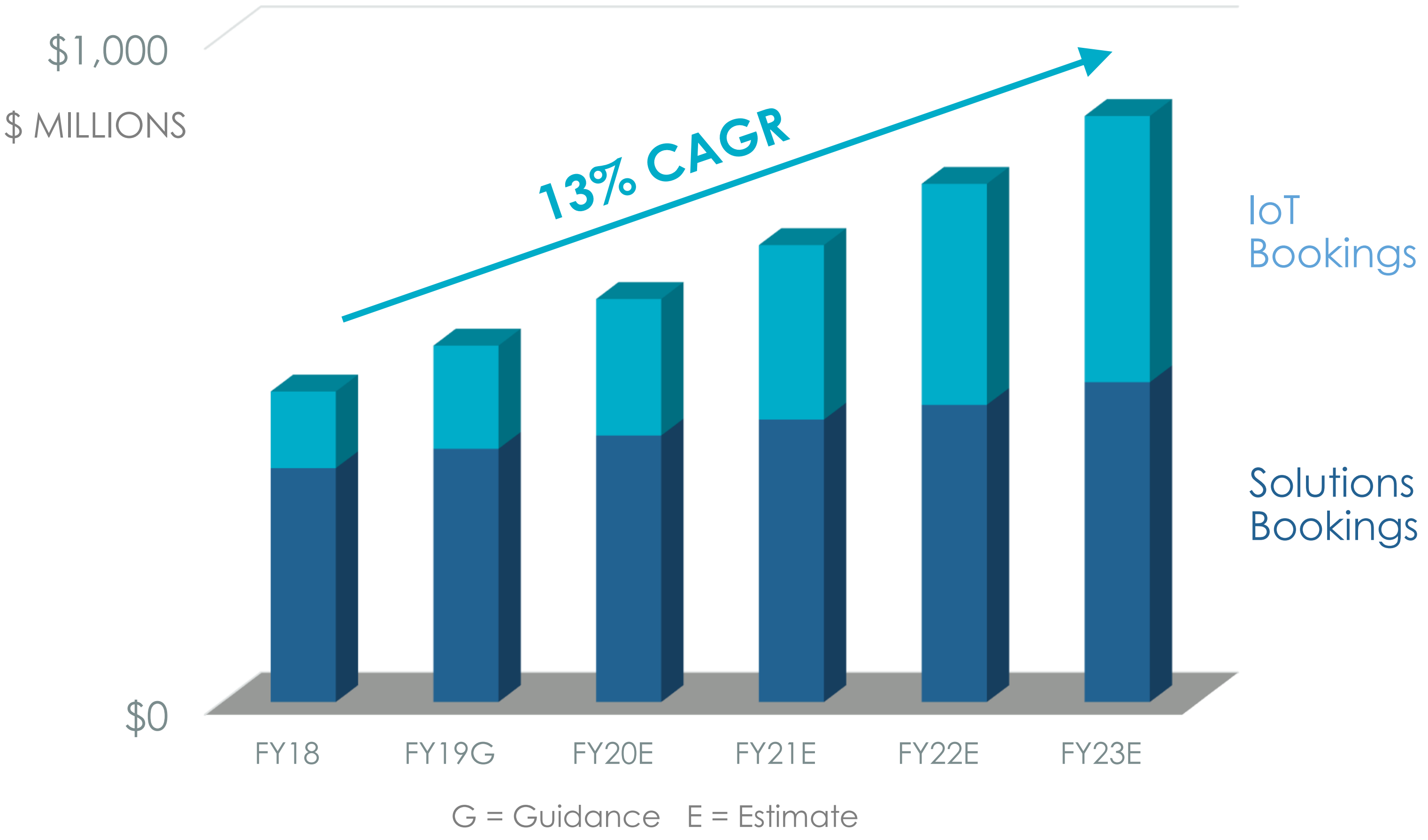
FY'21	Old	New	Comments
Total Revenue	$1.9B	$1.8B	Reflects impact of higher subscription mix; no change to bookings growth outlook
Software Revenue	$1.7B	$1.6B	Reflects impact of higher subscription mix; no change to bookings growth outlook
Subscription Mix	85%	95%	~100% subscription except Kepware and select legacy products
Recurring Software Revenue	~95%	~98%	300 bps increase due to higher subscription mix
Non-GAAP Op Margin	Low-30%	Low-30%	No change
Non-GAAP Tax Rate	15% - 20%	18%-20%	September 2018 tax regulations impact financial statement tax rate; no change to Free Cash Flow
Non-GAAP EPS	$4.30	$3.80	Reflects impact of higher subscription mix and higher non-GAAP tax rate
Free Cash Flow	$600M	$585M	Reflects impact of higher subscription mix

FY'23 TARGETS

FY'23	Old	New	Comments
Total Revenue	$2.4B	$2.4B	No change
Software Revenue	$2.2B	$2.2B	No change
Subscription Mix	85%	95%	~100% subscription except Kepware and select legacy products
Recurring Software Revenue	~95%	~98%	300 bps increase due to higher mix
Non-GAAP Op Margin	37%	37%	No change
Non-GAAP Tax Rate	15% - 20%	18%-20%	September 2018 tax regulations impact financial statement tax rate
Non-GAAP EPS	$6.50	$6.30	Reflects impact of higher non-GAAP tax rate
Free Cash Flow	$850M	$850M	No change

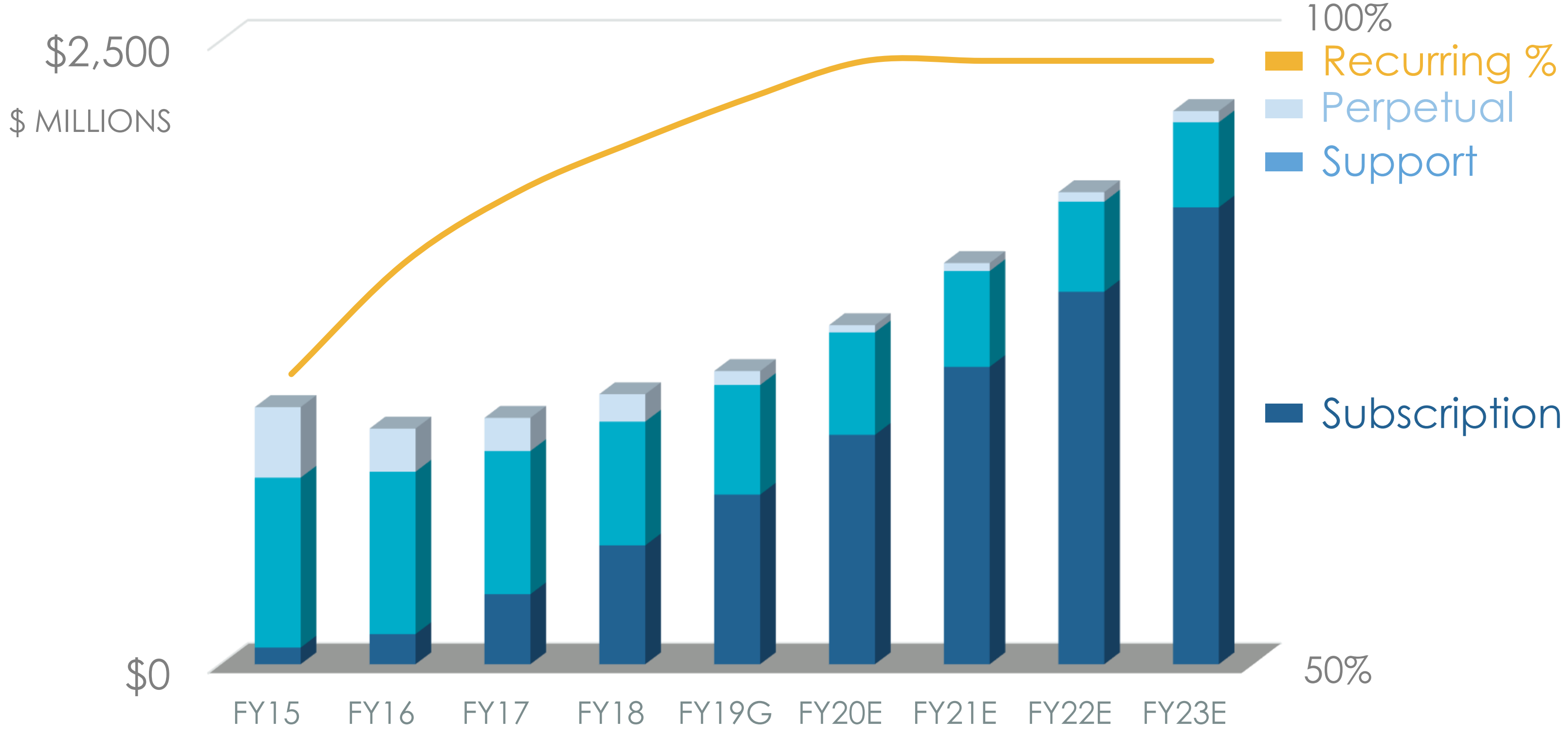
REAFFIRMING BOOKINGS GROWTH TARGET

- Bookings are comprised of new subscriptions and perpetual software licenses, and do not include renewals.
- We estimate that PTC's current addressable markets are growing in the mid teens, based on the weighted contribution of our various business segments.
- Our estimates are based on projected market growth rates of:
  - Mid-single digit growth for our Solutions business;
  - 30 to 40% growth for our IoT business in the near-term, with lower growth in the ensuing years, resulting in a CAGR in the high 20% range from FY'18 to FY'23.



SOFTWARE REVENUE ACCELERATING

- Beginning in FY'16, PTC launched a comprehensive program to transition its software business to subscription. Market adoption has been very strong, resulting in 76% of our FY'18 bookings coming from subscriptions. We expect to exit FY'19 in the mid-90% range of our bookings from subscriptions.
- The rapid pace of our subscription transition resulted in software revenue hitting a "trough" for the full-year FY'16, then returning to growth in FY'17 as we exited the trough.
- Due to the compounding benefit of deferred subscription revenue, we expect constant currency software revenue growth of 10% (midpoint of guidance) in FY'19, with mid-teens growth beginning in FY'20.
- We expect recurring software revenue to contribute approximately 98% of total software revenue by FY'20.



NON-GAAP SOFTWARE REVENUE

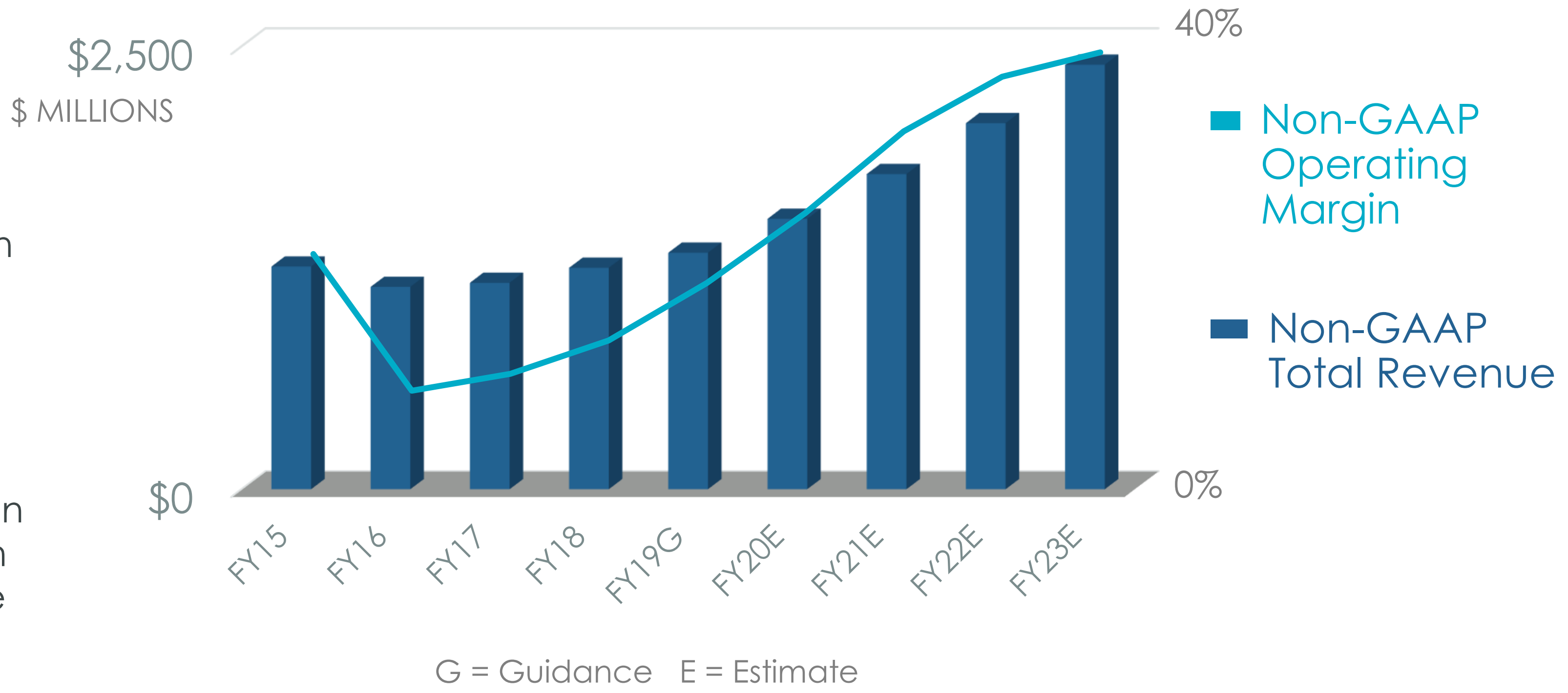
G = Guidance E = Estimate

OPEX DISCIPLINE REMAINS A KEY TENET

- PTC has a track record of maintaining cost discipline through rigorous portfolio management, resulting in non-GAAP operating margin expansion of ~1,100 bps from FY'09 to FY'15, before the subscription transition accelerated.
- Our long-term profitability targets are predicated on maintaining this cost discipline.
- We are targeting operating expense growth at about half the rate of bookings growth through FY'23.
- At the midpoint, FY'19 non-GAAP OpEx guidance is just 3% growth YoY, including ~200 bps of Fx, or 5% growth YoY on a constant currency basis, consistent with our long-term model.

MARGINS INFLECT IN FY19

- The combination of expected accelerating software revenue growth and operating expense discipline yields an attractive operating margin expansion trajectory.
- Having exited the software revenue trough in FY'16, non-GAAP Op Margin expanded in FY'17 and FY'18.
- Beginning in FY'19, when software revenue growth is expected to continue to rapidly accelerate, we expect non-GAAP Op Margin to grow approximately 400 bps (to 22%), with further expansion in the 400 to 500 bps range per year through FY'21, when we expect to achieve a non-GAAP Op Margin in the low 30% range.
- We are targeting non-GAAP operating margin of 37% in FY'23

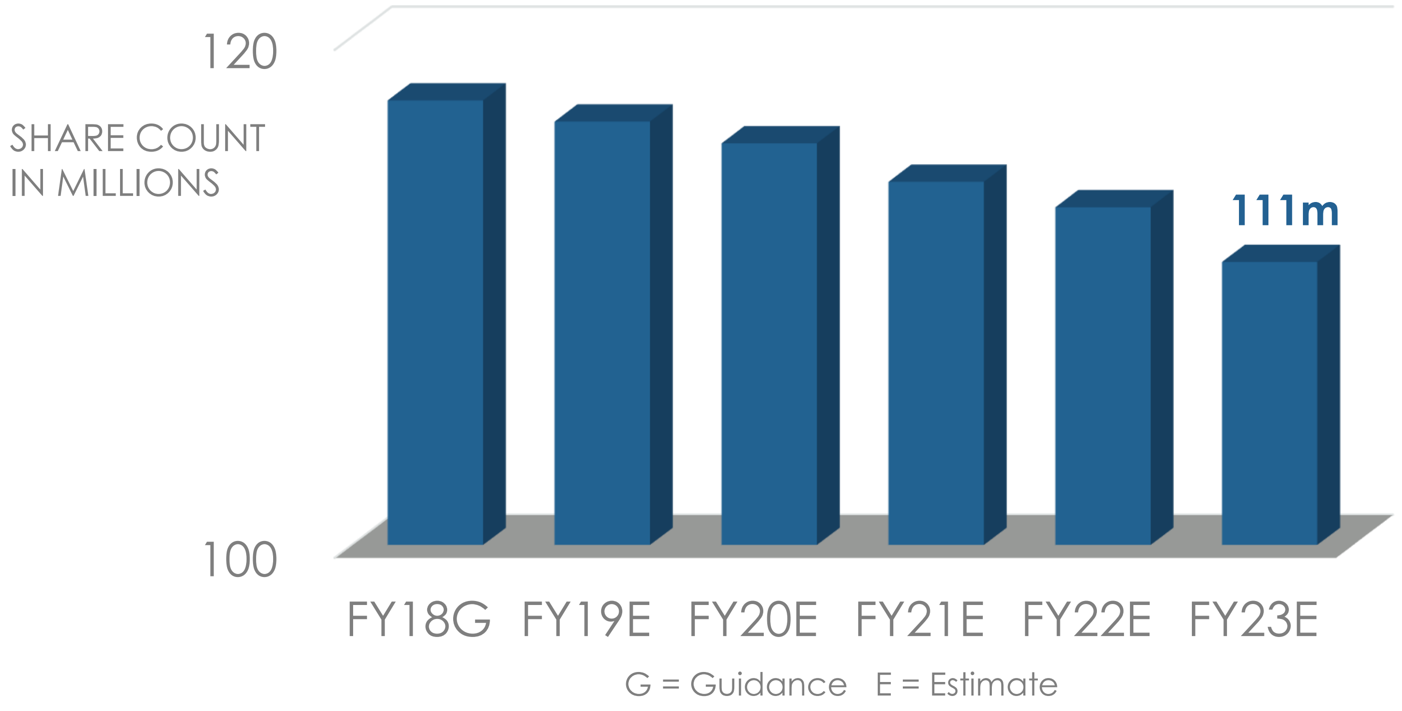


RETURNING CAPITAL TO SHAREHOLDERS

- In June, 2018 we increased our stock buyback authorization from $500M to $1,500M to reflect the $1,000M investment in PTC by Rockwell Automation. We entered into an ASR for $1,000M after the investment closed to buy back stock to offset dilution.

- Our capital strategy remains unchanged. With the amount of free cash flow we generate, we believe we should be in a net-debt position, with moderate leverage – not more than 3x EBITDA.

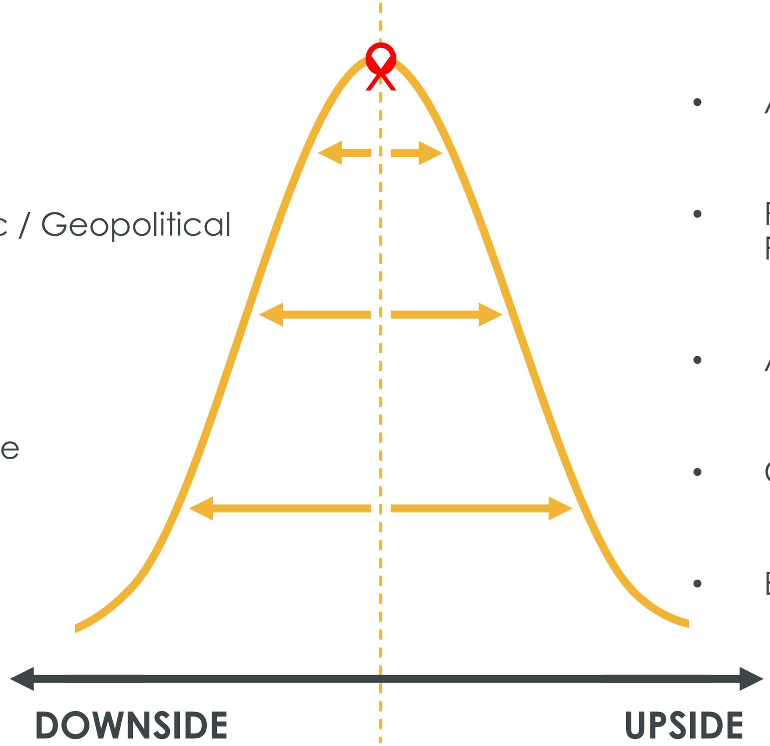
- Long term, we remain committed to returning at least 40% of free cash flow to investors, more than offsetting dilution. We consider the 40% threshold a minimum commitment, and could return a higher percentage if we have excess cash.
  - For example, in both FY'17 and FY'18 our share repurchases amounted to 47% of free cash flow.



SHAPE OF RISK

- At our June 2018 LiveWorx investor event, we shared this framework to provide context around the potential risks and opportunities related to our long-term growth targets.
- While we are clearly benefitting from strong secular growth dynamics in our IoT and Augmented Reality businesses, our CAD and PLM businesses are mature, and generally more cyclical. There may also be market factors and currency fluctuations that could impact our growth objectives (as they do in FY'19, most significantly in the first half).
- On the "upside", there are a number of positive factors providing a backstop to potential headwinds, including 1) accelerating Augmented Reality adoption; 2) upside from our Rockwell Automation partnership; 3) contribution from our Ansys CAD partnership; 4) maintenance conversions (which are not factored into our FY'20 to FY'23 targets); and 5) achieving best-in-class retention rates.

- Macro Economic / Geopolitical
- Market Factors
- Foreign Exchange



- Augmented Reality
- Rockwell Automation Partnership
- Ansys Partnership
- Conversions
- Best-In-Class Retention

ptc

FORWARD LOOKING STATEMENTS

Statements in this presentation that are not historic facts, including statements about our future financial and growth expectations and targets, are forward-looking statements that involve risks and uncertainties that could cause actual results to differ materially from those projected. These risks include: the macroeconomic and/or global manufacturing climates may deteriorate; customers may not purchase our solutions or convert existing support contracts to subscription when or at the rates we expect; our businesses, including our Internet of Things (IoT) business, and Augmented Reality businesses, may not expand and/or generate the revenue we expect; foreign currency exchange rates may vary from our expectations and thereby affect our reported revenue and expense; the mix of revenue between license & subscription solutions, support and professional services could be different than we expect, which could impact our EPS results; our transition to subscription-only licensing could adversely affect sales and revenue; sales of our solutions as subscriptions may not have the longer-term effect on revenue and earnings that we expect; bookings associated with minimum ACV commitments under our Strategic Alliance Agreement with Rockwell Automation may not result in subscription contracts sold through to end-user customers; our strategic initiatives and investments may not generate the revenue we expect; we may be unable to expand our partner ecosystem as we expect and our partners may not generate the revenue we expect; we may be unable to generate sufficient operating cash flow to return 40% of free cash flow to shareholders and other uses of cash or our credit facility limits or other matters could preclude share repurchases. In addition, our assumptions concerning our future GAAP and non-GAAP effective income tax rates are based on estimates and other factors that could change, including the geographic mix of our revenue, expenses and profits. Other risks and uncertainties that could cause actual results to differ materially from those projected are detailed from time to time in reports we file with the Securities and Exchange Commission, including our most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q.

IMPORTANT DISCLOSURES

Reporting metrics and non-GAAP definitions – Management believes certain operating measures and non-GAAP financial measures provide additional meaningful information that should be considered when assessing our performance. These measures should be considered in addition to, not as a substitute for, the reported GAAP results.

Software licensing model – A majority of our software sales historically were perpetual licenses, where customers own the software license. Typically, our customers choose to pay for ongoing support, which includes the right to software upgrades and technical support, and attach rates on support are in the high 90% range with retention rates also in the 90% range. For fiscal 2016 and year-to-date in fiscal 2017, a majority of our new license bookings have consisted of ratably recognized subscriptions. Under a subscription, customers pay a periodic fee for the continuing right to use our software, including access to technical support. They may also elect to use our cloud services and have us manage the application. We began offering subscription pricing as an option for most PTC products in Q1 FY'15, and earlier this year, we announced that beginning in January of 2019, we will no longer offer perpetual licenses, except for Kepware. We believe subscription has proved attractive to customers as it: (1) increases customer flexibility and opportunity to change their mix of licenses; (2) lowers the initial purchase commitment; and (3) allows customers to use operating rather than capital budgets. Over a four to five-year period we believe the value of a subscription is likely to exceed that of a perpetual license, assuming similar seat counts. However, initial revenue, operating margin, and EPS will be lower as revenue is recognized in part up front and in part ratably in a subscription, rather than all up front.

Any reference to "total recurring software revenue" or "recurring software revenue" means the sum of subscription revenue and support revenue. Any reference to "total software revenue" or "software revenue" means the sum of subscription revenue, support revenue and perpetual license revenue. "Subscription revenue" includes cloud services revenue.

Bookings Metrics – We offer both perpetual and subscription licensing options to our customers, as well as monthly software rentals for certain products. Given the difference in revenue recognition between the sale of a perpetual software license (revenue is recognized at the time of sale) and a subscription (revenue is deferred and recognized ratably over the subscription term), we use bookings for internal planning, forecasting and reporting of new license and cloud services transactions. 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, and is not associated with an existing contract, the booking is equal to the total contract value. Beginning in Q3'18, minimum ACV commitments under our Strategic Alliance Agreement with Rockwell Automation are included in subscription ACV if the period-to-date minimum ACV commitment exceeds actual ACV sold under the Agreement. License and subscription bookings equal subscription bookings (as described above) plus perpetual license bookings. Because subscription bookings is a metric we use to approximate the value of subscription sales if sold as perpetual licenses, it does not represent the 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.

Annualized Recurring Revenue (ARR) - To help investors understand and assess the success of our subscription transition, we provide an Annualized Recurring Revenue operating measure. Annualized Recurring Revenue (ARR) for a given quarter is calculated by dividing the portion of non-GAAP software revenue attributable to subscription and support for the quarter by the number of days in the quarter and multiplying by 365. (A related metric is Subscription ARR, which is calculated by dividing the portion of non-GAAP revenue attributable to subscription for the quarter by the number of days in the quarter and multiplying by 365.) ARR should be viewed independently of revenue and deferred revenue as it is an operating measure and is not intended to be combined with or to replace either of those items. ARR is not a forecast of future revenue, which can be impacted by contract expiration and renewal rates, and does not include revenue reported as perpetual license or professional services revenue in our consolidated statement of income. Subscription and support revenue and ARR disclosed in a quarter can be impacted by multiple factors, including but not limited to (1) the timing of the start of a contract or a renewal, including the impact of on-time renewals, support win-backs, and support conversions, which may vary by quarter, (2) the ramping of committed monthly payments under a subscription agreement over time, and (3) multiple other contractual factors with the customer including other elements sold with the subscription or support contract. These factors can result in variability in disclosed ARR.

Navigate Allocation -- Revenue and bookings for Navigate, ThingWorx-based IoT solution for PLM are allocated 50% to Solutions and 50% to IoT.

Foreign Currency Impacts on our Business – We have a global business, with Europe and Asia historically representing approximately 60% of our revenue, and fluctuation in foreign currency exchange rates can significantly impact our results. We do not forecast currency movements; rather we provide detailed constant currency commentary. We employ a hedging strategy to limit our exposure to currency risk.

IMPORTANT INFORMATION ABOUT NON-GAAP REFERENCES

PTC provides non-GAAP supplemental information to its financial results. We use these non-GAAP measures, and we believe that they assist our investors, to make period-to-period comparisons of our operational performance because they provide a view of our operating results without items that are not, in our view, indicative of our operating results. We believe that these non-GAAP measures help illustrate underlying trends in our business, and we use the measures to establish budgets and operational goals, communicated internally and externally, for managing our business and evaluating our performance. We believe that providing non-GAAP measures affords investors a view of our operating results that may be more easily compared to the results of peer companies. In addition, compensation of our executives is based in part on the performance of our business based on these non-GAAP measures. However, non-GAAP information should not be construed as an alternative to GAAP information as the items excluded from the non-GAAP measures often have a material impact on PTC's financial results and such items often recur. Management uses, and investors should consider, non-GAAP measures in conjunction with our GAAP results.
Non-GAAP revenue, non-GAAP operating expense, non-GAAP operating margin, non-GAAP gross profit, non-GAAP gross margin, non-GAAP net income and non-GAAP EPS exclude the effect of the following items:

- The net effect of a revenue reversal and revenue associated with the settlement of a previously disclosed disputed customer receivable (FY'18), fair value of acquired deferred revenue, fair value adjustment to deferred services cost, stock-based compensation, amortization of acquired intangible assets, acquisition-related and other transactional charges included in general and administrative costs, restructuring charges, headquarters relocation charges, and income tax adjustments. We excluded the net effect of a revenue reversal and new revenue related to the settlement of a previously disclosed disputed customer receivable because the revenue reversed was recorded in prior periods and because the revenue recorded in the period as it was related to the settlement and mitigated the effect of the revenue reversal.

- Fair value of acquired deferred revenue is a purchase accounting adjustment recorded to reduce acquired deferred revenue to the fair value of the remaining obligation, so our GAAP revenue after an acquisition does not reflect the full amount of revenue that would have been reported if the acquired deferred revenue was not written down to fair value. We believe excluding these adjustments to revenue from these contracts (and associated costs in fair value adjustment to deferred services cost) is useful to investors as an additional means to assess revenue trends of our business.

- Stock-based compensation is a non-cash expense relating to stock-based awards issued to executive officers, employees and outside directors and to our employee stock purchase plan. We exclude this expense as it is a non-cash expense and we assess our internal operations excluding this expense and believe it facilitates comparisons to the performance of other companies in our industry.

- Amortization of acquired intangible assets is a non-cash expense that is impacted by the timing and magnitude of our acquisitions. We believe the assessment of our operations excluding these costs is relevant to our assessment of internal operations and comparisons to the performance of other companies in our industry.

- Acquisition-related charges included in general and administrative costs are direct costs of potential and completed acquisitions and expenses related to acquisition integration activities, including transaction fees, due diligence costs, severance and professional fees. In addition, subsequent adjustments to our initial estimated amount of contingent consideration associated with specific acquisitions are included within acquisition-related charges. These costs are not considered part of our normal operations as the occurrence and amount will vary depending on the timing and size of acquisitions.

- U.S. pension plan termination-related costs include charges related to our plan that we began terminating in the second quarter of 2014. Costs associated with the termination are not considered part of our regular operations.

- Restructuring charges include excess facility restructuring charges and severance costs resulting from reductions of personnel driven by modifications to our business strategy and not considered part of our normal operations. These costs may vary in size based on our restructuring plan.

- Non-operating credit facility refinancing costs are non-operating charges we record as a result of the refinancing of our credit facility. We assess our internal operations excluding these costs and believe it facilitates comparisons to the performance of other companies in our industry.

- Income tax adjustments include the tax impact of the items above and assumes that we are profitable on a non-GAAP basis in the U.S. and one foreign jurisdiction, and eliminates the effect of the valuation allowance recorded against our net deferred tax assets in those jurisdictions. Additionally, we exclude other material tax items that we view as non-ordinary course.

A reconciliation of non-GAAP measures to GAAP results is provided within this presentation.

PTC also provides information on "free cash flow" and "adjusted free cash flow" to enable investors to assess our ability to generate cash without incurring additional external financings and to evaluate our performance against our announced long term goal of returning approximately 40% of our free cash flow to shareholders via stock repurchases. Free cash flow is net cash provided by (used in) operating activities less capital expenditures; adjusted free cash flow is free cash flow excluding restructuring payments and certain identified non-ordinary course payments. Free cash flow and adjusted free cash flow are not measures of cash available for discretionary expenditures.

RECONCILIATION BETWEEN GAAP AND NON-GAAP FINANCIAL MEASURES

	FY'15	FY'16	FY'17					FY'18				
Consolidated Statements of Operations -	Yr Ended	Yr Ended	Quarter Ended				Yr Ended	Quarter Ended				Yr Ended
Reconciliation between GAAP and Non-GAAP	30-Sep	30-Sep	31-Dec	1-Apr	1-Jul	30-Sep	30-Sep	30-Dec	31-Mar	30-Jun	30-Sep	30-Sep
(in millions, except per share amounts and %)												
GAAP revenue	$ 1,255	$ 1,141	$ 286	$ 280	$ 291	$ 306	$ 1,164	$ 307	$ 308	$ 315	$ 313	$ 1,242
Fair value adjustment of acquired deferred subscription revenue	2	2	1	0	0	0	2	0	0	0	0	0
Fair value adjustment of acquired deferred support revenue	1	-	-	-	-	-	-	-	-	-	-	-
Fair value adjustment of acquired deferred perpetual license revenue	-	-	-	-	-	-	-	-	-	-	-	-
Fair value adjustment of acquired deferred services revenue	1	1	0	0	0	0	1	0	0	0	0	1
Settlement adjustment - subscription revenue (1)	-	-	-	-	-	-	-	-	-	-	(5)	(5)
Settlement adjustment - professional services revenue (1)	-	-	-	-	-	-	-	-	-	-	15	15
Non-GAAP revenue	$ 1,259	$ 1,144	$ 287	$ 281	$ 292	$ 307	$ 1,167	$ 307	$ 308	$ 315	$ 322	$ 1,252
GAAP cost of revenue	$ 335	$ 326	$ 82	$ 82	$ 82	$ 83	$ 329	$ 83	$ 84	$ 82	$ 78	$ 326
License and subscription stock-based compensation expense	(1)	(1)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(1)	(2)
Support stock-based compensation expense	(4)	(5)	(1)	(1)	(1)	(1)	(5)	(1)	(1)	(1)	(1)	(3)
Professional services stock-based compensation expense	(6)	(5)	(1)	(2)	(2)	(2)	(6)	(2)	(2)	(1)	(2)	(7)
Fair value adjustment to deferred services cost	1	0	0	0	0	0	0	0	0	0	0	0
Software amortization of acquired intangible assets	(19)	(25)	(6)	(6)	(7)	(7)	(27)	(7)	(7)	(7)	(7)	(27)
Professional services amortization of acquired intangible assets	-	-	-	-	-	-	-	-	-	-	-	-
Non-GAAP cost of revenue	$ 306	$ 291	$ 73	$ 72	$ 73	$ 72	$ 290	$ 73	$ 74	$ 72	$ 68	$ 288
GAAP gross profit	$ 921	$ 815	$ 204	$ 198	$ 209	$ 224	$ 835	$ 224	$ 224	$ 233	$ 234	$ 916
Fair value adjustment of acquired deferred revenue	4	3	1	1	1	0	3	0	0	0	0	1
Settlement adjustment - revenue (1)	-	-	-	-	-	-	-	-	-	-	9	9
Stock-based compensation expense	10	11	3	3	3	4	13	3	3	2	3	12
Fair value adjustment to deferred services cost	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Amortization of acquired intangible assets	19	25	6	6	7	7	27	7	7	7	7	27
Non-GAAP gross profit	$ 953	$ 853	$ 214	$ 208	$ 219	$ 235	$ 877	$ 234	$ 234	$ 243	$ 254	$ 964
GAAP gross margin	73.3%	71.4%	71.3%	70.8%	71.8%	73.0%	71.7%	72.9%	72.8%	74.1%	75.0%	73.7%
Fair value adjustment of acquired deferred revenue	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Settlement adjustment - revenue (1)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.1%
Stock-based compensation expense	0.8%	0.9%	1.0%	1.1%	1.0%	1.1%	1.1%	1.0%	0.9%	0.8%	1.1%	0.9%
Fair value adjustment to deferred services cost	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Amortization of acquired intangible assets	1.5%	2.2%	2.2%	2.3%	2.2%	2.4%	2.3%	2.2%	2.1%	2.2%	2.1%	2.2%
Non-GAAP gross margin	75.7%	74.6%	74.6%	74.2%	75.0%	76.5%	75.1%	76.1%	75.9%	77.0%	78.9%	77.0%

(1) Our Q4'18 and FY'18 GAAP revenue results include the impact of a settlement of a customer dispute concerning a professional services receivable. The settlement, reached in September 2018, included partial payment of the receivable and new software purchases. The net revenue write-down recorded in the fourth quarter was $9.3 million, comprised of a $14.5 million services revenue write-down, partially offset by new license revenue of $5.2 million. We have excluded these amounts from our Non-GAAP results.

RECONCILIATION BETWEEN GAAP AND NON-GAAP FINANCIAL MEASURES (CON'T)

	FY'15	FY'16	FY'17					FY'18				
Consolidated Statements of Operations - Reconciliation between GAAP and Non-GAAP	Yr Ended	Yr Ended	Quarter Ended				Yr Ended	Quarter Ended				Yr Ended
(in millions, except per share amounts and %)	30-Sep	30-Sep	31-Dec	1-Apr	1-Jul	30-Sep	30-Sep	30-Dec	31-Mar	30-Jun	30-Sep	30-Sep
GAAP sales and marketing expense	$ 347	$ 367	$ 91	$ 88	$ 93	$ 101	$ 373	$ 99	$ 98	$ 108	$ 109	$ 415
Stock-based compensation expense	(14)	(15)	(4)	(4)	(3)	(4)	(15)	(5)	(5)	(5)	(10)	(25)
Non-GAAP sales and marketing expense	$ 333	$ 353	$ 87	$ 84	$ 90	$ 97	$ 358	$ 94	$ 93	$ 103	$ 99	$ 390
GAAP research and development expense	$ 228	$ 229	$ 58	$ 58	$ 60	$ 61	$ 236	$ 64	$ 62	$ 61	$ 62	$ 250
Stock-based compensation expense	(12)	(10)	(3)	(4)	(3)	(4)	(14)	(3)	(3)	(3)	(4)	(13)
Non-GAAP research and development expense	$ 216	$ 219	$ 55	$ 54	$ 57	$ 56	$ 222	$ 61	$ 59	$ 58	$ 59	$ 236
GAAP general and administrative expense	$ 225	$ 146	$ 37	$ 37	$ 35	$ 36	$ 145	$ 35	$ 33	$ 33	$ 42	$ 143
Stock-based compensation expense	(14)	(30)	(8)	(10)	(7)	(9)	(35)	(8)	(6)	(6)	(14)	(33)
Acquisition-related costs	(9)	(3)	(0)	(1)	(0)	(1)	(2)	(0)	(0)	(2)	(0)	(2)
US pension plan termination-related costs	(73)	-	-	-	(0)	-	(0)	-	-	-	-	-
Pending legal settlement accrual	(28)	(3)	-	-	-	-	-	-	-	-	-	-
Non-GAAP general and administrative expense	$ 101	$ 109	$ 28	$ 26	$ 27	$ 27	$ 108	$ 27	$ 27	$ 25	$ 28	$ 108
GAAP operating income (loss)	$ 42	$ (37)	$ 5	$ 8	$ 11	$ 18	$ 41	$ 17	$ 22	$ 22	$ 12	$ 73
Fair value adjustment of acquired deferred revenue	4	3	1	1	1	0	3	0	0	0	0	1
Settlement adjustment - revenue (1)	-	-	-	-	-	-	-	-	-	-	9	9
Stock-based compensation expense	50	66	18	22	17	21	77	18	17	17	31	83
Fair value adjustment to deferred services cost	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Acquisition-related costs	9	3	0	1	0	1	2	0	0	2	0	2
US pension plan termination-related costs	73	-	-	-	0	-	0	-	-	-	-	-
Pending legal settlement accrual	28	3	-	-	-	-	-	-	-	-	-	-
Restructuring and other charges (credits)	43	76	6	0	2	(0)	8	0	(1)	(0)	0	(1)
Headquarters relocation charges	-	-	-	-	-	-	-	-	1	2	2	5
Amortization of acquired intangible assets	56	58	14	14	14	15	59	14	14	15	14	58
Non-GAAP operating income (loss)	$ 304	$ 173	$ 44	$ 45	$ 45	$ 54	$ 188	$ 51	$ 54	$ 56	$ 69	$ 230
GAAP operating margin	3.3%	-3.2%	1.6%	2.7%	3.9%	5.7%	3.5%	5.7%	7.3%	6.9%	3.7%	5.9%
Fair value adjustment of acquired deferred revenue	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Settlement adjustment - revenue (1)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.6%
Stock-based compensation expense	4.0%	5.8%	6.3%	7.7%	5.7%	6.7%	6.6%	6.0%	5.5%	5.3%	9.9%	6.7%
Fair value adjustment to deferred services cost	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Acquisition-related costs	0.7%	0.3%	0.1%	0.2%	0.1%	0.2%	0.1%	0.0%	0.0%	0.5%	0.0%	0.1%
US pension plan termination-related costs	5.8%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pending legal settlement accrual	2.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Restructuring and other charges (credits)	3.5%	6.7%	2.2%	0.2%	0.5%	-0.1%	0.7%	0.0%	-0.3%	-0.1%	0.0%	-0.1%
Headquarters relocation charges	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.6%	0.6%	0.4%
Amortization of acquired intangible assets	4.4%	5.1%	5.0%	5.1%	5.0%	5.0%	5.0%	4.7%	4.7%	4.7%	4.6%	4.7%
Non-GAAP operating margin	24.2%	15.1%	15.4%	16.0%	15.4%	17.7%	16.1%	16.5%	17.6%	17.9%	21.3%	18.4%

(1) Our Q4'18 and FY'18 GAAP revenue results include the impact of a settlement of a customer dispute concerning a professional services receivable. The settlement, reached in September 2018, included partial payment of the receivable and new software purchases. The net revenue write-down recorded in the fourth quarter was $9.3 million, comprised of a $14.5 million services revenue write-down, partially offset by new license revenue of $5.2 million. We have excluded these amounts from our Non-GAAP results.

RECONCILIATION BETWEEN GAAP AND NON-GAAP FINANCIAL MEASURES (CON'T)

Consolidated Statements of Operations - Reconciliation between GAAP and Non-GAAP (in millions, except per share amounts and %)	FY'15 Yr Ended 30-Sep	FY'16 Yr Ended 30-Sep	FY'17 Quarter Ended 31-Dec	FY'17 Quarter Ended 1-Apr	FY'17 Quarter Ended 1-Jul	FY'17 Quarter Ended 30-Sep	FY'17 Yr Ended 30-Sep	FY'18 Quarter Ended 30-Dec	FY'18 Quarter Ended 31-Mar	FY'18 Quarter Ended 30-Jun	FY'18 Quarter Ended 30-Sep	FY'18 Yr Ended 30-Sep
GAAP net income (loss)	$ 48	$ (54)	$ (9)	$ (1)	$ (1)	$ 17	$ 6	$ 14	$ 8	$ 17	$ 13	$ 52
Fair value adjustment of acquired deferred revenue	4	3	1	1	1	0	3	0	0	0	0	1
Settlement adjustment - revenue [(1)]	-	-	-	-	-	-	-	-	-	-	9	9
Stock-based compensation expense	50	66	18	22	17	21	77	18	17	17	31	83
Fair value adjustment to deferred services cost	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Acquisition-related costs	9	3	0	1	0	1	2	0	0	2	0	2
US pension plan termination-related costs	73	-	-	-	0	-	0	-	-	-	-	-
Pending legal settlement accrual	28	3	-	-	-	-	-	-	-	-	-	-
Restructuring and other charges (credits)	43	76	6	0	2	(0)	8	0	(1)	(0)	0	(1)
Headquarters relocation charges	-	-	-	-	-	-	-	-	1	2	2	5
Amortization of acquired intangible assets	56	58	14	14	14	15	59	14	14	15	14	58
Non-operating gains (losses)	-	2	-	1	-	-	1	-	-	-	-	-
Income tax adjustments	(51)	(20)	0	(3)	(0)	(15)	(17)	(11)	(0)	(10)	(17)	(38)
Non-GAAP net income (loss)	$ 259	$ 138	$ 31	$ 35	$ 33	$ 40	$ 138	$ 36	$ 40	$ 42	$ 53	$ 171
GAAP basic net income (loss) per share	$ 0.41	$ (0.48)	$ (0.08)	$ (0.01)	$ (0.01)	$ 0.15	$ 0.05	$ 0.12	$ 0.07	$ 0.15	$ 0.11	$ 0.45
Fair value adjustment of acquired deferred revenue	0.03	0.03	0.01	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.01
Settlement adjustment - revenue [(1)]	-	-	-	-	-	-	-	-	-	-	0.08	0.08
Stock-based compensation expense	0.44	0.58	0.16	0.19	0.14	0.18	0.66	0.16	0.15	0.14	0.26	0.71
Fair value adjustment to deferred services cost	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Acquisition-related costs	0.08	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02
US pension plan termination-related costs	0.64	-	-	-	0.00	-	0.00	-	-	-	-	-
Pending legal settlement accrual	0.25	0.03	-	-	-	-	-	-	-	-	-	-
Restructuring and other charges (credits)	0.38	0.67	0.05	0.00	0.01	(0.00)	0.07	0.00	(0.01)	(0.00)	0.00	(0.01)
Headquarters relocation charges	-	-	-	-	-	-	-	-	0.01	0.02	0.02	0.04
Amortization of acquired intangible assets	0.48	0.50	0.13	0.12	0.13	0.13	0.51	0.13	0.12	0.13	0.12	0.50
Non-operating gains (losses)	-	0.02	-	0.01	-	-	0.01	-	-	-	-	-
Income tax adjustments	(0.45)	(0.17)	0.00	(0.02)	(0.00)	(0.13)	(0.15)	(0.10)	(0.00)	(0.08)	(0.14)	(0.32)
Non-GAAP basic net income (loss) per share	$ 2.26	$ 1.20	$ 0.27	$ 0.30	$ 0.28	$ 0.34	$ 1.19	$ 0.31	$ 0.34	$ 0.36	$ 0.45	$ 1.47
GAAP diluted net income (loss) per share	$ 0.41	$ (0.48)	$ (0.08)	$ (0.01)	$ (0.01)	$ 0.15	$ 0.05	$ 0.12	$ 0.07	$ 0.14	$ 0.11	$ 0.44
Fair value adjustment of acquired deferred revenue	0.03	0.03	0.01	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.01
Settlement adjustment - revenue [(1)]	-	-	-	-	-	-	-	-	-	-	0.08	0.08
Stock-based compensation expense	0.43	0.57	0.15	0.18	0.14	0.18	0.65	0.16	0.14	0.14	0.26	0.70
Fair value adjustment to deferred services cost	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Acquisition-related costs	0.08	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02
US pension plan termination-related costs	0.63	-	-	-	0.00	-	0.00	-	-	-	-	-
Pending legal settlement accrual	0.24	0.03	-	-	-	-	-	-	-	-	-	-
Restructuring and other charges (credits)	0.37	0.66	0.05	0.00	0.01	(0.00)	0.07	0.00	(0.01)	(0.00)	0.00	(0.01)
Headquarters relocation charges	-	-	-	-	-	-	-	-	0.01	0.02	0.02	0.04
Amortization of acquired intangible assets	0.48	0.50	0.12	0.12	0.12	0.13	0.50	0.12	0.12	0.12	0.12	0.49
Non-operating gains (losses)	-	0.02	-	0.01	-	-	0.01	-	-	-	-	-
Income tax adjustments	(0.44)	(0.17)	0.00	(0.02)	(0.00)	(0.12)	(0.15)	(0.09)	(0.00)	(0.08)	(0.14)	(0.32)
Non-GAAP diluted net income (loss) per share	$ 2.23	$ 1.19	$ 0.26	$ 0.30	$ 0.28	$ 0.34	$ 1.17	$ 0.31	$ 0.34	$ 0.36	$ 0.45	$ 1.45

(1) Our Q4'18 and FY'18 GAAP revenue results include the impact of a settlement of a customer dispute concerning a professional services receivable. The settlement, reached in September 2018, included partial payment of the receivable and new software purchases. The net revenue write-down recorded in the fourth quarter was $9.3 million, comprised of a $14.5 million services revenue write-down, partially offset by new license revenue of $5.2 million. We have excluded these amounts from our Non-GAAP results.

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In millions except per share amounts

Operating Measures[(1)]	Q1'19 Low	Q1'19 High	FY'19 Low	FY'19 High
Subscription ACV	$ 38	$ 41	$ 224	$ 230
License and Subscription Bookings	100	110	$ 500	$ 520
Subscription % of Bookings	76%	74%	90%	88%

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

Financial Measures	Q1'19 Low	Q1'19 High	FY'19 Low	FY'19 High
Subscription Revenue	$ 141	$ 144	$ 670	$ 680
Support Revenue	113	114	438	440
Perpetual License Revenue	24	28	52	60
Total Software Revenue	278	286	1,160	1,180
Professional Services Revenue	40	40	160	160
Total Revenue	$ 318	$ 326	$ 1,320	$ 1,340
Operating Expense (GAAP)	$ 231	$ 234	$ 898	$ 903
Operating Expense (Non-GAAP)	179	181	750	755
Operating Margin (GAAP)	2%	4%	7%	8%
Operating Margin (Non-GAAP)	22%	24%	22%	22%
Tax Rate (GAAP)	30%	30%	30%	30%
Tax Rate (Non-GAAP)	19%	18%	19%	18%
Shares Outstanding	120	120	119	119
EPS (GAAP)	$ (0.04)	$ 0.00	$ 0.32	$ 0.40
EPS (Non-GAAP)	$ 0.37	$ 0.42	$ 1.65	$ 1.75
Free Cash Flow			$ 255	$ 265
Adjusted Free Cash Flow			$ 273	$ 283

The first quarter and fiscal 2019 non-GAAP operating margin and non-GAAP EPS guidance exclude the estimated items shown in the table below, as well as any tax effects and discrete tax items (which are not known nor reflected). Adjusted free cash flow excludes $18 million of restructuring payments related to our workforce realignment plans.

In millions	Q1'19	FY'19
Restructuring charges	18	18
Headquarters relocation charges [(1)]	2	2
Intangible asset amortization expense	13	51
Stock-based compensation expense	29	116
Total Estimated Pre-Tax GAAP adjustments	$ 62	$ 187

(1) Represents accelerated depreciation expense recorded in anticipation of exiting our current headquarters facility. In 2019, we will be moving into a new worldwide headquarters in the Boston Seaport District and we will be vacating our current headquarters space. Because our current headquarters lease will not expire until November 2022, we are seeking to sublease that space, but have not yet done so. If we are unable to sublease our current headquarters space for an amount at least equal to our rent obligations under the current headquarters lease, we will bear overlapping rent obligations for those premises and will be required to record a charge related to such rent shortfall. We currently pay approximately $12 million in annual base rent and operating expenses for our current headquarters. We expect to record a charge for any such shortfall in the earlier of the period that we cease using the space (which will likely occur in the second quarter of our fiscal 2019) or the period we exit the lease contract. Additionally, we will incur other costs associated with the move which will be recorded as incurred.