



Cutting waste, risk, and costs in the end-to-end surgical process

- **Business needs** - The company needed a tracking solution to help hospitals and medical suppliers track surgical instruments. This would help reduce the waste of misplaced or surplus equipment and monitor the status of instruments in the sterilization process.
- **Networking solution** - AT&T IoT connectivity enables Innovative Perioperative Technologies to help hospitals and medical suppliers know the location of surgical instruments and gain visibility to the perioperative process in near-real time.
- **Business value** - Actionable insights that provide transparency and accountability for perioperative process improvement and address areas of waste, risk, and policy deviations.
- **Industry focus** - Healthcare: medical technology
- **Size** - Startup

About Innovative Perioperative Technologies

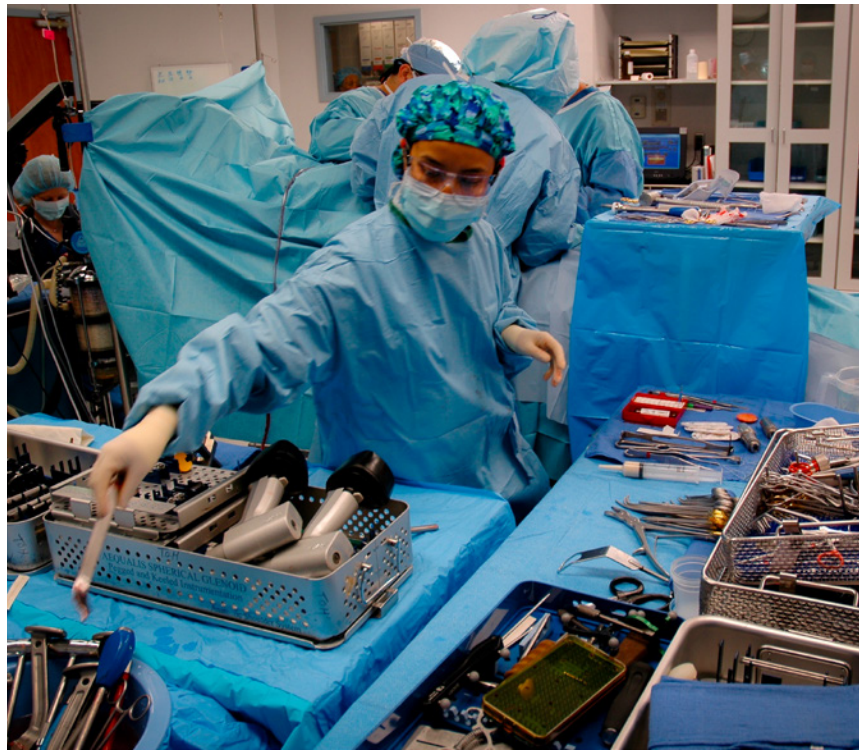
Innovative Perioperative Technologies (IPT) is a health-tech startup that has developed a software platform that enables hospitals to address areas of waste, risk, and policy deviation within the perioperative process. The perioperative process describes the end-to-end surgical experience for a patient: admission, anesthesia, surgery, and recovery. One of IPT's first initiatives focused on the methods by which hospitals sterilize, use, and return the instruments surgeons use.

The situation

The company's founders envisioned a system to verify that expensive surgical instrument sets efficiently followed the perioperative process. This would allow surgical supply companies to see the location of their valuable assets. IPT needed an effective, affordable way to track the location and status of millions of instrument sets.

Solution

IPT worked with AT&T Business to devise IoT tags that not only tracked each instrument tray's location, but also verified that each had followed the perioperative process and adhered to sterilization processes. Company leaders expect the innovation to help improve clinical outcomes, increase efficiency, and generate significant savings for healthcare organizations. The solution is part of a portfolio IPT developed to provide near-real-time visibility and information to help organizations identify and reduce perioperative waste.



Data to address patient outcomes

Healthcare costs continue to skyrocket. The National Academy of Medicine has found that waste contributes significantly to the surge. Its 2012 report revealed that the U.S. healthcare system squanders more than \$765 billion a year.¹ Some experts believe that eliminating waste in the sterilization of surgical instruments and other medical equipment could save billions of dollars a year.²

David Nichols, a founder and Managing Director for IPT, said current pre- and post-surgical methodologies have a huge impact on healthcare organizations. These methodologies affect financial operations, inflate resource requirements, and play a significant role in patient safety and surgical outcomes.

Nichols believes that maximizing the use of operating rooms is one key to addressing the problems. “The operating room is the engine that drives the profitability of hospitals,” he said.

Any solution that improves the efficiency of this revenue-generating area is likely to be attractive to hospitals. However, Nichols added, “Administrators don’t have the quantifiable, analytical data to fully understand the scope and effect of the problem.” IPT was founded to create disruptive solutions that reduce waste and support patient safety.

Improving operations

One of IPT’s first projects seeks to improve the operation of hospitals’ Central Sterile Processing Departments. They are responsible for the decontamination,

¹ <https://nam.edu/perspectives-2012-less-is-more/>

² <https://www.linkedin.com/pulse/49-billion-year-waste-healthcare-spending-we-can-solve-peter-nichol>

inspection, assembly, and sterilization processes for many of the trays, linens, and instruments used in operating rooms (ORs).

Seventy percent of hospitals were cited in one recent year for not implementing infection prevention and control activities while sterilizing instruments. Delivery of sterile products for use in patient care largely depends on an orderly level of efficiency, policy adherence, and safety in the sterilization process. This is key to protecting patients from infections while minimizing risks to staff. However, hospitals need a better way to manage their processes.

In addition, Nichols said, much of the medical equipment surgeons use is not owned by the hospital but ordered as needed for procedures. Nichols' background as owner of a medical device distribution company gave him insight into the problem.

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David Nichols
Founder and Managing Director,
Innovative Perioperative Technologies

“One of the things that I learned over the 20 years in the business that was difficult to swallow was that the communication between the surgeon, the scheduler, the facility, and the device industry rep was poor at best,” he said.

A better way to track assets

Ineffective communication with hospitals led surgical equipment companies to deliver additional instruments so surgeons would not be caught short during a procedure. “We were dropping off an enormous volume of surgical instrument trays worth thousands of dollars that were being loaned to hospitals on a per case basis to support multiple surgeries,” Nichols said. A high percentage of the surgical instrumentation that was delivered and processed for surgery went unused. This resulted in money wasted per procedure.

IPT found that on average 10 surgical trays are processed for each procedure, but only 60-70% are used. It costs about \$90.00 to process one tray, so the three unused trays cost a hospital \$270. There is an average of 10 million vendor supported U.S. surgeries each year,⁴ which means healthcare organizations are wasting about \$2.7 billion in unnecessary processing costs.

In addition, most hospitals' Central Sterile Processing Departments, which are responsible for checking in and sterilizing surgical equipment delivered by device companies, still use paper-based processing procedures. “That is the current practice for most surgical facilities in the United States that perform orthopedic surgery,” Nichols said.

³ OR Manager Publication, Vol. 34 No. 1 January 2018

⁴ <https://stanfordhealthcare.org/medical-clinics/surgery-clinic/patient-resources/surgery-statistics.html>

It's easy for the equipment to be misplaced or go missing, especially if it's not used during the surgery. The medical device companies needed a way to find their lost assets. "We saw an opportunity," Nichols said. "There could be a better way of providing a comprehensive solution to reduce the waste, as well as increase the profitability opportunity, of orthopedic surgeries for the majority of hospitals."

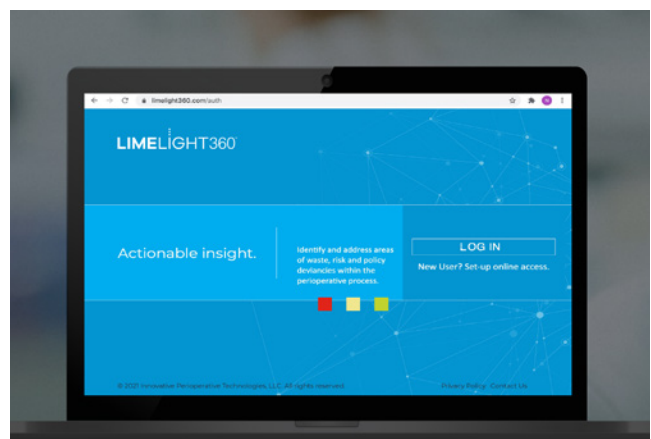
Reducing waste, improving outcomes

Nichols and his partners founded Innovative Perioperative Technologies to address this waste and equipment loss. The company created the LIMELIGHT 360™ platform, a comprehensive portfolio solution that provides near-real-time visibility and information to identify and reduce perioperative waste.

To support its solution, IPT needed real-time locating system tags that could provide tracking capabilities, inventory management visibility, and actionable data. But an ordinary tag wouldn't do. The tracking tag had to withstand the high temperatures required to sterilize surgical instruments. "Most assets don't have to survive a 270-degree steam oven under pressure, which hospitals use to kill any living organic material," Nichols said.

The company called on AT&T Business to assist in building the technologies and applications that support its solution, including IoT tags powered by the AT&T Global SIM. IPT can use the AT&T Control Center to easily deploy, manage, and monetize its connected assets in near real-time. The cloud-based platform delivers control, visibility, and agility to IPT's breakthrough system.

"I've been working with the crew at AT&T Business to help develop the IoT stack that actually makes the information coming off the tags viable and functional," Nichols said. The ID tags contain heat probes that can reveal temperature spikes that let officials know the equipment has been through the washer and autoclave.



Protecting billion-dollar inventories

IPT expects medical device companies, especially those with an inventory of millions of instruments, to embrace the LIMELIGHT 360 platform. Public financial performance reports indicate these medical device companies carry an estimated \$7 billion in surgical instruments on their books and spend upward of \$1 billion a year in shipping, Nichols said.

Each tray of surgical equipment costs on average an estimated \$10,000, yet many end up forgotten in a hospital storage room. The LIMELIGHT 360 platform will make it easier for companies to track their assets. IPT shared some of its findings with device company CFOs. "They were absolutely emphatic about how valuable this information was," Nichols said.

“The LIMELIGHT 360 platform, in conjunction with the tags, is going to give a huge amount of valuable information to a variety of people within the surgical delivery process,” Nichols continued. “It’s also going to provide actionable analytics to medical device companies. Device companies will be financially incentivized for access to this data, given the high cost of instrumentation, high shipping costs, and what is currently a poorly managed practice that they don’t have real visibility into.”

Collaboration and credibility

IPT is pleased with the results of its collaboration with AT&T Business, Nichols said. “AT&T is obviously a global leader in IoT, so having that expertise and experience is really powerful for us. Having the ability to work with AT&T and talk about things such as installation, service, and support not only allows us to pair the technology, but pair it with the strength and the power of AT&T Business. This allows us to scale in a manner that we could not typically do as a startup.”

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IPT Chief Operating Officer Jennifer Endicott appreciates the credibility that working with AT&T Business provides. “Health system chief information officers are conservative by nature,” she said. “And one of their concerns, particularly about young tech startups, is allowing a product to enter into the health system and then the tech company dissolves,” she said. “They want to know that you’ve got some real staying power. And I think our ability to go to the table with a company like AT&T Business as part of our solution set is going to send a very powerful message to a CIO who is contemplating installing our product,” Endicott said.

The early-stage technology start-up is launching its product in alpha and beta test sites this spring and early summer and targeting commercialization by year’s end.



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COO, Innovative Perioperative Technologies