



- JANE CURRY -

# Sustainability, Jurisdictions and Interoperability

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**N**o single jurisdiction can affordably build and sustain all the components of a health infostructure to support their own health system - and that includes the jurisdiction of Canada as a nation. The health system can no longer be seen as a structure entirely within the control of a single jurisdiction - health problems know no boundaries and the solutions to health problems are beginning to be addressed at a global level. *The evolution of the health system and the health infostructure is an inevitable evolution of collaboration and cooperation internationally, nationally, provincially, locally and personally.*

## Jurisdiction and Accountability

Jurisdiction is a complex but essential concept. Jurisdiction represents the scope of control and the degree of autonomy to make independent decisions. An individual person has a degree of autonomy to act within the constraints of their accepted roles. Organizations too have roles and constraints on their actions within these roles. The accountability for action follows the delegated "chain of authority" from one organization to another down to specific positions filled by people accountable for their actions in their roles. This traditional hierarchal form of accountability is well understood. People acting within the forms of hierarchal jurisdiction today operate most existing processes. The expectations and constraints of this form of accountability are often taken for granted, and often are not explicitly managed or recorded.

But not all decision-making authority is hierarchal in nature. Jurisdiction implies someone being specifically and formally empowered to act within their sphere of control, but subject to specific boundary conditions, whether those conditions are based on a geo-political global subdivision, a subject area, specific circumstances or some combination. All of these boundary conditions exist within a convoluted web of agreements between people that have evolved over time through many different processes with varying degrees of formality. The result is not a coherent structure of explicitly articulated "rules of engagement" that everyone in the world has signed off on. Many "jurisdictions" have been formed with very fuzzy and overlapping boundary conditions.

*Jurisdictional accountability makes development of computer systems to support human decision making difficult, and requires that both the formal and informal rules that guide human and computer interaction be made explicit.* This becomes even more important in a pan-Canadian health infostructure, where it is necessary to share information across jurisdictional boundaries.

## Jurisdictional Interoperability

To support both the demands of jurisdictional accountability and

the privacy and confidentiality of personal information, operations that cross jurisdictional boundary lines must have explicit negotiated agreement by all affected parties so that the computers can implement the agreements. This is the essential meaning of **interoperability**.

The health infostructure is expected to support the increasingly interdependent nature of decisions required to develop a "seamless" health system that transcends the boundaries of jurisdictions. This means that any of the decision-making processes that are expected to be automated must be made explicit with all dependent data made available at each decision point. It further means that jurisdictions will need to agree on these decisions and on the information required to make them.

*Interoperability among computer systems requires co-operation and agreement by all parties that have a stake in the outcome of the decision. In health infostructure terms, these agreements are the standards that constrain choices for individual action but enable collective action without having to explicitly negotiate every interaction between parties for every single transaction. The standards are continuously evolving to both meet the need for more co-operative actions and more precise actions, and to take advantage of more sophisticated computer solutions.*

Historically, agreements have been implemented on a case-by-case basis between the parties needing to agree. Over time, processes have evolved that bring more people together to develop agreements that achieve interoperability covering more circumstances. The processes that have evolved to produce standards by be either formal or informal and are often a mixture of both.

Processes are the way work is organized to get done. Processes can be within the scope of a project which is time limited. Or processes can be within the scope of an ongoing program. Typically, processes are developed within the scope of a single organization that has control of all the rules, roles and resources required to get the work done. In many organizations, these processes may be so ingrained that there is no record of what they are or the rules that constrain them. People are adept at dealing with ambiguity and inferring information in context and are quite capable of learning by doing and passing knowledge from one person to another over time. These informal processes can be quite effective.

## Making Process Rules Explicit

Adding automated processing may increase efficiency and effectiveness, but requires making all the steps and information in the process explicit. Much of the cost of developing applications is in the task of eliciting the tacit knowledge of existing processes,

their whys and wherefores from the people who do the work, and then making the tasks, information and rules explicit. Designing new processes to be automated means: making new tasks, information, and rules explicit; validating with expected users; and then transforming the agreed on specifications into automated functionality. In an increasingly dynamic environment, designing for continuous change is the only cost effective solution.

## Information Sharing Between Jurisdictions

Any process that crosses jurisdictional boundaries is potentially part of the health infrastructure. Processes which capture data that is used beyond the capturing organization is definitely part of the health infrastructure, as are all the processes that transmit, transform or present information that supports decision making. A great deal of existing work involves re-collecting data or information that has already been collected but is not readily available in a form that is useful for the new process. One of the primary potential benefits of the health infrastructure is to avoid re-collecting, by sharing information already collected, transforming if necessary, under explicit agreements that constrain what information is collected, with whom it is shared and for what purposes it is used. Automating these data collection processes and incorporating the transformation and presentation into new processes is technically and cost effectively feasible.

## Collaboration and Negotiation ARE Standards

It will, however, require collaboration. Collaboration means a group of peers, whether individuals or organizations, working together to meet common needs. Collaborating is a new way of working and

requires new skills. Because many of the jurisdictions that need to work together to develop the health infrastructure are peers, collaborating will become a more prominent way of working. The hierarchal arrangement of processes that matches delegated chains of authority will continue to exist within jurisdictions.

However, many health processes involve co-operation between jurisdictions at different levels. Ongoing co-operation relies on negotiated agreements that spell out the terms and conditions of all parties involved. These agreements have typically been expressed as signed paper documents. As integration of the health infrastructure evolves, more of these agreements will become automated so that the terms and conditions can be enforced through the automated processes that support the health system. In effect, explicit process and information agreements are standards.

These collaborative processes cannot be managed on a "project by project" basis. Although projects can be struck to effect changes, ongoing communication among all parties will be required to know what to change, when to change, the expected impact of change, and the costs and benefits of doing so.

Successfully creating and sustaining a Pan-Canadian health infrastructure will require the development of essential roles, rules, relationships and processes to enable the co-operative communication that is the essence of interoperability. These new communication processes can then be enabled by agreements that can be translated into automated functionality to ensure information is appropriately shared to achieve the agreed on purposes.

The international standards community has recognized the

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requirement for interoperability standards for information systems and has begun to apply best practices to the health care field. Learning from other industries, the Standards Development Organizations (SDOs) focused on health informatics are beginning to collaborate rather than compete. SDOs are learning to work together so that standards emerge that are aligned and mutually supportive, rather than overlapping and conflicting.

Opportunities to participate abound. For educators and researchers opportunities exist to participate in the early stages of working out and testing new information representation and sharing techniques. Health service program managers and their collaborating vendors can participate in the development and approval of the actual interchange standards supporting system-to-system communication. Vendors of health information systems can participate in demonstrations that highlight the benefits of interoperability and offer insights to the issues that remain to be resolved. Existing health services operations jurisdictions will be able to evaluate their existing infostructures and register their capabilities to interoperate by documenting the degree of alignment to existing and emerging standards.

*Infoway* has established a Standards Collaboration Process that produces pan-Canadian information and interoperability standards for all *Infoway* sponsored projects. As well *Infoway* has established an online collaboration forum called e-Health KnowledgeWay that provides an opportunity to review and comment on emerging interoperability standards. Recently, *CIHI's Standards Liaison Department* instituted a process to engage interested individuals in early review of ISO TC215 work items. These Canadian Expert Task Groups are actively influencing health information standards under development globally and are also providing essential feedback to determine whether and how to adopt/adapt ISO health information standards for use as national standards. HL7 Canada is actively working to influence the development of HL7 health information exchange standards, either in conjunction with *Infoway* sponsored projects, or by any HL7 Canada member interested in the ongoing evolution of these standards. *CIHI's Partnership for Health Information Standards* is also providing opportunities to collaborate and influence emerging information standards.

The effort to actively participate needs to be acknowledged - it takes time, effort and attention that is always in short supply. Without the recognition, sanction and support at the executive level in the multiple jurisdictions, the necessary persistent attention is difficult to achieve. Short-term jurisdiction specific issues tend to outweigh multi-jurisdiction objectives, especially when the benefits appear to be long term and diffused and the costs are near term and local.

Collaboration mechanisms continue to evolve to provide the focused attention across jurisdictions. The Western Health Information Collaborative and the Health Infostructure Atlantic organizations encourage multi-provincial initiatives that include evaluating, adopting or adapting and even developing health information standards.

More such initiatives will be required. In particular, opportunities are needed for professional associations to align clinical guidelines (which are clinical process standards) and emerging information standards to increase the comparability and congruence of health information recording and use. HL7 is promoting the creation of clinical Special Interest Groups (SIGs) to provide just such forums. Current clinical SIGs include Genomics, Anesthesia, Patient Safety, Pediatric and Public Health and Emergency Response with new clinical SIGs being created with every Working Group.

Coordination among the different standards development organizations and initiatives is also beginning to emerge, both

within Canada and at the International level. Active "harmonization" efforts among once competing SDOs are underway and gaining steam. The goal is an international community of standards development organizations producing families of coherent information standards that produce a congruent whole and remain sustainable as the global healthcare industry evolves.

## Conclusion

Interoperability among information systems in the health industry is a new "hot topic" with lots of discussion but relatively little agreement on what it means and how to make it happen. The idea that interoperable information systems will enable a sustainable health system is compelling, especially in an environment with an increasing rate of change in a health system that is already under pressure. Interoperable information systems require co-operative people working together with common objectives. Key concepts include:

- Jurisdiction means scope of control and exists at multiple levels - from personal through organizational, regional, provincial to national - but with overlapping boundaries of geography and responsibility
- While people can negotiate interactions across jurisdictional boundaries informally, information systems must have explicit processes and information to inter-operate
- Cross-jurisdiction processes require shared governance with collaboration among all affected stakeholders - there is no single decision maker who can say "do it because I said so"
- Designing information systems to enable continuous change is technically feasible and a new information technology industry best practice
- Cost effective change management of inter-operative information systems requires alignment with continuously evolving information and system standards as applications and the health processes they support change
- Active participation in standards evolution takes real work but is a necessary investment in the sustainability of the health infostructure
- Participating in the often messy process of collaboration and compromise is the only way to ensure the resulting interoperability standards can be implemented with the least cost and greatest benefit to the health system as a whole
- Standards Development Organizations are beginning to work together
- Opportunities to participate - to learn and to influence - abound

