

Q4 2019 Earnings Call

Company Participants

- Calvin Darling, Senior Director of Finance, Investor Relations
- Gary S. Guthart, Chief Executive Officer, Member of the Board of Directors
- Marshall L. Mohr, Executive Vice President and Chief Financial Officer

Other Participants

- David Lewis, Analyst
- Larry Biegelsen, Analyst
- Richard Newitter, Analyst
- Rick Wise, Analyst
- Robert Hopkins, Analyst
- Tycho Peterson, Analyst

Presentation

Operator

Ladies and gentlemen, thank you for standing by, and welcome to Intuitive Surgical's Fourth Quarter 2019 Earnings Release. At this time, all lines are in a listen-only mode. Later, we will conduct a question-and-answer session. (Operator Instructions) As a reminder, today's conference is being recorded.

I would now like to turn the conference over to Senior Director of Finance, Investor Relations, Calvin Darling. Please go ahead.

Calvin Darling {BIO 17664656 <GO>}

Thank you. Good afternoon, and welcome to Intuitive's fourth quarter earnings call. With me today, we have Gary Guthart, our CEO; and Marshall Mohr, our Chief Financial Officer.

Before we begin, I would like to inform you that comments mentioned on today's call may be deemed to contain forward-looking statements. Actual results may differ materially from those expressed or implied as a result of certain risks and uncertainties. These risks and uncertainties are described in detail in the Company's Securities and Exchange Commission filings, including our most recent Form 10-K filed on February 4, 2019, and 10-Q filed on October 18, 2019.

Our SEC filings can be found through our website or at the SEC's website. Investors are cautioned not to place undue reliance on such forward-looking statements. Please note

that this conference call will be available for audio replay on our website at intuitive.com on the Latest Events section under our Investor Relations page. In addition, today's press release and supplementary financial data tables have been posted to our website.

Today's format will consist of providing you with highlights of our fourth quarter results, as described in our press release announced earlier today, followed by a question-and-answer session. Gary will present the quarter's business and operational highlights, Marshall will provide a review of our fourth quarter financial results, then I will discuss procedures and clinical highlights, and provide our financial outlook for 2020. And finally, we will host a question-and-answer session.

With that, I will turn it over to Gary.

Gary S. Guthart {BIO 3429541 <GO>}

Thank you for joining us today. At Intuitive, we measure our efforts by their ability to positively impact the Quadruple Aim, better outcomes, better patient experience, better care team experience, and lower total cost to treat per patient episode. This fourth quarter of 2019 was another strong one for Intuitive in pursuit of these aims, capping a good year for the Company. Our performance has reflected in healthy total growth and customer use of our systems, new capital installations, sustained quality service of our customers, clinical publications and the launch of new products and services.

For the quarter, global procedure growth was approximately 19%. Growth was led by general surgery in the United States, with positive contributions to the global growth rate from Japan, China, Germany, and Korea. Globally, customer utilization of systems increased again in the quarter, indicating greater productivity per installed system. Leasing and alternative placement models have also helped our customers gain access to additional procedure capacity with lower capital outlays.

In the United States, year-over-year procedure growth for the quarter was 18%. General surgery accounted for the largest increase accompanied by stable growth in urology and gynecology. Within general surgery, hernia repair, cholecystectomy, bariatric and colorectal surgery showed strength. Outside the United States, several markets are early in their transition from growth in urology to other surgical categories, including gynecology, thoracic surgery and general surgery, with growth varying by country. Calvin will take you through global procedure dynamics in more detail later in the call.

With regard to our installed base, the placement of new systems in the quarter was solid. We placed 336 systems in the quarter, with growth in total placements rising 16% from Q4 of 2018. Net of trade-ins and retirements, our da Vinci installed base grew to approximately 5,582. The mix of system placements, this quarter continues to favor our flagship excise system and trade-ins were healthy.

The proportion of systems placed under operating leases was 38% this quarter compared with 33% last quarter. As a reminder, total placements in that percentage of systems placed under lease or usage-based arrangements can vary substantially quarter-to-

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quarter. Over the past several years, we've been working to enable greater access to our products and services. For example, we believe, leasing and usage-based models benefit our customers by lowering barriers for them to provide high-quality computer-aided interventions. We anticipate continuing to expand access and lower cost for our customers as our business progresses into different procedures into different procedures and geographies.

Turning to expenses, we believe we are still in the early days of computer-aided surgery and acute interventions. As a result, we are investing in building our capability in several important ways, including deepening internationally, launching our new platforms, strengthening our computational capabilities and executing projects that support future scale and provide leverage opportunities as we grow.

Our spending for the quarter and for the year was within the upper end of spend guidance we shared with you in 2019. It is supported by solid procedure growth, capital placements and product cost reductions. Financial highlights of our fourth quarter results are as follows. Procedures grew approximately 19% over the fourth quarter of last year. We placed 336 da Vinci Surgical Systems, up from 290 in the fourth quarter of 2018. Our installed base grew 12% from a year ago. Revenue for the quarter was approximately \$1.3 billion, up 22%. Pro forma gross profit margin was 72.2% compared to 71.8% in the fourth quarter last year.

Instrument and accessory revenue increased to \$671 million, up 24%. Total recurring revenue in the quarter was \$896 million, growing 24% over Q4 of 2018 and representing 70% of total revenue. We generated a pro forma operating profit of \$506 million in the quarter, up 23% from the fourth quarter of last year, and pro forma net income was \$417 million, up 18%.

Highlights for the full year 2019 are as follows. Procedures grew approximately 18% over 2018. We placed 1,119 systems in the year, growing the installed base 12% over 2018. Revenue for the year was approximately \$4.5 billion, growing 20% over 2018 and pro forma net income was approximately \$1.5 billion, up 17% over 2018.

Turning to progress in our innovation pipeline, I'll start first with systems. We are in our Phase 1 launch of da Vinci SP, and we are working to expand its clinical clearances and build SP products at scale. In the quarter, we installed six systems to bring our installed base of SP to 44. Customer response and early clinical results using SP remain encouraging with over 50 peer-reviewed clinical articles on SP to date.

With regard to additional indications for SP, we have been in discussion with FDA regarding data requirements for a colorectal indication. We expect this to require an IDE trial that includes follow-up analysis. This implies, we do not expect the third indication for SP in the U.S. in 2020. While I would like a faster launch of SP, the combination of additional indications for SP and our readiness for deployment at a larger scale will pace the speed of our SP commercial expansion.

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In flexible diagnostics, our Ion platform is focused on the need for accurate and timely biopsies to support definitive early diagnosis of suspicious lesions. As of the end of the quarter, there are approximately 16 systems in the field, some commercial and some clinical trial sites with several hundred procedures performed. To date, the rollout is meeting our expectations and user feedback during this initial launch period has been strong. We expect several publications reviewing the performance of Ion to be presented during 2020.

Turning to instruments and accessories, our team has been making great progress in building out our instrument portfolio with high-quality products. Our experience has shown that procedure adoption occurs when holistic -- when the holistic needs of the care team are met when the right system and imaging products come together with the right instruments and accessories.

Our team initiated our first phase launch in the quarter for our SynchroSeal sealing and transaction device along with our first integrated energy controller called E-100. SynchroSeal provides surgeons with rested precise and fast sealing and transaction ability often used in general surgery. Early feedback on its performance has been outstanding. SynchroSeal joins our portfolio of advanced instruments, stapling instruments and advanced energy instruments that customers are now adopting in their da Vinci cases.

Turning to imaging and analytics, we are working on imaging, computing and real-time cloud technologies that allow for capabilities from big data analytics to telementoring to augmented reality. Here alone Intuitive Surgical simulators have been used for over 17,000 hours by more than 5,800 surgeons. Our IRIS augmented reality system and clinical use in the fourth quarter of 2019, and we're pleased with our first customer responses.

Over the past several years, our analytical capability has increased, and we now routinely engage our customers to help assess the performance of their robotic-assisted surgery programs relative to other surgical modalities. Armed with local comparative analysis of robotic-assisted surgery within their institutions, hospitals with active programs have been building access to da Vinci systems and growing their programs. We expect continued investment and progress in these areas in 2020.

As we move into 2020, let's step back and review the da Vinci surgery universe. In the past several years, general surgeons have increased their adoption of our offerings, underpinned by improvements in the Quadruple Aim and procedures they perform from hernia repair, cholecystectomy and colorectal surgery to bariatric surgery. These surgical procedures span a broad range of complexity and economics. At the same time, Intuitive continues to deepen our capability in key countries to support the adoption of robotic-assisted surgery in their healthcare environments. We are flexing our Company to better serve these customers with the launch of new systems, new instruments and updates to our software, along with changes to our sales and support models and pricing structures.

Given the large global opportunity to pursue the Quadruple Aim, I believe the next few years for the Company will be dynamic. We will guide the Company to meet our

customers' clinical and economic needs across this wide range of procedures and geographies. Doing so we'll involve continued investment in innovation in both technology and business models, and we see a path to do both.

Moving into 2020, we are focused on the following. First, supporting adoption of da Vinci and general surgery, including hernia repair, colorectal procedures, and bariatrics. Second, launching our SP, Ion, imaging instruments and analytics platforms; third, extending our depth in OUS markets, particularly, Asia and EU, with growth beyond urology, and finally, supporting additional clinical and economic validation in our focus procedures and countries. Lastly, we are pleased to publish today our inaugural sustainability report, which you can find on our website, outlining our multi-year efforts in these areas.

I'll now turn the call over to Marshall, who will review financial highlights.

Marshall L. Mohr {BIO 5782298 <GO>}

Good afternoon. I will describe the highlights of our performance on a non-GAAP or pro forma basis. I will also summarize our GAAP performance later in my prepared remarks. A reconciliation between our pro forma and GAAP results is posted on our website.

Revenue and procedures are consistent with our preliminary press release of January 9. Key business metrics for the fourth quarter were as follows. Fourth quarter 2019 procedures increased by approximately 19% compared with the fourth quarter of 2018 and increased by approximately 11% compared with last quarter. Procedure growth continues to be driven by general surgery in the U.S. and urology worldwide. Calvin will review the details of procedure growth later in this call.

Fourth quarter system placements of 336 systems increased 16% compared with 290 systems, last year, and increased 22% compared with 275 systems, last quarter. We expanded our installed base of da Vinci systems by 12% to approximately 5,582 systems. This growth rate compares with 12% in the last quarter and 13% last year. Utilization of clinical systems in the field, measured by procedures per system grew approximately 6%, which is the same as the 6% growth last quarter and last year.

Our revenue overview is as follows. Fourth quarter 2019 revenue was \$1.3 billion, an increase of 22% compared with \$1 billion for the fourth quarter of 2018 and an increase of 13% compared with \$1.1 billion last quarter. Instrument and accessory revenue of \$671 million increased 24% compared with last year, which is higher than procedure growth, primarily reflecting customer buying patterns and increased usage of our advanced instruments.

Instrument and accessory revenue realized per procedure was approximately \$1,980, an increase of 5% compared with the fourth quarter of 2018. It was consistent with last quarter. Instrument and accessory revenue per procedure has grown in the low-single digits over the past couple of years, reflecting increased usage of our advanced

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instruments, partially offset by higher growth and benign procedures where revenue per procedure is lower than the overall average.

While adoption of benign procedures has been a major contributor to the overall I&A revenue to the extent benign procedures grow faster than complex procedures, I&A per procedure may decline. In addition, over time as we achieve greater penetration of our advanced instruments in da Vinci procedures, the growth rate for advanced instruments will slow and align with the growth rate of underlying procedures in which advanced instruments are used.

Systems revenue for the fourth quarter of 2019 was \$416 million, an increase of 22% compared with the fourth quarter of 2018, and an increase of 23% compared with last quarter. Relative to the fourth quarter of 2018, systems revenue reflected higher system placements, higher ASPs and higher lease-related revenue. We completed 126 operating lease transactions, representing 38% of total placements, compared with 84% or 29% of total placements in the fourth quarter of 2018, and 92% or 33% of total placements last quarter. As of December 31, we have 658 operating leases outstanding and realized approximately \$34 million of revenues related to these arrangements in the quarter compared with \$16 million last year and \$27 million last quarter.

Operating leases create a future source of recurring revenue and reduce the volatility of system revenue while the increased number of operating systems -- operating leases placed in the quarter dampens short-term revenue growth for the quarter in which they're placed. Operating leases include usage-based financings that we provided to certain hospitals with advanced robotics experience.

We believe that our lease financing alternatives align with customer objectives and have enabled faster market adoption. Relative to systems purchased over the lease period, we earn a small premium, reflecting the time value of money and in the case of usage-based arrangements, the risk that those systems may not achieve anticipated usage levels. The proportion of operating lease and usage-based arrangements will likely increase long-term and will vary quarter-to-quarter.

We recognized \$34 million of lease buyout revenue in the fourth quarter compared with \$20 million last quarter and \$17 million last year. Lease buyout revenues vary significantly from quarter-to-quarter and will likely continue to do so.

138 or 41% of current quarter system placements involved trade-ins reflecting customer desire to access or standardize on our fourth-generation technology, contributing to an Xi installed base growth of 39% year-over-year. This is an increase compared with 81 or 28% of system placements in the fourth quarter of 2018, and 116 or 42% last quarter.

Trading activity can fluctuate and it could be difficult to predict. However, given prior product trade-in cycles, we expect the proportion of the installed base traded in future quarters to decrease over time. 81% of the systems placed in the quarter were da Vinci Xis, and 16% were da Vinci X systems compared with 79% da Vinci Xis and 17% da Vinci X this last quarter.

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Six of the systems placed in the quarter -- fourth quarter, were SP systems. Our rollout of SP Surgical System will continue to be measured by putting systems in hand of experienced da Vinci users, while we optimize training pathways in our supply chain. We placed seven Ion systems in the quarter. Ion system placements are excluded from our overall systems count and will be reported separately. Procedures and other information associated with Ion are excluded from our prepared remarks and will be reported separately when they become more substantive.

Globally, our average selling price, which excludes the impact of operating lease revenue and lease buyouts was approximately \$1.61 million compared with \$1.46 million last year, and \$1.57 million last quarter. Our fourth quarter ASPs reflect the favorable geographic mix as we sold 39 systems in China and 26 into Japan where ASPs are higher, given the higher cost of doing business in those geographies.

Excluding geographic mix, ASPs for the quarter declined slightly relative to the third quarter, reflecting pricing arrangements associated with a higher mix of multisystem contracts. System ASPs will fluctuate the geographic and system mix and may decline relative to the average total 2019 ASP, reflecting increased multisystem arrangements.

Outside of the U.S., results were as follows. OUS procedures grew approximately 22% compared with the fourth quarter of 2018 and increased 9% compared with last quarter. Fourth quarter revenue outside of the U.S. of \$422 million, increased by 37% compared with the fourth quarter of 2018, and increased 27% compared with last quarter.

The increase compared with the prior year reflects increased instruments and accessories revenue of \$47 million or 39% growth and increased systems revenue of \$58 million or 42% growth. The increase in instrument accessory revenue was primarily driven by procedure growth and stocking orders associated with China system sales. The increase in systems revenue is primarily the result of increased placements and increased ASPs reflecting favorable geographic and product mix.

Outside of the U.S., we placed 140 systems in the fourth quarter compared with 115 in the fourth quarter of 2018, and 90 systems, last quarter. Current quarter system placements included 54 into Europe, 26 into Japan and 39 into China compared with 55 in Europe, 31 into Japan and two into China in the fourth quarter of 2018.

71% of the systems placed in the quarter were da Vinci Xis and 24% were da Vinci X systems compared with 55% da Vinci Xis and 30% da Vinci Xs last year. 32 of the system placements in the current quarter were operating leases, compared with 15 last year and 21 last quarter. The 39 systems in the China included customers who have begun their tender processes and we believe expedited their purchase cycles to avoid a tariff increase that was expected On December 15. The proposed tariff was suspended on December 13. We would expect remaining purchases under the quota to be completed consistent with historical timelines and therefore we expect placements to be lower in the first quarter and skew more towards the end of 2020 and into 2021.

While overall European system placements were relatively flat in the quarter and for 2019, shipments by country fluctuate significantly. Placements into the four largest European markets, increased 29% in the fourth quarter and 19% for the year. Overall placements outside of the U.S. will continue to vary as some of the OUS markets are in the early stages of adoption, some markets are highly seasonal reflecting budget cycles or vacation patterns and sales into some markets are constrained by government limitations.

Moving on to gross margin and operating expenses. Pro forma gross margin for the fourth quarter of 2019 was 72.2%, compared with 71.8% for the fourth quarter of 2018 and 72% last quarter. The increase compared with the fourth quarter of 2018 and last quarter primarily reflects higher system ASPs and product cost reductions. Future margins will fluctuate based on the mix of our newer products, mix of systems and instrument and accessory revenue, system ASPs and our ability to further reduce product costs and improve manufacturing efficiency.

Pro forma operating expenses increased 23% compared with the fourth quarter 2018 and increased 19% compared with last quarter. Spending is consistent with our plan and includes an order of magnitude of increase, costs associated with the expansion of our OUS markets, spending on our imaging and analytics capabilities, and investment in our infrastructure in order to scale the business. We believe we have a unique opportunity to expand the benefits of computer-aided surgery and acute interventions around the world and have been and will continue to invest in the business accordingly.

Our pro forma tax rate for the quarter was 21.1% compared with our expectations of 19% to 20%, reflecting geographic mix. Our actual tax rate will fluctuate with changes in the geographic mix of income, changes in taxation made by local authorities and with the impact of one-time items. Our fourth quarter 2019 pro forma net income \$417 million or \$3.48 per share compared with \$353 million or \$2.96 per share for the fourth quarter 2018, and \$409 million or \$3.43 per share for last quarter.

I will now summarize our GAAP results. GAAP net income was \$358 million or \$2.99 per share for the fourth quarter of 2019 compared with GAAP net income of \$293 million or \$2.45 per share for the fourth quarter of 2018, and GAAP net income of \$397 million or \$3.33 per share for last quarter. The adjustments between pro forma and GAAP net income are outlined and quantified on our website and include excess tax benefits associated with employee stock awards employee stock-based compensation and IP charges, amortization of intangibles and acquisition-related items and legal settlements.

We ended the quarter with cash and investments of \$5.8 billion compared with \$5.4 billion at September 30, 2019. The cash generated from operations was partially offset by investments in working capital and infrastructure during the quarter. Capital expenditures for the quarter and the year are higher than historical averages as we invest in our infrastructure. We expect investments in our infrastructure to continue into 2020.

In the quarter, we grew inventory by approximately \$16 million to \$596 million, representing approximately 142 days of inventory, which is slightly lower than at the end

of the third quarter. We did not repurchase any shares in the quarter and have approximately \$1.7 billion remaining under the Board buyback authorization.

In summary, I want to highlight certain business dynamics that may impact your models. First, as I noted, we will grow operating expenses appropriately as we see the substantial opportunity to expand the benefits of computer-aided surgery and acute interventions. Calvin will provide you with operating expense growth guidance.

In addition, as we align to our -- with our customer needs, we believe the percentage of leasing and alternative financing arrangements will increase over time. We also believe that the number of trade-in transactions will level off in the short-term and then decline over time. System ASPs will fluctuate with geographic and system mix and may decline relative to the average total 2019 ASP, reflecting increased multisystem arrangements.

While adoption of benign procedures has been a major contributor to overall I&A revenue to the extent the benign procedures grow faster than complex procedures, I&A per procedure may decline. Lastly as likely, we will see elongated negotiation timelines and possibly price pressures as competition gets closer to launching their products. We will continue doing to manage the business for the long-term, as we believe that the fundamentals of the business are strong.

And with that, I'd like to turn it over to Calvin who will go over procedure performance and our outlook for 2020.

Calvin Darling {BIO 17664656 <GO>}

Thank you, Marshall. Our overall fourth quarter procedure growth was approximately 19% compared to 19% during the fourth quarter of 2018 and nearly 20% last quarter. Our Q4 procedure growth was driven by 18% growth in U.S. procedures and 22% growth in OUS markets. Overall, procedure growth for the full year 2019 was approximately 18% equal to 18% in 2018, comprised of 17% growth in the U.S. and 21% growth in OUS markets.

In the U.S., Q4 procedure growth was consistent with recent trends and was largely driven by continued strength in general surgery with substantive contributions from gynecologic and urologic procedures. In U.S. general surgery, fourth quarter growth in leading procedures, hernia repair and colorectal remains solid at rates consistent with last quarter. Cholecystectomy growth continued to accelerate in the fourth quarter and now represents a significant driver of incremental procedures.

While da Vinci cholecystectomy adoption has been robust, given the high level of lab penetration, it is difficult for us to predict the extent and pace of future chole adoption. Bariatric procedures also showed continued solid growth in Q4 and will become an increasing area of field focus for us in 2020. For the full year 2019, approximately 421,000 U.S. general surgery procedures were performed, up 29% from 2018, representing approximately 48% of overall U.S. da Vinci procedures. Q4 U.S. gynecology procedure growth was largely consistent with the first three quarters of 2019. For the full year 2019,

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approximately 282,000 U.S. gynecologic surgery procedures were performed, up 6% from 2018, representing approximately 32% of overall U.S. procedures.

In U.S. urology, fourth quarter dVP growth rates continued to exceed our expectations, although growth did moderate from Q3. For the full-year 2019, approximately 138,000 U.S. urologic procedures were performed, up just under 10% from 2018, representing approximately 16% of overall U.S. da Vinci procedures. As a highly penetrated procedure category, we believe that our U.S. prostatectomy volume should track to the broader prostate surgery market and will likely grow more modestly in 2020. Fourth quarter OUS procedure volume grew approximately 22% compared with 24% for the fourth quarter of 2018 and 23% last quarter. Fourth quarter 2019 OUS procedure growth was driven by continued growth in urology procedures and earlier stage growth in general, gynecologic and thoracic surgery.

In China, as in Q3, procedure growth accelerated modestly as new systems installed under the latest system quota began to provide capacity for incremental growth. In Q4, the China procedure growth rate slightly exceeded the overall OUS metric. As Marshall mentioned, 39 systems were shipped into China in Q4. Note that 35 of these 39 systems went to new hospitals. Teams in these hospitals will need to move through training pathways and establish da Vinci procedure processes before these new systems contribute meaningfully to procedure growth in China.

In Japan, procedure growth was again strong at just over 40%, reflecting growth in procedures granted reimbursement status in April 2018 and continued later stage growth in urology procedures. Our emphasis in Japan remains on the surgeon and team training and building proctoring networks. Overall, European procedure growth was largely consistent with prior periods with variation by country. German results were particularly strong while results in the U.K. lagged.

Now turning to the clinical side of our business. Each quarter on these calls, we highlight certain recently published studies that we deem to be notable. However, to gain a more complete understanding of the body of evidence, we encourage all stakeholders to thoroughly review the extensive detail of scientific studies that have been published over the years. A recent article by doctors Wexner, and (inaudible) in the journal of Techniques in Coloproctology, provided results from a systemic review and meta-analysis of intracorporeal versus extracorporeal anastomosis in minimally invasive right colectomy.

This study analyzed data from 25 studies and 4,450 patients. Intracorporeal anastomosis was associated with significantly shorter length extraction site incisions, earlier bowl recovery, fewer complications and lower rates of conversion, anastomotic leaks, surgical-site infections and institutional hernia as compared to the extra extracorporeal anastomosis.

This study highlighted the many clinical outcome advantages associated with intracorporeal anastomosis. Da Vinci systems, instruments and smart stapling technology enabling, performing anastomosis of the bowl inside the body, and it is our hope that

more patients can benefit from intracorporeal anastomosis with continued adoption of our technology.

Intuitive's investment in a prospective multicenter intracorporeal versus extracorporeal anastomosis study comparing robotic versus laparoscopic approaches called the ANCHOR study is timely, and the enrollment for this study is expected to be completed this year with results expected in 2021. The details of the ANCHOR study are available online at clinicaltrials.gov.

I will now turn to our financial outlook for 2020. Starting with procedures, as described in our announcement earlier this month, total 2019 da Vinci procedures grew approximately 18% to roughly 1,229,000 procedures performed worldwide. As communicated previously during 2020, we anticipate full-year procedure growth within a range of 13% to 16%. We expect 2020 procedure growth to continue to be driven by U.S. general surgery and procedures outside the United States where we are at earlier stages of adoption. We expect similar seasonal timing of procedures in 2019 as we have experienced in previous years with Q1 being the seasonally weakest quarter as patient deductibles are reset. Q1 and full-year 2020 will benefit from one extra working day attributable to leap year.

With respect to revenue, as we have mentioned previously, capital sales are ultimately driven by procedure demand, catalyzing hospitals to establish or expand robotic system capacity. Capital sales can vary substantially from period-to-period based upon many factors, including U.S. health care policy, hospital capital spending cycles, reimbursement and government quotas, product cycles, economic cycles, and competitive factors. Within this framework, we'd expect 2020 capital placement seasonality to generally follow historical patterns by quarter.

During the fourth quarter of 2019, 126 of the 336 systems shipped or 38% were under operating leases. We expect the proportion of systems placed to be operating leases will vary from quarter-to-quarter and could trend up in the future. During Q3 and Q4, 42% and 41% respectively of systems placements were upgrades to our Gen-4 platform. As we mentioned last quarter, we expect the proportion of trade-in transactions to generally trend downwards in 2020.

Turning to gross profit, our full-year 2019 pro forma gross profit margin was 71.7%. In 2020, we expect our pro forma gross profit margin to be within a range of between 70% and 71% of net revenue. The slightly lower gross profit margin anticipated in 2020 reflects higher sales of newer products and infrastructure investments. Our actual gross profit margin will vary quarter-to-quarter depending largely on product, regional and trade-in mix and the impact of new product introductions.

Turning to operating expenses. In 2019, our pro forma operating expenses grew 27%. In 2020, we expect pro forma operating expenses to grow between 15% and 20%. We expect our non-cash stock compensation expense to range between \$400 million and \$440 million in 2020 compared to \$336 million in 2019. We expect other income, which is comprised mostly of interest income to total between \$100 million and \$115 million in 2020. With regard to income tax in 2019, our pro forma income tax rate was 19.5%. As we

look forward, we estimate our 2020 pro forma tax rate to be between 20% and 21% of pre-tax income with the increase primarily reflecting the anticipated geographic mix of pre-tax income.

That concludes our prepared comments. We will now open the call to your questions.

Questions And Answers

Operator

Okay. (Operator Instructions) Our first question will come from the line of David Lewis with Morgan Stanley. Please go ahead.

Q - David Lewis {BIO 15161699 <GO>}

Great. Good afternoon. Just two questions from me. Gary, I want to start with the first on Scholly. It's probably your largest procedure said in terms of volume. Two sequential quarters of acceleration within Scholly, obviously, still very low penetration. Historically that was tied to sort of training physicians would use Scholly as a way of training broader general surgery procedures. But can you just talk about the last two quarters' accelerations procedure? Do you think that's simply training, a leading indicator of general surgery? Or do you think something is going on distinct from that within broader Scholly? And a quick follow up.

A - Gary S. Guthart {BIO 3429541 <GO>}

Okay. On the first one, just I'm going to put a posted note on the assumption of its size relative to everything else. I'll let Calvin come back and put it in context, size-wise in terms of current run rate. But the underlying question of what are we seeing in cholecystectomy, we think there is a segment there where we're bringing differentiated clinical value, could be underlying clinical elements like obesity, comorbidities, state of disease of the gallbladder.

So while it's a large category as a whole, generally well served by a minimally invasive surgery today. There are segments in it that are difficult and for which we think current product sets do really well. There is also a set of training or people deepening their experience as they go through it. So there is a mix of those two. We think there is a durable component segmenting out. How big that is over time, we're still working through where we think those endpoints are. We have seen it both grow in the last few quarters and appear to be sticky not to have been a transient.

Calvin, in terms of kind of setting in context relative to other procedures?

A - Calvin Darling {BIO 17664656 <GO>}

No. I mean the size of the market, you can tell from our commentary, it's gotten to the point where general surgery is a meaningful enough category. It's a more and more significant contributor to growth within the general surgery category that's growing

overall. Again as we mentioned in the commentary, it's hard for us to gauge given the high lab penetration there to what extent and what pace it may ultimately adopt.

Q - David Lewis {BIO 15161699 <GO>}

Okay. And then, just curious, second question from me is just on the capital environment. Your fourth quarter U.S. net placement growth was a little lower, and Europe in 2019 was a little lower on a net placement basis. Maybe just comment on underlying demand for systems in the U.S. and the European markets. And also curious if has -- in any respect as competitors introducing new systems or talking about their new systems more publicly, has that in any way impacted demand or changed the conversation you're having with large IDNs in the U.S. or European customers? Thanks so much.

A - Gary S. Guthart {BIO 3429541 <GO>}

On the outline of the first question, sort of think about what the installed base growth was. So if you think about capital demand, underneath there is what's happening to the installed base, so opening additional capacity in various places or trade-ins of older generation systems. I'll let Marshall speak to the quantitative nature of your question with regard to the U.S. and Europe. But I'd say there is -- it's something -- there is some trading dynamics that I think the team has been discussing with you the last couple of quarters. In general, I think we're feeling like it's reasonably stable.

On the second piece of what will competitive advertising and conversation do. From time-to-time we see delay deals, we definitely see increasing conversations as they get closer to the market with what they want to do or other companies are starting to get some clearances in other regions. In general, our teams have handled that pretty well. But I think the noise level will increase. I think the customers are interested in listening to other pitches. I think we're pretty well-positioned to have a conversation about that. But I do see delay from time-to-time. It kind of comes in waves and then it will settle as the world figures out kind of what they're offering. But Marshall, maybe a little bit on -- a little more quantitative answer than that?

A - Marshall L. Mohr {BIO 5782298 <GO>}

Yes. First, the capital environment has been approximately the same. There haven't been much in terms of change in motives and so forth over the last several quarters. The number of systems that we placed in the U.S., which is disclosed in the website is what is healthy in our view. And in fact which you -- the other way we measure how healthy we're -- how well we're doing is the utilization of systems and utilization systems growth as I said was 6%, which is consistent with where it's been.

And in Europe, we saw as I said, maybe a flattish number of systems placed, both in the quarter as well as compared to the previous year in total. And just be aware of averages and it's going to be lumpy. When you are in earlier stages of adoption in less mature markets, you're going to see a lumpiness to placements of capital. When we look at the four largest markets, we saw a nice growth, which again as Calvin commented procedure growth in Germany was strong and we saw nice placements in Germany for example. That help?

Q - David Lewis {BIO 15161699 <GO>}

Great. Thanks so much.

Operator

Our next question will come from the line of Tycho Peterson with J.P. Morgan. Please go ahead.

Q - Tycho Peterson {BIO 4279327 <GO>}

Hi, thanks. I'll start with SP, just curious following your discussions with FDA, any color you can provide on just when the trial is going to start, the size and what's expected for follow-up analysis? And then outside the U.S., you're obviously generating data on SP and thoracic and OUS in Korea. Can you just talk about some of the data generations outside the U.S. as well?

A - Gary S. Guthart {BIO 3429541 <GO>}

Sure. On the first one, I think we're settling in on what the trial will look like. And I'm not ready yet to answer that, but I think we're getting close. So in future quarters, we should be able to answer that question.

With regard to what we're seeing elsewhere, we're starting to see in terms of Korea, where we have more regulatory room and clinical indications, we'll start seeing a whole series of publications coming out talking about where there is an opportunity. And it's I think, going to be quite interesting and shows real potential for us. It's the thing that drives our underlying commitment and excitement.

I don't have them at the tip of my fingers. I do know that in future quarters, we will start describing to you what the substance of some of these publications are as they start to release.

Q - Tycho Peterson {BIO 4279327 <GO>}

And then, just sticking with the pipeline for a minute. Can you just comment on IRIS, where we are in the rollout? It's obviously early days. And then also if you could just comment separately on the Scholly endoscope acquisition? And have you worked through the supply chain headwinds there?

A - Gary S. Guthart {BIO 3429541 <GO>}

Great. I will do so. IRIS, first couple of counts up and running, we expect more this quarter. It's really testing the whole order to a delivery pipeline. Think of that is a digital pipeline that has to go through feedback is really encouraging. So this early part, it's one of these things that's easier to describe, but to do well is hard, making sure all your cloud connections are right, making sure you have all your security protocols done, getting the turnaround times right, getting all your machine learning algorithms right.

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Feedback has been really good about its ability to help surgeons visualize pre-case, which is fantastic use in other kinds of ways in terms of patient consultation and then access during the case. So the -- kind of the core idea, I think is being vetted nicely. We have said before, we don't think it's a significant revenue driver in 2020. I think I would encourage people to think about this as baseline core technology, the kinds of things that as you develop systems like this in the future that customers will come to expect a little bit like our Firefly product. It is additive in the way that it's -- the system itself becomes greater than the sum of its parts. So IRIS I think looks quite strong.

On the Scholly acquisition, the team is doing a really nice job. We're right to bring it in. We are right to bring in when we did. That is doing a couple of things for us. It's giving us a little more alignment around next-gen products which is exciting for us. It's helping us double down on some investments in terms of capacity and efficiency that goes with that capacity. And it will in the medium term start releasing some profitability and financing with regard to the way we produce our endoscopes that can be turned around and reinvested in the business. So far so good.

It is real work. They are a very good team. I think we knew what we were bringing in and acquiring. I'm really pleased with the leadership of the Group and our team members that have joined us in Germany and in Boston or in Massachusetts. It's not to say there isn't work to be done, but so far so good.

Q - Tycho Peterson {BIO 4279327 <GO>}

Okay. And then one just last clarification from Marshall, you called about China pull forward dynamic around tariff. Can you just -- in the context of 39 systems, are you able to quantify how much of that was tied to the tariff?

A - Marshall L. Mohr {BIO 5782298 <GO>}

Well, that I can't quantify, specifically. I would just tell you that there were a number of systems that the customers decided to expedite the process and we were the beneficiary of that obviously.

Q - Tycho Peterson {BIO 4279327 <GO>}

Okay. Thank you.

Operator

All right. Our next question will come from the line of Bob Hopkins with Bank of America. Please go ahead.

Q - Robert Hopkins {BIO 2150525 <GO>}

Great. Thank you. Just a quick -- first question on I&A (inaudible) you highlighted some tailwind -- potential headwinds they called out that revenue (inaudible) next year?

A - Gary S. Guthart {BIO 3429541 <GO>}

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Hi, Bob, we heard (inaudible) You're kind of broken up on the call, so could you reiterate the question?

Q - Robert Hopkins {BIO 2150525 <GO>}

Sorry about that. Just on instrument (inaudible) just want to make sure I hear the messaging because there's some positives, negatives, price, not a good decline, I guess (inaudible) So I just want to share the messaging on the I&A line for the next 12 months?

A - Gary S. Guthart {BIO 3429541 <GO>}

Yes. So what I said Bob was we've really seen good contribution to I&A revenue overall from benign procedures. But as we've described before, the increase in the I&A per procedure is really a reflection of additional advanced instrument revenue and then per procedure offset by benign procedure growth. So all I'm calling out is if we're successful and growing benign procedures a much faster than complex procedures, then you will see then that it will win the tug of war and therefore your I&A per procedure might decline.

On the advanced instruments, we've enjoyed further penetration into procedures in which advanced instruments are used. And as that has occurred, then our revenue associated with procedures -- our revenue per procedure has grown disproportionately to the number of procedures. Over time as you penetrate that, then you will revert to your advanced technology growth will be consistent with the number of additional procedures you add versus adding also incremental procedures that were previously not including it. So all we're saying is that there is the potential that the growth rate will decline. We still expect growth, just a lower rate.

Q - Robert Hopkins {BIO 2150525 <GO>}

Okay, thank you. And then a quick question on U.S. capital. Over the last couple of years, the growth in procedures per average system has been remarkably consistent at about 5%, especially in the U.S. Is there a reason in your view why that number might change meaningfully in 2020? Or is that a -- that trend line expected to continue?

A - Gary S. Guthart {BIO 3429541 <GO>}

I think directionally, continued growth in procedures per system is something we would expect. It's something that we're actively working with customers, sharing analytics and data to help them -- to make their practices, programs as efficient as they can be. So I think the trend I don't know if it's going to continue and exactly at the same rates, but increasing utilization is something we would expect.

Q - Robert Hopkins {BIO 2150525 <GO>}

Thank you.

Operator

Our next question will come from the line of Larry Biegelsen with Wells Fargo. Please go ahead.

Q - Larry Biegelsen {BIO 7539249 <GO>}

Good afternoon. Thanks for taking the question. Hopefully, you guys can you hear me okay. Just one on Ion and then one on the P&L. How should we think about the ramp of Ion in 2020? Is it still going to be a controlled launch? We just expect a steady increase in placements. And I had one follow-up.

A - Marshall L. Mohr {BIO 5782298 <GO>}

As we've said in our prepared remarks, Ion is in the early stages of a measured launch. And so you should expect that it will grow slowly over time.

A - Gary S. Guthart {BIO 3429541 <GO>}

It's slowly through 2020 and then more rapidly thereafter.

Q - Larry Biegelsen {BIO 7539249 <GO>}

I got it. And gross margins came in better in 2019 versus your original guidance. What are the puts and takes on the gross margin in 2020? And separately, Gary, R&D as a percent of sales, it's been increasing steadily. It's almost 10% of sales in 2019. Where do you see that going over time? Thanks for taking the questions, guys.

A - Calvin Darling {BIO 17664656 <GO>}

Okay.

A - Gary S. Guthart {BIO 3429541 <GO>}

Sure. So for gross margins, the gives and takes are, as I outlined in my prepared remarks, pricing on systems, reductions in cost, manufacturing efficiency and mix of both customers and types of product. And I think that what we're messaging for next year is that the gross margins will decline slightly, reflecting primarily product mix. And a shift -- the effect of new product and investments in the infrastructure.

Q - Larry Biegelsen {BIO 7539249 <GO>}

And R&D, Marshall, as a percent of sales? I'm just curious if, you expect that to continue to increase. Sorry, Gary.

A - Gary S. Guthart {BIO 3429541 <GO>}

Yeah. I know I can jump in and take that one. I think about -- we have grown R&D as a percentage of sales pretty consistently over the last three years, and our messaging to you has been, we're going to bring a couple of new platforms to market in parallel with some of our multi-port efforts, SP and Ion being those two that we think that next-gen imaging and non-optical imaging is important -- non-white light imaging is important and we've been investing in that domain.

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We have been investing for scale. We've talked about the fact that I think there is a virtuous cycle here, which is as utilization goes up and volumes go up, it allows us to start taking advantage of automation opportunities and changing the way we manufacture. That has taken the Company to be a little more capital intensive than in years past. But some of the things you were just talking about the linkage to your prior question on gross margin are enabled by these capital investments on multi-year timelines that allow us to get production scale advantages. And that allows us to share some of that cost savings with our customer and be able to be into lower complexity procedures at good economics and good economics for the Company as well as the customer. So we've been doing that as well. And then lastly, it's been building in digital infrastructure.

So those are the major buckets that have been taking R&D spend aside. I think we are not thinking that, that number of will leap going forward, but we also think we're still in the early innings of a baseball game here that, that have a real opportunity, long-term for growth of the market. And we think that we can position ourselves really well by making sure that those four buckets are adequately staffed.

Marshall, anything you want to?

Q - Larry Biegelsen {BIO 7539249 <GO>}

Thanks for taking the question.

A - Gary S. Guthart {BIO 3429541 <GO>}

Okay.

Operator

Our next question will come from the line of Rick Wise with Stifel. Please go ahead.

Q - Rick Wise {BIO 1490589 <GO>}

Hi. Good afternoon, Gary -- everybody. You talked -- Marshall mentioned that -- I think Calvin mentioned that, that system trade-ins may slow, may trend down. I just want to make sure that I'm understanding the reasons why. Is it the lack of a major new next-gen system launch. And so you've seen the trade-ins -- of course, the easy trade-ins. And maybe just as part of that Gary, just reflecting back on R&D and innovation, obviously, you're launching a lot of new products and innovation. But should we'll be thinking that there -- you don't need to launch next-gen big lon? Or how do we think about that -- those two aspects of trade-ins and the pipeline?

A - Marshall L. Mohr {BIO 5782298 <GO>}

So trade-ins, we've been in the middle of a fairly strong cycle of trade-ins and you've seen it go up quarter-over-quarter. Last two-quarters kind of flattening out. And what we commented on into the third quarter Rick, was that the total population of SIs that are out there, they can't be traded in obviously, it's decreasing as customers trade in their systems. And so the population is decreasing.

And when we look back at historical patterns for previous generation products, we think that we're at the peak of how much of that remaining base will be traded in any particular quarter. And so the two of those things lead us to the conclusion that you will see a decrease in the number of trade-ins as we go forward.

A - Gary S. Guthart {BIO 342954| <GO>}

The second half of the question, I might quibble with description is big lon, so I'm not going to own that, but I will talk to innovation in multiport. We're not done in innovating in multi-port. We're often asked, are you -- CSP, CION [ph] is that it? The answer is categorically no. We think there's room for additional innovation beyond our Gen-4 multiport products and we're working on those things.

Q - Rick Wise {BIO 1490589 <GO>}

All right. And just two other quick ones. I'm curious to hear more about sales force productivity. You highlighted, Gary, the improved productivity in the third quarter, it seems like that's part -- has to be part of the equation, I'm guessing in the fourth quarter. How do we think about that factor as a driver in 2020?

I'll just ask my second one. Your competitors are -- potential robotic competitors are talking about digital surgery, and we've talked about this before. But I just wonder if you have competitors marketing something called digital surgery, how do we imagine Intuitive answering that kind of a functional or marketing push? Thank you so much.

A - Gary S. Guthart {BIO 342954| <GO>}

Okay. On the first question is sales force productivity, we saw a move in the right direction in the fourth quarter, some of the underlying dynamics in terms of rapid procedure growth or a healthy procedure growth driving the need for new territories still exists. So I credit our sales leadership team is doing a really nice job, both managing growth and helping the organization become more productive while thinking through territory opportunities as well as efficiency opportunities. That's a long way of saying, we made a step in the right direction. I think they have the opportunity to keep moving in the right direction in terms of productivity. So far so good.

With regard to some of the commentary around digital surgery, I -- the short answer is welcome to the party. I think that we've been working on these issues for more than a decade. As I said before my initial response is, it's a valuable thing to be working on and that's why we've been doing it. We've been the Internet of Things, in surgical robots for a decade, cloud-enabled for a decade, we are quite deep. As you go out and talk a little more than the tag line, you talk about what timelines are what's the substance, so dig down a little bit. And the substance comes down to I think four opportunities.

One opportunity is in the use of big data for analytic power. And that says that, as you look across large sets of customers doing various things, can you help establish benchmarks that people can improve upon, and we have done that. It's been something we've been working on, so I think we're becoming quite skilled and we'll become more. That's one category.

Another category is the use of computing power in real-time to aid the surgeon or interventionalist during a case to get a better outcome. And absolutely interesting there are many, many companies in the world that are thinking about that and making progress and we are one of them. Ion is fundamentally powered by computing to help you make good decisions. IRIS is fundamentally a real-time computing capability in addition to big data. So that's one.

The next bucket is around education and the reduction of variation team to team. We know that care team variation in any acute intervention, be it surgery -- robotic surgery, live arthroscopy is highly variable. And the use of computing and analytics to help that process is clear. And I talk to a little bit about how much we have in simulation 200,000 simulated tasks done by surgeons as last year 17,000 hours of simulation capability, these are things that we can help turn into better learning environments and reduction in care team variation. And the last bucket is efficiency improvement. The use of computing technologies and networking to help hospitals become more productive and to help our Company to become more productive. And we're leveraging those opportunities on both to help our customers and otherwise.

So I look forward to the conversation, I think it will win. The winner won't be the tag line. I think the winner will be those who deliver real value that's validated against those four categories.

Q - Larry Biegelsen {BIO 7539249 <GO>}

Thank you so much.

A - Gary S. Guthart {BIO 3429541 <GO>}

We'll take one more question, operator.

Operator

Okay. That final question, one moment here. That final question will come from the line of Richard Newitter with SVB. Please go ahead.

Q - Richard Newitter {BIO 16908179 <GO>}

Hi. Thanks for taking the questions. Just two quick ones. The first I'll ask them both just right upfront. The first one, the comments on cholecystectomy is a training procedure and kind of what you're seeing there as a spillover to again comfortable with other general surgery. Are you seeing that same dynamic increase in the usage or the utilization within hernia as kind of like a training ground for other types of general surgeries? Or is hernia kind of also equally as sticky?

And then the second question just -- Marshall, on the I&A per case, if the benign growth does accelerate relative to the advanced type cases, what's the impact to gross margin there? Thank you.

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A - Gary S. Guthart {BIO 3429541 <GO>}

I'll take the first one, and let Marshall take the second one. One thing I would -- just to be clear on general surgery is, general surgery is a quite a diverse set of procedures with quite a diverse set of practice patterns amongst general surgeon practitioners or practices. First of all, I think they choose procedures to do not simply to be trained because but because they think they and the patient can be benefited by that procedure. So I don't think they run off and train for the sake of training. I think they decide that there is some value here. They will sequence their way into practice and that would make sense, both by patient selection and by the type of procedure they do.

You had asked does the same kind of effect of, well, let's start with the right patient population for cholecystectomy also apply to something like a hernia? The answer to that is yes. Some surgeons will elect to go into a hernia set first then if they find value in the product, find value in the process, they may elect to move from there to a different procedure. Interestingly, we found that there is not a one size fits all way that a practice adopts. They may choose a different entry point depending on their interests and experiences.

Second question, Marshall?

A - Marshall L. Mohr {BIO 5782298 <GO>}

I&A per case if benign procedures were to grow faster than more complex procedures, it's a very slight improvement in gross margin, and the advanced instruments have just a slightly lower gross margin than our other instruments.

A - Gary S. Guthart {BIO 3429541 <GO>}

Okay. That was our last question. In closing, we believe there is a substantial and durable opportunity to fundamentally improve surgery and acute interventions. Our teams continue to work closely with hospitals, physicians and care teams in pursuit of what our customers have termed the Quadruple Aim, better more predictable patient outcomes, better patient experiences, better experiences for care teams, and ultimately a lower total cost of care per patient episode. We believe value creation in surgery and acute care is foundationally human. It flows from respect for and understanding of patients and care teams, their needs and the environment in which they operate.

Thank you for your support on this extraordinary journey. We look forward to talking with you again in three months.

Operator

Okay. Ladies and gentlemen, that does conclude today's conference. I want to thank you for your participation. You may now disconnect.

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