

Trinity Village Care Centre and VitalHub Innovation Partnership in Healthcare

Procurement by Co-Design – Case Study

By **Jamie Gamble**



Procurement by Co-Design

Procurement by Co-Design is a novel innovation procurement approach designed, developed and delivered by the MaRS Solutions Lab. The program enables the public sector to partner with innovative technology and service vendors to collaboratively create impactful solutions to pressing challenges. Taking a co-design approach, innovation teams engage key stakeholders, including end-users to rapidly learn from small scale experimentation and iteration. Teams then conduct an outcome based evaluation of the solution before making the final procurement decision. To learn more about Procurement by Co-Design, please visit www.marsdd.com/systems-change/procurement-co-design and contact us at designchallenge@marsdd.com.

MaRS Solutions Lab

MaRS Solutions Lab is the public and social innovation lab at the MaRS Discovery District. Solutions Lab constructs inclusive containers for society to reimagine itself and generate the breakthrough innovations that will bring these new imaginaries to life. We help to understand these challenges from different perspectives, and we convene stakeholders from across society to develop, prototype and scale new solutions. We also help build capacity for systems change across Canada, providing advice and training to governments, foundations and other organizations that want to work out how to create change for a better future together. Our customers are future generations of Canadians, and our clients are innovators who want to make progress on the most important and complex challenges today so all Canadians can flourish tomorrow.

MaRS Discovery District

MaRS is the world's largest urban innovation hub, a place where today's moonshots become tomorrow's breakthroughs. It's a launchpad for startups, a platform for researchers and a home to innovators. As a non-profit organization, MaRS is dedicated to driving economic and social prosperity by harnessing the full potential of innovation. Learn more at www.marsdd.com.

Imprint Consulting

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Ontario Buys

This project is funded by OntarioBuys, an Ontario government program that makes investments to support innovation and to facilitate and accelerate the adoption of integrated supply chains, back-office leading practices and operational excellence. OntarioBuys helps drive collaboration and improve supply-chain processes in Ontario's broader public sector.

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DOCit: A co-designed solution to a complex healthcare challenge

Susan's smartphone alerted her that Mrs. Wilson has some bruising on her shoulder. (Not their real names.) As the registered practical nurse (RPN) on duty at Trinity Village Care Centre (Trinity Village), one of Susan's many responsibilities is to check on patients when a personal support worker (PSW) notices a possible injury or issue. Susan was alerted immediately after Mrs. Wilson's bath, when a PSW first noticed the bruising.



Getting notified wasn't always so efficient. PSWs are always on the move, caring for residents, and issues like Mrs. Wilson's possible injury would usually get mentioned to the RPN at a break or the end of a shift. This new

instant alert is the result of DOCit, a new mobile application being rolled out at Trinity Village.

Efficient scheduling is an important part of a PSW's job. There are activities to coordinate, such as ensuring patients are ready for outings or making sure that a bath happens before—not after—an appointment with the hairdresser.

Documentation and reporting are paramount to this coordination. PSWs need to document patients' health and behaviour in frequent intervals throughout their busy day. More specifically, PSWs use assessment tools to clinically monitor residents who are exhibiting unusual or concerning behaviours. For example, if a resident is to be observed for dementia, their mental and emotional states are recorded every 30 minutes to determine the occurrence, frequency and duration of behaviours of concern. Before the introduction of DOCit, such documentation was done on paper or at a large wall-unit computer.

Documentation was generally done in bursts after the fact, often at a break or the end of a shift. PSWs would have to remember everything that had happened during a shift—sometimes for multiple residents—which could lead to inaccurate data. Plus, keeping up with paperwork meant that PSWs and RPNs were often unable to take their breaks.

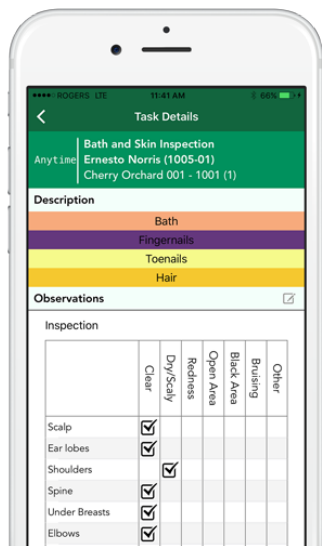
Now, at the start of a shift, PSWs sign out one of their unit's smartphones and log into their personal accounts. With the DOCit app, PSWs have a personalized view of the residents they are responsible for on a particular shift, as well as of all their upcoming tasks. The app highlights any pending or overdue events and guides clinical monitoring activities and any required observations or documentation through checklists. Most importantly, documentation can be done in real time. DOCit helps PSWs to plan better, make better use of unproductive time and spend more time with residents. They no longer need to leave a resident to go to a wall screen.

What does this mean for Trinity Village? It results in better use of time and better data accuracy, which lead to cost efficiencies and improved care. In a time-savings study conducted during the six-week implementation testing of DOCit, PSWs saved an average of 23 minutes per shift and house managers (RPNs) saved an average of 1.5 hours per shift. The implementation testing of DOCit also demonstrated fewer errors in recording and reporting data. Data quality and accuracy improved by 30% during testing. Furthermore, staff members involved in the testing reported being able to more consistently take their breaks, improving their work life and allowing them to dedicate more time to resident care.



Wall-unit computer.

DOCit was co-developed by Trinity Village and VitalHub, a Toronto software company. The two organizations collaborated under a novel procurement strategy called an “innovation partnership.” Innovation partnerships offer healthcare service providers the opportunity to participate in the development of



The DOCit app smartphone interface.

innovative solutions before procuring them. In turn, technology and service innovators with scalable business models gain unprecedented access to end users and are able to validate use cases, enabling them to remain competitive.

Trinity Village and VitalHub were supported in their innovation partnership through **Innovation Partnership: Procurement by Co-Design (IPPCD)**, a program offered at MaRS Discovery District (MaRS). The program is a partnership between MaRS and the Ontario Ministry of

Government and Consumer Services, and is funded in full by the OntarioBuys program. The initiative offers healthcare service providers the opportunity to collaborate with vendors in the development of innovative solutions that address complex problems they face, while complying with the Broader Public Sector Procurement Directive.

What does DOCit mean for Trinity Village? A better use of time and better data accuracy, which lead to cost efficiencies and improved care.

Trinity Village Care Centre

Trinity Village is a supportive and caring retirement community, situated on 11-and-a-half acres close to shopping, churches and essential services in Kitchener, Ontario. Providing a continuum of care, Trinity Village offers life-lease townhomes, an assisted living retirement residence, a long-term care centre and a day program for seniors in the Region of Waterloo. Trinity Village is a not-for-profit organization owned by Lutheran Homes Kitchener-Waterloo.



VitalHub

VitalHub Corp. is a Toronto-based software company developing IT mobile solutions for healthcare. VitalHub’s platform includes apps for clinical care and communications, with a focus on the mental health and long-term care space. VitalHub was founded in 2010 and acquired by a group of private investors in 2016 with the objective of building new solutions off the original platform. VitalHub is publicly traded on the TSX Venture Exchange.

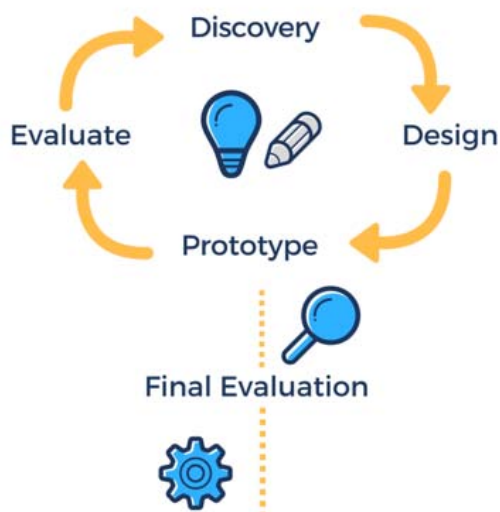


The IPPCD program

One of the main objectives of the IPPCD program is to create solutions that are a better fit with real-world healthcare contexts by involving end users and all stakeholders in shaping the solutions. The process starts with a challenge brief written by the healthcare provider. In the brief, the healthcare provider describes its challenge, the outcomes it seeks and the criteria it will use in selecting a vendor. Interested vendors respond with innovator briefs describing their proposed approach to overcoming the challenge. Providers review the submissions to determine a short list of vendors, and then invite them to pitch their innovative approaches to tackling the challenge and discuss potential solution possibilities.



DESIGN & PROTOTYPE



PROCURE

The selected vendors and healthcare providers apply user-centred design principles and other rapid prototyping methods to deal with the risks of introducing innovation in a complex healthcare setting. The teams are supported with hands-on co-design workshops at MaRS and regular review sessions with the MaRS team. This phase is iterative and can have many design cycles. Based on the insights gained from previous iterations, the provider and vendor team scopes a minimal viable product to evaluate outcomes and a viable business model for procuring the solution. The team uses the results to make a final decision whether to move forward with procurement.

With IPPCD, MaRS engaged healthcare procurement experts, care delivery organizations and the technology venture community to create a process for new forms of collaborative value creation.

MaRS helped by:

- providing a structured process that is compliant with the Broader Public Sector Procurement Directive, but still allows for flexible application of the process for different types of projects;
- facilitating innovation partnership formation through broad yet targeted networks and dialogue processes;
- providing guidance and accountability through workshops, bi-weekly check-ins and resource materials; and
- designing and administering grant incentives for participants to help cover the cost of procurement using a novel approach.

How Trinity Village and VitalHub developed DOCit

When Debby Riepert, Trinity Village's chief operating officer (COO), first heard about the IPPCD program, she thought it would be an opportunity to help frontline workers have better access to the various software systems already in use.

Trinity Village communicated the following challenge to potential vendors: "Software used by frontline staff includes systems that deliver care

plans, systems that track meals, and other systems that take care of operations (e.g. asset management and scheduling). Access to such systems is confined to computers located in specific locations throughout the campus and thus not always easily accessible. Multiple logins and lack of access at the bedside (or where the patient is) reduces staff efficiencies, increases errors, and delays communication.”

Several vendors responded, but VitalHub was the clear fit for Trinity Village. Reflecting on the selection of VitalHub, Debby says: “Other vendors were trying to sell us an existing solution, but they were square pegs in a round hole. VitalHub listened sincerely to what we were saying and really understood our challenge.”

Initially, Trinity Village thought the IPPCD process would result in some hardware upgrades. In the end, a much more comprehensive idea for the goal of better care and better tracking of information emerged. Early ideas included better wall units, fillable PDF forms instead of paper documents, and tablets.

After several face-to-face brainstorming meetings in Kitchener, and several iterations, the challenge

statement was reframed to: “How can we gain efficiencies for care workers within a highly regulated field for complex multi-diagnosed individuals, currently supported by multiple paper-based and electronic documentation systems and locations?”

The process of developing a challenge and the iteration process to refine it can stimulate greater ambition. In this case, Trinity Village greatly expanded the problem it wanted to solve and ended up tackling a problem that it would not have undertaken had it not participated in the program. What was initially conceived as a need for hardware replacement turned into a radical rethinking of the organization’s documentation process.

Andre Vandenberg, VitalHub’s vice-president of mobile technology, says the “big a-ha moment” was breaking down the forms into discrete individual tasks. These individual tasks became bite-size items assigned to responsible providers and then monitored, tracked, acted on and documented.

VitalHub’s solution became “to change forms and the associated data collection process into a consolidation of many individual recorded activities



The project team, comprising staff from both Trinity Village and VitalHub.

and individual care worker tasks. A new smartphone app for care workers will provide fingertip access to forms, documents, schedules, tasks and resident data, enabling on-the-fly documentation, note taking, task tracking and team collaboration.”

What emerged was not only an application, but also a major rethinking of the entire scheduling and documentation process.

A project team made up of staff from both Trinity Village and VitalHub started prototyping ideas. The team was initially multidisciplinary, involving staff from all across Trinity Village. As the work got started, they realized it would be better to focus the team to only include Trinity Village staff working in care support.

Trinity’s project team consisted of the COO, the director and assistant director of resident care, the clinical auditor, and PSWs and RPNs from the Pine Woods floor (the part of Trinity Village that would first implement DOCit). VitalHub’s project team consisted of the VP of mobile technology, the director of business development, and the VP of product development and professional services. Throughout the prototyping phase the project team tested ideas by reviewing mock-ups, wireframes and possible workflows.

The Trinity Village team thought what was being proposed made a lot of sense and committed to VitalHub, moving into the testing phase. They agreed to procure VitalHub’s solution if the testing implementation successfully met a set of agreed-upon metrics. The metrics—or outcomes-based specifications (OBS)—were well defined and included minimum, desired and ambitious targets for user experience, time savings and quality of care. OBS are an integral part of the innovation partnership process—and the process requires the upfront clarification of intention to procure if the OBS are met. This is a key part of the process that helps to reduce risk and encourage executive buy-in.

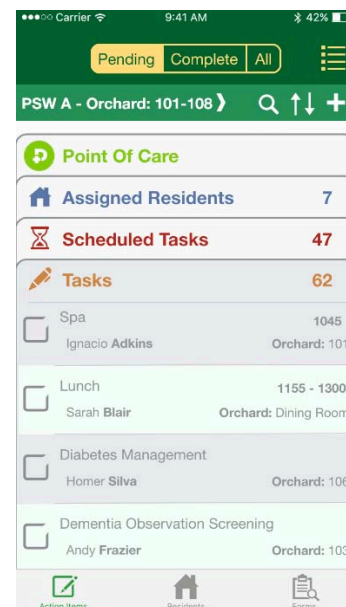
VitalHub completed an on-site implementation and tested the minimally viable product of the DOCit solution with the day shift on the Pine Woods floor. VitalHub developed 11 of the documentation forms

that PSWs are responsible for and integrated them into the DOCit system. It was then tested over a six-week period from May to June 2017. The testing involved four builds, with each build incorporating feedback from the previous one. In addition to the metrics, the testing phase had explicit learning goals that evolved from build to build. For example, in the first build, one of the goals was to discover whether PSWs are comfortable using smartphones throughout their shifts. In the final pilot build, a goal was to determine whether users were finding the alerts and notifications helpful or unnecessary.

The testing phase was successful. The metrics were met, and staff started to become more familiar with the smartphones. After the first build, one longtime employee gave a satisfaction rating of 1 out of 10. She reported she was unfamiliar with smartphones and felt uncertain about the change. After the final build, her rating changed to a 10. The innovation partnership process emphasizes internal engagement, which helps support successful change management.

The project has continued to move forward since the initial testing phase. VitalHub has completed further development of DOCit, and Trinity Village has started a gradual rollout across the entire organization. Starting in November 2017, DOCit was expanded to all three shifts on the Pine Woods floor and another floor in Trinity Village is added each month. By May 2018, DOCit will be used facility-wide.

While DOCit is Trinity Village’s name for the application, VitalHub is marketing the app to other healthcare providers as its VH Long-Term Care (VH



The prototype smartphone interface.

LTC) solution. VH LTC has started to generate market interest. In fact, VitalHub has signed a contract with Saint Luke's Place in Cambridge, Ont., and currently has strong interest with six other long-term care homes in the Kitchener-Waterloo region.

Trinity Village has a stake in the growth of interest as it has a revenue-sharing arrangement with VitalHub. Trinity Village will recoup its initial investment from future sales and, once it has done so, will continue to receive a modest, ongoing benefit at a lower percentage. To date, Debby Riepert, Trinity Village's COO, has assisted VitalHub in showcasing the application at trade shows, and Trinity Village has presented the app to other long-term care homes in the region at a semi-annual town hall meeting.

Drivers of success

Trinity Village and VitalHub's collaboration in the development of DOCit has been a great success. The following three influences are the primary factors that contributed to their success.

1. Organizational commitment

The process of an innovation partnership demands significant time and resources—and it can be quite onerous, especially when tackling a very complex problem. As a result, strong commitment to the project and strong engagement in the process are essential.

In this case, both organizations in the partnership were committed to the cause. Critical attention was given to building organizational buy-in. Frontline staff were involved in the process from the outset and the team worked hard to integrate their feedback into each consecutive development cycle of the application. The team then followed up with staff to ensure changes were working. Managers back-filled PSWs' shifts to enable them to participate in feedback meetings with VitalHub. The whole process was very open—critiques were encouraged in the feedback sessions and everyone felt comfortable to share comments, whether good or bad.

The extent of executive buy-in is a critical factor in the prototyping and procurement of the innovation. As COO, Debby Riepert was the champion of this project from the outset. Because of her buy-in it was easy to secure permission to backfill frontline workers' time so they could participate in design feedback sessions with the vendor. Furthermore, the space and legitimacy for the vendor to be present and interact in-depth with Trinity Village staff was authorized and prioritized.

2. The relationship between VitalHub and Trinity Village

VitalHub and Trinity Village trusted one another. From the initial meeting, there was a sense that they were partners with shared interests and were equally willing to commit to the effort required. This trust shaped the nature of how the vendor representatives saw themselves in the organization. VitalHub felt it was a part of Trinity Village, resulting in a detailed and grounded perspective on the challenge.

VitalHub spent a lot of time on site—so much so that some Trinity Village residents thought the VitalHub team was part of Trinity Village's staff. This demonstrated VitalHub's dedication and gave the team a lot of insight into how long-term care actually works. VitalHub gained a detailed appreciation of the work that PSWs do, the standards that a long-term care home must meet and the needs of residents. One Trinity Village staff member observed that, "[VitalHub staff] care about the residents, they understand, they are making decisions like nurses."

Revisiting and changing in response to feedback also builds trust, and trust creates a platform for good feedback. Done well, this becomes a virtuous cycle.

Even with strong trust and ongoing feedback, there were still many challenges. Ideas or functionality didn't always work out as expected, and there were occasionally misunderstandings about what was being said and confusion over acronyms. However, these challenges were small speed bumps that never became big issues—the result of user honesty and feedback, following up for clarification

and vendor responsiveness. Plus, there were never any surprises. The relationship was characterized by a lot of communication. Everyone was always given a heads up before any changes were made or rolled out.

It also helped that frontline issues were given top priority. Trinity Village agreed that, first and foremost, the frontline use of the application needed to be solid. This meant that some of the system-wide reporting had to wait. Managers understood this and were able to get the reports they needed by using a workaround that involved manually exporting and analyzing data. Innovation implies change. The most essential element required of both the healthcare provider and the vendor is their willingness to work differently than the status quo. The right solution is built from a high level of trust and a willingness to come up with something different from what both parties have done in the past.

3. Incremental risk-taking

The management of risk through iterative validation is extremely important—and it's what makes an innovation partnership different from more traditional RFX processes. More specifically, validation is done iteratively on multiple facets—technical feasibility, desirability for end users, ability to achieve desired outcomes, and viability of the business model—from both the purchaser and vendor perspectives. The innovation partnership process is staged so that concepts and options are explored before significant resources are committed. The process produces good solutions, ones that accurately respond to a complex provider challenge. The co-design approach reduces the risk in the development process, and the involvement of a structured program at MaRS provides some accountability prompts and a structured process for purposeful innovation.

The IPPCD program is set up so that all participating healthcare providers must have a clear intent to procure. In the case of Trinity Village and VitalHub, there seemed to be a particularly high investment in the process, based on the potential seen in the idea and the high-trust relationship. The prototyping confirmed the viability, feasibility and

desirability of the application, and the conditional procurement allowed VitalHub to move forward with confidence and some resources, while still providing security for Trinity Village. The iterative development optimized the solution and laid the groundwork for organizational buy-in.

Challenges and lessons learned

The process was not without its challenges, which was to be expected. Solving a complex challenge is hard work, as are collaboration and introducing something new into an organization. Trinity Village and VitalHub worked well to plan for, respond to and mitigate challenges. In doing so, some valuable lessons were learned.

1. Capacity of IT department

The work stretched and, at times, exceeded Trinity Village's information technology capacity. As some new features were proposed, such as integrating a nurse call bell functionality to the app, the Trinity Village IT team estimated a quick turnaround, but VitalHub knew it would take significant time to implement.

IT infrastructure and resource limitation issues are fairly common in long-term care. To implement DOCit, Trinity Village needed to make several infrastructure upgrades and procure 24-7 phone support (CareWorx). Throughout the IPPCD process, VitalHub became an informal IT advisor to Trinity Village and the company learned to take a more consultative approach when engaging other long-term care entities.

2. Effort required for development

The level of effort that the IPPCD process demanded was quite significant. Andre Vandenberg, VitalHub's VP of mobile technology, estimates the project required 90% of his time and 50% of the VP of products and professional services' time, as well as a dedicated developer who was involved at both the front and back end of

development. Co-design is resource intensive, suggesting that suitable challenges must be carefully selected and teams must be completely willing and able to commit the necessary time.

3. Timing of the opportunity

Generating the buy-in to invest in projects of this nature can be a challenge. In this case, the support was very strong for both Trinity Village and VitalHub. For VitalHub, the company was focused on new growth and IPPCD was a timely opportunity. The VitalHub team was looking for new mobile app opportunities and the long-term care market was a sector it was eager to cater to. Trinity Village was interested from the outset, reinforced throughout by strong executive buy-in and consistent internal engagement.

Impact

DOCit successfully met the outcomes-based specifications of the challenge. The desired improvements in user experience, time savings and quality of care were all met. Twenty-three minutes of saved time means that a PSW can give one extra bath, complete five extra transfers, or simply spend more one-on-one time with a resident. Moreover, that 23 minutes saved is for only one staff member. There are four PSWs working at a time in one house area, so when DOCit is implemented facility-wide, 460 minutes will be saved per shift, which equates to an annual savings of approximately \$75,000. While the benefits of DOCit are currently limited to personal care, Trinity Village and VitalHub are looking at ways to expand the mobile application into other areas of Trinity Village's business, such as programming, maintenance, and food and diet services.

Trinity Village and VitalHub each reflected on what the development of DOCit means to them.

From Trinity Village's perspective: "This solution will assist in maintaining the compliance of the Long-Term Care Homes Act, a highly regulated environment. It will also assist us in serving our

healthcare system in being: effective, safe, resident-centred, timely, efficient and equitable. The solution provides us with an opportunity to free up dollars and time to reallocate resources with the time saved in completing and creating forms and travelling within multiple hardware locations."

Through IPPCD, Trinity Village was able to better understand the scope of its opportunity, gain understanding of new technologies, and build stronger buy-in within its organization.

From VitalHub's perspective: "This solution gives us a sellable product that addresses a common problem in long-term care. Typically, VitalHub has focused on acute care, but with this solution we will have the opportunity to sell into the long-term care space—an exciting new market for VitalHub—while leveraging our existing resources and support infrastructure."

DOCit has the potential to report on systems-wide data related to long-term care homes and to contribute to better consistency across different healthcare facilities.

VitalHub gained access to a customer earlier in the development process than it might have in a more traditional RFX process. This helped them to add functionality in response to a real-world application of an idea and to gather data that helps to explain—and market—benefits earlier and better.

There is a third beneficiary: the larger healthcare system. The innovation partnership process has the potential to stimulate changes in procurement practices in the healthcare system. If widely implemented, the DOCit application has the potential to report on systems-wide data related to long-term care homes (for example, trends on dementia observation sheets, infections, skin and

wound care, falls etc.) and to contribute to better consistency across different healthcare facilities. The staff at Trinity Village are excited by the prospects. Miller Longanilla, director of resident care, says, “I see the future of it. There are possible partnerships with pharmacy and their forms or with tracking hospital transfers, to name a few.”

Furthermore, with more standardization, the challenges of assessing residents with multiple issues can improve how staff workload is distributed and funding allocations are made.

Laura Schmidt, the clinical auditor at Trinity Village, agrees: “DOCit gives us real-time accountability. There are many standards we have to abide by, accreditations we have to follow. This helps us to do this much better.”

The benefits are clear. Trinity Village is saving money and improving care. VitalHub has a scalable product. There is also great potential for a system-wide benefit.

A practical solution with proven outcomes

DOCit is a practical, effective solution. It’s an exemplary case of what is possible when a healthcare provider and vendor share an interest in solving a complex problem and a commitment to innovation.

To meet legislated reporting requirements, Trinity Village, like many long-term care homes, had cobbled together a documentation process that was workable, but complicated and cumbersome.

Together, VitalHub and Trinity Village developed a solution that supports compliance while improving patient care and improving PSWs’ workflow. The team did not compromise to produce a solution that demanded some kind of trade-off; instead, the team followed through with a deep exploration of the problem and a strong commitment to work collaboratively through the iterations of development and testing, which led to the creation of value.

The benefits are clear. Trinity Village is saving money and improving care, and VitalHub has a scalable product that has already caught the attention of other long-term care providers in the region. There is also great potential for a system-wide benefit. If DOCit were implemented in long-term care homes across the province, data on patterns of care, incident trends and other valuable information could enable the evidence-based refinement of policies and practices over time.

VitalHub is an example of a small enterprise that has benefitted greatly from the IPPCD program. VitalHub continues to grow through a combination of organic growth and acquisitions. At the beginning of the program, VitalHub had 11 employees. Currently it has just under 50 employees, the result of acquiring other companies.

Innovation partnerships show great promise, and the co-design process can produce good solutions. Not every challenge is suited for an innovation partnership, but it provides a promising way of tackling complex challenges. Complex challenges have high uncertainty about both the nature of the problem and how to produce desired results. The uncertainty of a complex challenge demands a different approach, and the potential gains of a solution are worth the investment. The exploration of the issue, the development of options, and the generation of permissions and organizational conditions are all elements that take time. What develops is a function of high trust and a willingness to come up with something different from what both the healthcare provider and vendor have done in the past. As more organizations experiment with innovation partnerships, we can expect to see many more interesting and exciting innovations that benefit both patients and healthcare providers.