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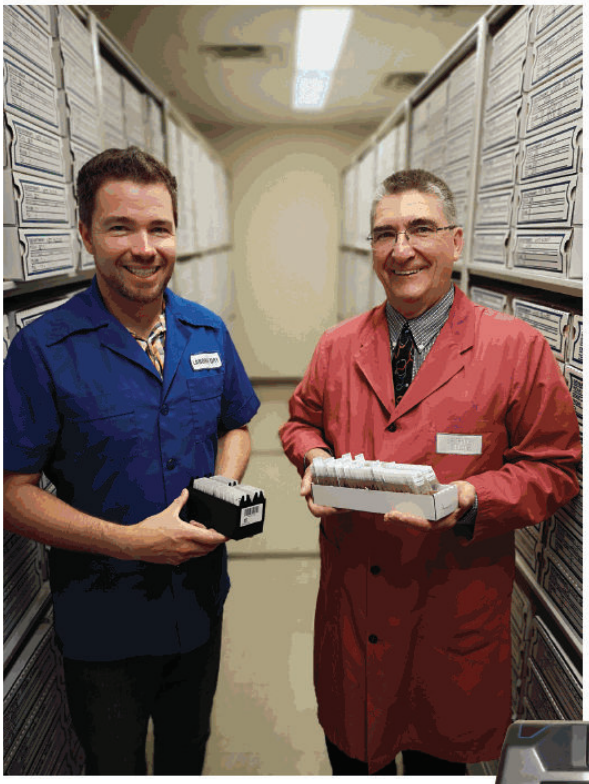
How a local startup solved a lab's slide-management issues

When Alex Bushell, the young CEO of a Canadian startup, approached Bernard Schaan, the now-retired laboratory manager at Peterborough Regional Health Centre, in 2017, to ask what problem they might tackle together, Schaan mentioned an issue that had nagged him for years: histology slide filing and retrieval. Tasked with filing between 125,000 and 135,000 slides per year, "I thought the process could be automated and had been asking various sales reps if there's anything out there—and they said no, there wasn't," Schaan says.

Bushell, the CEO of Peterborough, Ontario-based Lab Improvements, an engineering firm focused on laboratory automation, embraced the challenge of solving the PRHC laboratory's dilemma as part of its goal of working with the local institution. Less than two years later, the vendor-provider undertaking has culminated in the installation of a benchtop device at PRHC that has greatly reduced the staff time required to file and retrieve slides, and it has showcased the benefits of such a partnership.



Alex Bushell (left) and Bernard Schaan in the slide storage vault at Peterborough Regional Health Centre, where SlideTrack (at right) has increased the speed and accuracy of slide management.

Before the device, called SlideTrack, was installed, laboratory staff at PRHC manually filed slides, in numerical order, in cardboard boxes for storage, a less than foolproof system, Schaan says. And when pathologists pulled slides from storage for review, he adds, "they sometimes left them in their office for unexpected periods of time or misplaced them. And there was no documentation that they'd been pulled by anyone."

The original plan was to develop a device customized for PRHC, which performs more than 1.82 million laboratory tests per year. But shortly after Schaan and Bushell began discussing how best to automate the process, Bushell says, "the [provincial] Ministry of Health and Long-Term Care caught wind of our plans. They said if you're going to spend money on this, let's expand the scope and develop something that's not only going to work in Peterborough but also in larger and smaller hospitals across Ontario and worldwide." Through a now-defunct government/private sector collaboration, Lab Improvements secured $25,000 for development of the device and PRHC secured $15,000 for procurement.

Among the conditions for obtaining the funding, which covered a portion of the development costs, was that Lab Improvements perform "peer review" at other institutions, Bushell explains. "We visited a total of six or seven hospitals [twice accompanied by Schaan] that were quite varied in size and met the lab directors, who would give us a walk-through and show how their labs addressed the problem. But it was generally the frontline staff, who were dealing with this issue on a day-to-day basis, who were able to give the best input. That allowed us a really deep dive into the problem, and at the end of the day we ended up with a much more well-rounded solution." Two key lessons from the site visits, Bushell adds, were that "no one has any space, and no one wants to revamp their storage infrastructure." Consequently, the final product is about the size of a microwave and designed to work with a laboratory's cardboard storage, which, according to Bushell, "is by far the most common media for slide storage."

Rather than manually scanning each slide, Bushell says, a laboratorian can load up to 200 slides at a time into SlideTrack and walk away. The device then sorts the slides and files them into long-term storage containers. "The machine grabs one slide at a time, checks the label for barcodes and other identifying information, such as key characters or colors, and files the appropriate slides in containers based on that information," he explains. "When all of the slides have been sorted and loaded in the appropriate containers, the machine lets the operator know it's finished. The operator then unloads the now-filled magazines and puts them into the lab's long-term storage vault. SlideTrack's database manages the location where each slide is stored."

SlideTrack can then transfer slide information to a histology tracking system, or it can operate as a standalone slide-inventory manager. When operating as a standalone device, laboratorians can view case and slide history and place retrieval requests using the interface to their work terminals.

SlideTrack serves as a gatekeeper, Schaan says. "The system first asks where the slides are going," Bushell adds. "For an internal request, we only need to know which pathologist it's heading to. But if it's being sent off site, the requestor needs to enter key information about where it's going, how it's being used, and for how long it will be off site. All this information is logged, and an alert is issued if the slides are not returned within this time. Now the charge tech has all the information they need in order to follow up and chase down the overdue slides."

The new retrieval procedure initially sparked some pushback from pathologists who were accustomed to pulling their own slides, but they're getting used to it, Schaan says. And the time spent by lab staff to file slides has been reduced from up to six hours a day to approximately an hour, freeing staff for other tasks. "There is no longer a need to form urgent search parties to try to find a misplaced slide," Bushell jokes.

Schaan and Bushell emphasize that constant communication, including frequent in-person meetings, was key to the success of their collaboration. "It was fantastic to work with a site that was 15 minutes away from our office," says Bushell. "We were able to go in multiple times just to test one feature to make sure we got it right. It wouldn't have worked for us to disappear for six weeks and come back and find that we had been going completely down the wrong path. [At the beginning,] a lot of it was very hands-on: How many slides are you doing on a daily basis? How would you want to load them? And we tried a couple different techniques and methods and styles of loading up the machine." As Bushell learned from previous visits to other institutions, "It's great to have a manager or director tell you that there's a problem, but to truly understand it, you have to sit down with the frontline people and see what's happening on a day-to-day basis and what will make their life easier. Their input resulted in a lot of the features that we ended up incorporating."

Lab Improvements' small size and nimble response to whatever issues cropped up was also key to the success of the endeavor, Schaan says. "I think this came together quite quickly, with few challenges. If I had been working with a large international vendor, it may not have gotten off the ground as easily because you would need to get the okay from this director and that director, and the VP who is over in

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Europe, and so on." Yet he stresses the need to get support from the hospital C-suite before taking the first step toward collaboration. Bushell concurs. "The best advice I can give to someone who wants to attempt this kind of collaboration," he says, "is getting executive-level support—someone who can champion the project from a high level. In our case, it was their director of laboratory and diagnostic testing. Also, we had a signed letter of support from one of the vice presidents of the hospital, and we kept management apprised of our progress."

As a result of its success at PRHC, Lab Improvements is getting calls from "all over the world" seeking more information about SlideTrack, Bushell says. "Our current focus is scaling production so we can meet demand and expand into other regions." —*Jan Bowers*

Sysmex and Optim forge another partnership

The diagnostics device firm Sysmex and artificial intelligence company Optim have announced plans to establish a joint venture to develop digital medicine platforms and services.

The companies had formed a business alliance last February under which they are collaborating on initiatives that combine Sysmex's expertise in the medical field and global sales and service network with Optim's Optim Cloud IoT OS Internet of Things operating system and other data-management and AI technologies and services.

Through the new partnership, the companies plan to develop diagnostic methods that combine image information from gene testing and AI analysis. They will use AI for image processing of data from Sysmex analyzers. They also will collaborate with pharmaceutical companies, medical device manufacturers, and others to create "ecosystems for medical IT solutions" by placing those companies' medical applications on their platform, according to a press release from Sysmex.

Sysmex and Optim aim to establish the joint venture next month and are already holding discussions with pharmaceutical companies and medical device manufacturers about mounting medical applications on the platform.

Sysmex, 888-879-7639

UPS expanding drone service to University of Utah Health

United Parcel Service recently announced that University of Utah Health, in Salt Lake City, will be the second medical campus to participate in its drone delivery service, UPS Flight Forward.

"Flight operations at University of Utah Health will be geared toward building out a more cost-efficient medical delivery system as the campus undergoes tremendous growth," according to a press release from UPS. The unmanned drones will follow a predetermined flight path to a delivery point on the hospital campus.

UPS has been delivering blood products and laboratory specimens to the Raleigh, NC, campus of WakeMed Health and Hospitals since last spring.

The company's UPS Flight Forward subsidiary was awarded an airline certification by the Federal Aviation Administration in September. The certificate eliminates restrictions on UPS pertaining to the number of drones it flies and number of remote operators in command. The certification also allows the drones to fly at night and exceed 55 pounds when loaded.

Proscia and Dell undertake digital pathology venture

The digital pathology software vendor Proscia reported that it is collaborating with Dell Technologies to deploy digital pathology solutions and that it introduced the fall 2019 release of its Concentriq image- and data-management platform.

To support the newly expanded Concentriq platform, Proscia has collaborated with Dell to provide a scalable information technology infrastructure for digital pathology products. The companies will offer reference architectures for whole slide image viewing and management combined with high-performance computing, scalable storage, and multi-cloud capabilities via Dell.

The latest release of Concentriq includes capabilities that allow biotechnology, pharmaceutical, and contract research organizations to streamline the launch and management of concurrent studies involving millions of images across diverse multi-site organizations.

The enriched Concentriq platform provides the following:

- standard field libraries, project templates, and expanded roles and permissions intended to simplify study management and enhance the control of IT administrators and project coordinators.
- a unified display in Concentriq Workspaces that presents data from multiple sources.
- enhanced global search capability for pathology data within a health care organization.
- expanded image format support with the addition of Zeiss CZI to the formats supported by Concentriq, which include those of Akoya Biosciences, Epredia, Hamamatsu, Huron, Leica, and Ventana Roche.

Proscia, 877-255-1341 □

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