



- DENNIS GIOKAS -

## GOING THE EXTRA MILE

*Interoperability is key  
to EHR development  
in Canada*

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Today, there is consensus - in Canada and many other parts of the world - about the value of health information technology in the healthcare industry. There is agreement that this technology must be founded on interoperability. It is no longer acceptable that while banks can share financial information between Mumbai and Burnaby, B.C., we cannot share health information across University Ave. in Toronto.

Think about it. Would you embark on building a multi-billion-dollar set of roads and bridges without construction drawings and standards? What if England and France had attempted to connect their respective ends of the Channel Tunnel only to find that they did not line up midway under the English Channel? In a similar vein, we should not embark on a solution of this magnitude without pan-Canadian agreement on what it takes to achieve interoperability - a common blueprint and common standards.

Architecture and standards, two of the key elements in achieving interoperability, can bring benefits to all the key stakeholder groups in the healthcare system.

- Vendors can develop products, based on established norms that meet the needs of a broad spectrum of buyers. This means more cost-efficient development and less custom systems integration.
- Healthcare regions and provincial governments can find it easier to link hospitals and regions by having "road maps" to guide them and standards to facilitate interconnection.
- Ultimately, healthcare providers will be able to access the information they need whether it is sitting across the street or across the country, resulting in better quality care and improved safety for patients.

### Laying the groundwork for interoperability

The key to achieving interoperability is having all parties concerned working from the same "playbook." Canada Health Infoway has developed such a "playbook" - the Electronic Health Record Solutions (EHRS) Blueprint. The Blueprint allows jurisdictions to develop systems that meet their own priorities, with the assurance that all shared components will be compatible. This approach also encourages vendors to develop commercial off-the-shelf solutions that conform to the architecture. Infoway's EHRS Blueprint underwent a major revision and was made available to the general public in February 2006. Interested parties can join Infoway's EHRS Blueprint Evolution on-line discussion forum by registering at the following web address: <http://forums.infoway-inforoute.ca/EBE/>

The updated Blueprint contains such features as refined information on its use within the context of the whole health enterprise including key economic drivers, documentation of key requirements of an EHR, and storyboards and use cases which document clinical activities - including public health surveillance and telehealth. There is much new material on the services architecture and proposed EHR deployment models necessary to meet varying jurisdictional needs. Potential new applications made possible by the EHR are highlighted. All of these are tied together by the documentation of interoperability profiles that define how point-of-service applications interact with the EHR.

The issue of privacy and the need for common architecture to support and ensure confidentiality is an integral part of any interoperable system. Infoway's Privacy and Security Architecture was released recently and has been widely adopted by Canadian jurisdictions. This first-ever definition of privacy and security requirements for an interoperable EHR, as well as the architecture

required, has already been integrated into Requests for Proposals for drug, diagnostic imaging and interoperable EHR projects in several jurisdictions. All of this material is part of the Blueprint update as well.

*Infoway* has published two summaries of the EHRS Blueprint - one covering the general solution architecture and one specific to the privacy and security architecture. These 20-page documents provide a business perspective of the conceptual business and technical architecture of an interoperable EHR. Both of these are available on *Infoway's* KnowledgeWay and can be accessed through our website at [www.infoway-inforoute.ca/](http://www.infoway-inforoute.ca/)

## Standards facilitate interoperability

Working to deploy a pan-Canadian Electronic Health Record (EHR) across Canada means that *Infoway* needs to promote standardization across healthcare information systems. This will facilitate interoperability as well as simplify deployment of solutions and increase the rate of adoption by end users, such as healthcare providers. Accordingly, *Infoway* has set up a Standards Collaboration Process to guide and govern the establishment of pan-Canadian EHR standards for *Infoway* investments.

The EHR Standards Collaboration Process involves those jurisdictions, standards-related organizations, healthcare professionals and vendors that will build, operate and use an interoperable EHR. The process will establish pan-Canadian standards for *Infoway* investments through collaboration and consensus. Its primary focus is on information and technology standards. *Infoway* has established a set of guiding principles for

the process. These include the need to leverage established standards wherever possible and practical, to ensure standards initiatives are driven by the business of health care, to refine standards within the context of early adopter implementations, and to work with other existing standards organizations to achieve pan-Canadian standards for the EHR environment.

*Infoway* has already made some progress in the standards area through leveraging the Health Level 7 version 3 (HL7 v3) messaging standards which is currently used as a benchmark in North American health services and is becoming the desired messaging standard of choice internationally for countries working towards EHRs. Without standardized messaging - the storage and retrieval of information such as a lab test - a complete patient health profile cannot be possible. For example, the system that generates and stores the lab test in the EHR needs to do it in such a way that all other systems (specifically their users) can read that record and understand it. Thus a treating physician will be able to retrieve complete, correct, timely and interpretable data to facilitate effective diagnosis and speed access to quality care. Accordingly, all new messaging standards being developed with *Infoway* investment funds are being developed using the HL7 v3 messaging standards.

Clinical terminology is another area where standards come into play. Clinical terms can vary from one information system to another, and from one clinician to another, again creating confusion and delaying effective diagnosis and treatment. The Systematized Nomenclature of Medicine Clinical Terms, known as SNOMED CT, is an example of a standard terminology for core EHR information. SNOMED CT is known as a reference terminology. It is a set of

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concepts, descriptions and relationships of clinical terms independent of human language. Rather than storing textual descriptions of concepts such as symptoms and diagnoses in the EHR, codes are stored. This provides a more effective means of storing, sharing and analyzing clinical data. A reference terminology such as SNOMED-CT is essential for decision support and patient safety.

## Conformance creates a win-win situation

Standards conformance is critical for all concerned in the drive to establish a pan-Canadian EHR - vendors, jurisdictions and end users alike. *Infoway* and Canada are not alone in this drive for conformance. In the United States, the US Certification Commission for Healthcare IT states that its mission is to accelerate adoption of robust, interoperable health IT "by creating an efficient, credible, sustainable mechanism for the certification of HIT products." In the United Kingdom, the National Health Service defines IT requirements and vendors must go through a third-party testing process to prove conformance in order to get a contract. Australia has a Healthcare Messaging Lab that tests and certifies electronic healthcare solution messaging to ensure conformance. In Scotland, Dr Kenneth Robertson of the Scottish Executive Health Department speaks about "the absolute need for ruthless standardization."

In Canada, conformance with the standards *Infoway* and its partners are building is key for project funding. Without requiring conformance, standards are a hollow shell and interoperability cannot be achieved.

Benefits of conformance for vendors include increased efficiency and credibility, lower testing costs, greater return on investment and better access to a growing market. For the buyer, conformance means they can be confident that the electronic solutions they purchase will meet their needs, ensure their interoperability with other systems, enhance the value of their electronic health solution and ensure privacy and security concerns are met. Conformance to standards means a win-win situation for all concerned and will result in a truly interoperable EHR that can improve quality of care, access to care and the productivity of our healthcare system.

Given the number of vendors and their products currently on the market and the need for efficient sharing of patient data, it is imperative that the interoperability of vendors' products be assured when implementing EHR solutions in Canada's 14 federal, provincial and territorial jurisdictions. With a view to assisting vendors in determining interoperability and the success of their technology within an EHR setting, Canada Health *Infoway* and the Centre for Global eHealth Innovation recently launched the "eHealth Collaboratory." Located in the Centre for Global eHealth Innovations' facilities in Toronto, the Collaboratory allows vendors to evaluate their products' interoperability and usability with complementary products all within a simulated clinical setting.

Another significant interoperability-related initiative in which *Infoway* was involved was the founding of Integrating the Healthcare Enterprise (IHE) Canada to facilitate sharing of patient information across different facilities. IHE Canada brings together a large group of volunteer experts and is a catalyst in promoting interoperable healthcare systems and clinical data. This work takes us one step closer to fulfilling the vision of an effective Electronic Health Record in Canada.

Architecture and standards are not the be-all of interoperability. True interoperability is dependent on many other factors such as adequate financing, stakeholder buy-in, governance, trust and resolution of data ownership issues.

Accordingly, in parallel with its architecture and standards work, *Infoway* is also investing in dozens of projects across the country to put the notion of interoperability into action and help deal with some of the factors mentioned above. **(Please see sidebar "Diagnostic Imaging Systems: Interoperability Success Stories")**

Interoperability is more than just a noble cause. It is a critical factor in renewing our healthcare system. Without interoperability, there can be no Electronic Health Record (EHR) and information will continue to be trapped in silos, to the detriment of healthcare providers and patients.

Like many important issues, interoperability is often referred to in these terms: "I am all for it, as long as it is not too much trouble for me." Certainly, we need to get past this attitude. Interoperability is a shared responsibility and getting there does mean, initially, some additional cost, effort and inconvenience for jurisdictions, technology buyers, vendors and healthcare providers. We must work together to go the extra mile. As professionals in the healthcare information technology industry today, we should think about the legacy we will leave. We need to "bring the vision of the EHR to life" for the benefit of Canadians.



### Diagnostic Imaging Systems: Interoperability Success Stories

Two *Infoway*-funded diagnostic imaging projects - one with the Thames Valley Hospital Planning Partnership (TVHPP) in Southwestern Ontario and one with British Columbia's Fraser Health Authority (FHA) - are clear examples of how to build an interoperable system and make it work.

Diagnostic Imaging (DI) Systems enable healthcare providers to electronically store, manage, distribute and view patient radiology reports and images entirely in digital format without any need for X-ray film. To be fully effective, these systems must be supported by modern digital archiving capabilities known as Picture Archiving and Communications Systems (PACS). These systems require a significant investment and would be out of the reach of most small hospitals and health authorities in Canada.

At TVHPP and FHA, by pooling resources to share a single PACS DI repository and using interoperable DI systems, the hospitals are able to share diagnostic imaging across their regions, thereby easing access to digital images for radiologists and other authorized clinicians and helping to improve the quality and efficiency of diagnosis and effective care.

The TVHPP initiative is of particular interest as they achieved their goal by setting up a shared governance organization to carry the project through to completion. As of January 2006 all eight hospitals are now able to share diagnostic images and reports. FHA also completed connection of its twelve hospitals to its shared DI system at the same time.

The success of these projects has been documented in *Infoway's* DI Toolkit, one of four toolkits *Infoway* makes available to assist in the implementation and replication of interoperable systems across Canada.