

**Electronic Health Information and Communication Technology Projects
March 2010 Performance Evaluation**

Final Report

March 2010

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Table of Contents

Executive Summary.....	i
1. Introduction	1
2. Profile of Canada Health Infoway	3
2.1 Background.....	3
2.2 <i>Infoway's</i> Mission, Vision and Goal.....	4
2.3 <i>Infoway's</i> Approach	5
2.4 2007 Funding Agreement.....	6
3. Evaluation Approach and Methodology.....	10
4. Findings and Specific Conclusions	11
4.1 "Footprint" of the Investments – Reach, Roll-Out and Results	11
4.1.1 Reach – Distribution by Program and Jurisdiction.....	11
4.1.2 Roll-Out – Allocations, Approvals and Funds Spent	13
4.1.3 Results Achieved – Overall, by Program and by Jurisdiction	15
4.1.4 Summary.....	18
4.2 Compliance with Section 4.2 – Use and Purpose of Grant Funding.....	18
4.3 Compliance with Section 5.1 – Six Principles of the Funding Agreement.....	19
4.3.1 Section 5.1.1 – Support Development and Use of EHICTs.....	19
4.3.2 Section 5.1.2 – Support A Publicly Funded Health Care System.....	20
4.3.3 Section 5.1.3 – Foster Collaboration	20
4.3.4 Section 5.1.4 – Support Interoperability	21
4.3.5 Section 5.1.5 – Adopt a Pan-Canadian Approach.....	22
4.3.6 Section 5.1.6 – Seek to Achieve Alignment of F/P/T and <i>Infoway</i> Investments.....	23
4.3.7 Summary.....	23
4.4 Progress against Section 5.2 – Six Outcomes in the Funding Agreement	24
4.4.1 Section 5.2.1 – Endeavour to Achieve Expected Outcomes in Annual Corporate Plans	24
4.4.2 Section 5.2.2 – Development of Reusable Health Information Building Blocks	25
4.4.3 Section 5.2.3 – Implementation of Interoperable Electronic Health Record Solutions.....	27
4.4.4 Section 5.2.4 – Development of Reusable Tools/Assets to Address the Human Factor in EHR Adoption.....	28
4.4.5 Section 5.2.5 – Development of a Pan-Canadian, Multi-Jurisdictional Approach.....	30
4.4.6 Section 5.2.6 – Privacy, Confidentiality and Security	32
4.5 Other Observations from Interviews	34
4.5.1 Design and Delivery	34
4.5.2 Partnerships and Relationships.....	34
4.5.3 Engagement and Communications.....	35
5. Overall Conclusions and Recommendation.....	36
5.1 Summary of Conclusions.....	36
5.2 Overall Observations and Recommendation.....	38
6. Management Response.....	39
Annex A: Case Studies	40
A.1 Case Study – Alberta HIAL and Event Repository (Shared Health Record-SHR) Implementation.....	40

A.2	Case Study – Patient Access to Quality Care (PAQC): New Brunswick Tertiary Telerehabilitation Project Phase II	43
A.3	Case Study – Diagnostic Imaging Projects in Ontario	46
A.4	Case Study – Evolution of the Standards Collaborative	49

Executive Summary

Background

This report presents the results of the March 2010 Performance Evaluation of Electronic Health Information and Communication Technology (EHICT) Projects for Canada Health Infoway (*Infoway*). These EHICT projects relate directly to *Infoway*'s 2007 Funding Agreement.

The objective of the Performance Evaluation was:

...to conduct a formative evaluation to measure *Infoway*'s overall performance in achieving the purpose of the funding as specified in section 4.2 and 5 of the funding agreement and in accordance with a Board-approved framework and timeline as specified in the 2007 Funding Agreement. The report needs to be submitted to the Board no later than March 2010 and made available to the public.

As stated in the Board-approved framework for the evaluation, the overall objectives for this evaluation were to meet the requirements as set out in the funding agreement:

- Verify compliance with the requirements as specified in section 4.2 (Purpose) and 5.1 (Principles) of the 2007 Funding Agreement; and
- Report on progress against the Outcomes (Section 5.2) including lessons learned.

Further, the evaluation answered some high level questions such as the following:

- Has the Grant Funding been solely used for the purpose of providing funding to Committed Patient Wait Time Guarantee (PWTG) jurisdictions or organizations to assist them in the development and implementation of EHICT projects?
- Are the appropriate strategies in place to achieve the outcomes with respect to EHICT funding as outlined in the 2007 Funding Agreement?
- Are the EHICT projects being managed in a cost-efficient and effective manner?
- Is *Infoway* making progress relative to its strategies with respect to EHICT projects?

The evaluation covered the full scope of *Infoway*'s investment activities within the \$400 million grant under the 2007 Funding Agreement. Therefore, it included all funding provided or committed to funding Committed PWTG jurisdictions or organizations within such jurisdictions to assist them to develop and implement EHICT projects. In practical terms, this meant assessing *Infoway*'s investment portfolio of projects in all jurisdictions over the 31-month period, from March 30, 2007 until October 31, 2009.

The investment portfolio under evaluation covers six investment programs that are specifically funded by the 2007 Funding Agreement. The six investment programs are:

- Diagnostic Imaging (DI);
- Drug Information Systems (DIS);
- Laboratory Information Systems (LIS);
- Interoperable Electronic Health Record Systems (iEHR);

- Public Health Surveillance (PHS); and
- Patient Access to Quality Care (PAQC).

Infoway's other four investment programs – Registries, Telehealth, Innovation and Adoption, and Infostructure – were out of scope for this evaluation.

Approach

The evaluation team followed three main lines of inquiry – document review, interviews with external and internal stakeholders, and case studies. The documents reviewed included corporate reports and material (e.g., corporate plans, annual reports, presentations to the Board of Directors), program reports and material (e.g., program descriptions, strategies and plans) and project reports and material (e.g., project plans and reports available through *Infoway's* project management system). The evaluation team also examined and built upon the 2006 Performance Evaluation of *Infoway*, the 2009 Performance Evaluation of Canada Health Infoway Public Health Surveillance Program, and the Chapter 4 on Electronic Health Records in the Fall 2009 report of the Auditor General of Canada.

Key informant interviews were conducted with 42 selected respondents representing: Deputy Ministers of Health (Members of the Corporation); members of *Infoway's* Board; Chief Information Officers (CIOs) (or equivalents) for federal, provincial and territorial governments as project sponsors; associations that are representative of industry vendors and partners; selected external leads for investment projects; external participants in supporting areas such as standards, privacy and project reference group; and *Infoway* management - senior executives, executive regional directors, group directors, group program directors, executive directors and other senior managers.

Case studies were prepared to provide more detail on specific areas and impacts/results of *Infoway's* investment.

Evaluation Findings and Conclusions

Based upon our findings, as discussed in Section 4 of the main report, the evaluation team reached the following conclusions:

- *Infoway* complies with Section 4.2 on the use and purpose of the Grant Funding under the 2007 Funding Agreement. The analysis of the “footprint” of the 2007 Funding Agreement demonstrates that funds were used for the purpose of providing funding to Committed PWTG jurisdictions or organizations located within them, and used to assist them to develop and implement EHICT projects.
- *Infoway* is compliant with the Principles outlined in Section 5.1 of the 2007 Funding Agreement. These principles are:
 - Support of the development and use of EHICTs
 - Support a publicly funded health care system consistent with the Canada Health Act
 - Foster collaboration
 - Support interoperability
 - Adopt a pan-Canadian approach
 - Seek to achieve alignment of F/P/T and *Infoway* investments.

- *Infoway* has met or made progress on those Outcomes outlined in Section 5.2 of the 2007 Funding Agreement. These outcomes map to investment programs that were allocated funds. Specific conclusions for each outcome are listed below:
 - Based upon its governance and management practices, and the “footprint” being achieved from the 2007 Funding Agreement, *Infoway* has and continues to perform strongly against the outcome – Endeavour to Achieve Expected Outcomes in Annual Corporate Plans.
 - Through the 2007 Funding Agreement, *Infoway* continues to contribute to the outcome of developing reusable Health Information Building Blocks, both in principle and in practice. *Infoway*’s ongoing work on the Blueprint and leadership around standards will only increase the support of re-use. Development of standard implementation guides and support for standardized conformance testing for new systems could also help reusability and adoption.
 - Through the allotment of funds from the 2007 Funding Agreement, *Infoway* has made a strong commitment to furthering the implementation of iEHR solutions. Twenty projects (both new and ongoing) have been approved for funding. These will support progress towards *Infoway*’s iEHR implementation targets and overall 50% goal for 2010. *Infoway* continues to work with jurisdictions on impediments, such as privacy legislation, to iEHRs. Ongoing revisions of the Blueprint will be needed to support the evolution of the health care system.
 - To date, the investment of funds from the 2007 Funding Agreement has had only limited impact upon the development of re-usable tools/assets to address the human factor. The major reason is that the Innovation and Adoption investment program was not allocated funds from the 2007 Funding Agreement. The projects in the six investment programs where funds were allocated have made use of existing reusable tools and assets, much in the same way all other projects have done.
 - During the course of the last 2 ½ years, through its overall corporate initiatives as well as projects funded under the 2007 Funding Agreement, *Infoway* has continued to develop and refine its pan-Canadian, multi-jurisdictional approach to its work. New opportunities have been developed (e.g., certification) while other have been refined (e.g., privacy, blueprint, stakeholder engagement). Useful lessons have been learned from the Panorama Public Health Surveillance project regarding development and roll-out of pan-Canadian systems.
 - *Infoway* has applied its standard corporate approach regarding privacy, confidentiality and security to its work under the 2007 Funding Agreement in the same manner as it has for the rest of its work. These have led to compliance with all applicable laws regarding the protection of privacy, confidentiality and security of personal health information, as well as appropriate privacy principles. Privacy issues will continue to be a challenge to pan-Canadian and inter-jurisdictional interoperability of EHRs. *Infoway* continues to enable the exploration of these issues.

With regard to the additional high level questions that the Board directed the evaluation to answer, the evaluation team reached the following conclusions:

- Has the Grant Funding been solely used for the purpose of providing funding to Committed PWTG Jurisdictions or organizations to assist them in the development and implementation of EHICT projects?
 - This question relates back to compliance with Section 4.2 (Purpose) in the Funding Agreement. As noted above, *Infoway* is in compliance with this requirement.
- Are the appropriate strategies in place to achieve the outcomes with respect to EHICT funding as outlined in the 2007 Funding Agreement?
- Are the EHICT projects being managed in a cost-efficient and effective manner?
- Is *Infoway* making progress relative to its strategies with respect to EHICT projects?
 - The “footprint” analysis of the use of the 2007 Funding Agreement led to the following findings that support positive responses to each of the questions above.
 - The funding under the 2007 Funding Agreement has been used to invest in EHICT projects within six of *Infoway*’s investment programs. This constitutes \$370 million of the \$400 million total funding. The other \$30 million is being spent, on an annualized basis, on associated governance and administration costs. Funding is being directed by investment strategies for each of the investment programs.
 - The EHICT projects include those with jurisdictions and those which deal with pan-Canadian and inter-jurisdictional matters. The latter enable progress on the former and support the principles of the funding agreement.
 - The funding under the 2007 Funding Agreement was quickly allocated to the investment programs and then committed to approved projects in the six investment programs. This funding was the major source of funding for these six investment programs from 2007 to the current date, and has supported projects in every jurisdiction. There is a lag in actual funds spent, which relates to the gated funding milestones and the e-health context and plans in each jurisdiction. This lag appears to be similar for projects funded under the 2007 Funding Agreement as for the previous funding agreements.
 - The projects funded under the 2007 Funding Agreement are contributing to *Infoway*’s progress in meeting its overall goal and its key performance indicators for each of the six investment programs. However, because of time lags, the majority of impact of these projects will be felt in coming years.
 - Specifically related to performance measurement and the telling of its performance story, *Infoway* is better positioning itself. The KPIs for each of the six investment program are appropriately more reflective of the demand side than are the targets that have been presented in Corporate Business Plans. The KPIs are well aligned with the overall “population-based” goal.

Overall Observations and Recommendation

The findings and conclusions of this performance evaluation lead to the following three overall observations and one recommendation:

- Observation 1: *Infoway* should continue its current program of investments, approaches and processes related to the 2007 Funding Agreement. Improvements and refinements to approaches and processes that derive from work related to this funding agreement, or more broadly, from *Infoway*'s overall work, should continue to be applied to work funded under the 2007 Funding Agreement.
- Observation 2: The sustainability of results/outcomes from projects funded under the 2007 Funding Agreement has a dependency upon funding announced in Budget 2009, but not yet provided to *Infoway*. Health Canada should clarify the future funding situation to *Infoway* as soon as possible, so that expectations for jurisdictional sponsors and *Infoway* are clear.
- Observation 3: The Auditor General of Canada's report recommends that *Infoway* report on adoption and use of the EHR by health care providers, in addition to availability of an EHR, as part of *Infoway*'s overall goal. The findings of this evaluation are consistent with the AG's recommendation.
- Recommendation 1: *Infoway* should revisit and update its Vision 2015 to reflect changes since its initial publication. Any revisions should drive down through *Infoway*'s Corporate Business Plan and linkages should continue to be made, where appropriate, with the outcomes in the 2007 Funding Agreement.

1. Introduction

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The objective of the Performance Evaluation¹ was:

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The evaluation covered the full scope of *Infoway*'s investment activities within the \$400 million grant under the 2007 Funding Agreement. Therefore, it included all funding provided or committed to funding Committed PWTG jurisdictions² or organizations within such jurisdictions to assist them to develop and implement EHICT projects. In practical terms, this meant assessing *Infoway*'s investment portfolio of projects over the 31-month period, from March 30, 2007 until October 31, 2009.

¹ *March 2010 Performance Evaluation of Infoway's EHICT Projects, Framework and Timeline*. Approved by the Board, September 23, 2009.

² All jurisdictions agreed to be Committed Patient Wait Time Guarantee jurisdictions just prior to the signing of the 2007 Funding Agreement.

The investment portfolio under evaluation covers six investment programs that are specifically funded by the 2007 Funding Agreement. The six investment programs³ are:

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- Drug Information Systems (DIS);
- Laboratory Information Systems (LIS);
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- Public Health Surveillance (PHS); and
- Patient Access to Quality Care (PAQC).

In summary, the focus for the evaluation was upon evaluating *Infoway*'s performance in achieving the purpose of the funding stated in section 4.2 of the 2007 Funding Agreement, in accordance with the principles established in section 5.1, and against the outcomes committed to in section 5.2.

A profile of *Infoway* is given in the next section of this report. An overview of the approach and methodology to the evaluation is provided in Section 3. Evaluation findings and specific conclusions are discussed in Section 4. Overall conclusions, observations and recommendations are made in Section 5.

³ *Infoway*'s other four investment programs – Registries, Telehealth, Innovation and Adoption, and Infostructure – are out of scope for the evaluation because they have not been funded by the \$400 million allocation in the 2007 Funding Agreement.

2. Profile of Canada Health Infoway

2.1 Background

Canada Health Infoway Inc. was incorporated by Letters Patent on January 22, 2001 under Part II of the Canada Corporations Act and commenced active operations on March 21, 2001. The Corporation was mandated and funded to deliver on commitments made by Canada's First Ministers. Key events are listed below⁴.

- In support of a First Ministers' agreement, the Canadian federal government announced on September 11, 2000, that it would "invest \$500 million immediately in an independent corporation mandated to accelerate the development and adoption of modern systems of information technology, such as electronic patient records, so as to provide better health care".
- As a result, a \$500 million federal investment was granted in March 2001 to Canada Health Infoway Inc., a not-for-profit organization. The Deputy Ministers of Health in Canada's federal, provincial and territorial jurisdictions are the 14 Members of *Infoway*. *Infoway's* initial priority was to foster and accelerate the development and implementation of effective, interoperable electronic health solutions.
- In support of the 2003 First Ministers' Accord on Health Care Renewal, the 2003 federal budget (February 18, 2003) announced the provision of an "additional \$600 million to Canada Health Infoway to accelerate the development of EHRs, common information technology standards across the country, and the further development of telehealth applications, which are critical to care in rural and remote areas."
- The Funding Agreement was put into place March 31, 2003 with regard to this \$1.1 billion total investment. It outlined 12 outcomes expected of *Infoway* in its use of the investment. These outcomes were the focus of the 2006 mid-term performance evaluation of *Infoway*.
- In March 2004, an additional \$100 million was granted to *Infoway* to support the development of a pan-Canadian health surveillance system. This funding and *Infoway's* associated program and activities related to Public Health Surveillance Systems were the focus of a 2009 performance evaluation of *Infoway's* public health surveillance program.
- On March 30, 2007, the Government of Canada signed a "Funding Agreement" (\$400M) with *Infoway*. The purpose of this additional funding was to provide funding to Committed PWTG jurisdictions or organizations to assist them in the development and implementation of EHICT projects. The allocation strategy for the \$400 million EHICT funding, approved by *Infoway's* Board of Directors, focused on two key directions set in *Infoway's* 2015 Vision strategy – first, completing the current job, and second, catalyzing health system innovation. Investments in the existing programs were intended to support sustainable and ongoing wait time reductions by

⁴ A more complete historical background is available at Health Canada's Internet Site: <http://www.hc-sc.gc.ca/hcs-sss/ehealth-esante/infostructure/hist-eng.php>

improving access, quality and productivity in the delivery of health care to Canadians through the implementation and acceleration of *Infoway's* electronic health record investment programs. The EHICT funding allocated to a program for Patient Access to Quality Care was intended to serve as a catalyst for information technology (IT) demonstration projects for health care innovation in the years to come. A blue ribbon panel composed of pan-Canadian health care leaders selected six demonstration projects from a nation-wide call for jurisdictional proposals. The selected projects would leverage existing technologies and demonstrate how technology can contribute to transformative change that will improve patients' access to quality care. This 2007 Funding Agreement is the focus of the performance evaluation which is the subject of this report.

- Budget 2009 provided another \$500 million in funding for *Infoway*. *Infoway* has planned how this funding would be allocated to complete current work, as well as launch new programs in electronic medical records and consumer health solutions. However, as of February 2010, this funding had not yet flowed through a funding agreement with the Government of Canada.
- In the Auditor General of Canada's Fall 2009 report, a chapter was devoted to audit findings concerning electronic health records, and more specifically, *Infoway*. The findings of the audit were positive, noting that *Infoway*, "has accomplished much in the eight years since its creation," in terms of compatible EHRs, partner and stakeholder engagement, governance, risk management and management controls. Suggestions were made for strengthening controls for contracting, going beyond ensuring compliance with the blueprint and standards to conformance testing to ensure standards are implemented, and reporting not only on percentage of Canadians living in jurisdictions where an EHR is available to their health care professionals, but also on actual adoption or use of completed systems.

2.2 *Infoway's* Mission, Vision and Goal

Infoway has articulated its mandate through its vision⁵, mission and overall goal⁶.

Vision: Better care through timely access to secure health information when and where it's needed.

Mission: To foster and accelerate the development and adoption of pan-Canadian electronic health information systems. These are systems with compatible standards and communications technologies, providing tangible benefits to Canadians.

Goal: By 2010, every province and territory and the populations they serve will benefit from new health information systems that will help transform their health care delivery system. Further, by 2010, the electronic health records of 50 per cent of Canadians and by 2016, those of 100 per cent of Canadians, will be available to their authorized health care practitioner.

⁵ Vision stated on *Infoway's* website. <http://www.Infoway.ca/lang-en/about-infoway>.

⁶ Mission and goal stated in *Infoway's Corporate Business Plan 2009/2010, Making Health Information Work Better for Canadians*, p. 2 and 6 respectively.

Infoway's direction is informed by its Vision 2015⁷ exercise that engaged a broad range of stakeholders across Canada. Vision 2015 identified five priorities⁸ to provide Canadians and their health care providers with timely, appropriate and secure access to the right information when and where it is needed:

1. Finish what's been started in electronic health records and public health surveillance;
2. Implement electronic medical records in physician offices and physician order entry systems in hospitals;
3. Enable public visibility for wait times and access;
4. Facilitate patient self-care and empowerment; and
5. Trial and perfect more advanced functionality in wait times and chronic disease management.

The investments associated with the 2007 Funding Agreement align, in particular, with the first, third and fifth priorities.

2.3 *Infoway's* Approach

Infoway describes its overall approach as follows⁹:

Canada Health Infoway (*Infoway*) is working in partnership with the country's federal, provincial, and territorial governments to create and implement electronic health record (EHR) systems that will build a legacy of health care distinguished by improved access, quality and productivity.

There are three core facets to *Infoway's* approach:

1. **Strategic investment:** *Infoway* invests in EHR programs focused on the development of innovative technology to enable the delivery of more efficient, more effective health care for all Canadians no matter where they live in our vast country. *Infoway* evaluates EHR projects to determine which will receive funding and works with the provinces and territories to identify projects in line with Canada's vision for a pan-Canadian EHR system.

Projects are selected on the basis of established criteria. Once a project is selected, *Infoway* commits to providing up to 75 per cent of the eligible costs for planning and implementation, with the jurisdictional partner funding the balance. *Infoway* may fund up to 100 per cent on pan-Canadian initiatives.

2. **Gated funding:** To manage risk, *Infoway* uses a gated funding model. This means project funding is provided to our jurisdictional partners only when agreed-upon milestones are met. This approach ensures strong accountability from each member of the federal, provincial and territorial partnership for each specific EHR project.
3. **Leadership:** Approved EHR projects are jointly managed by *Infoway* and its partners in the public sector. *Infoway* provides leadership by establishing the strategic direction for Canada's EHR systems in collaboration with the jurisdictions.

⁷ *Vision 2015: advancing Canada's next generation of health care.*

⁸ Priorities as outlined in Board presentation, September 2007. Priorities 3, 4 and 5 are worded slightly differently in *Infoway's Corporate Business Plan, 2009/2010.*

⁹ Approach as described on *Infoway's* website. <http://www.infoway.ca/lang-en/about-infoway/approach>. The strategic pillars are also described in *Infoway's Corporate Business Plan 2009/2010*, p. 6.

Infoway's strategic pillars

Infoway's business model is helping Canada's provinces and territories accelerate the development of EHR systems for their citizens based on five strategic pillars:

1. **Participate in health care renewal.** *Infoway's* involvement with national, jurisdictional and local initiatives provides the opportunity to help strengthen health care in such areas as access to information, chronic disease management, patient self-care, wait time management, primary care, cancer care, mental health care, and Aboriginal health care.
2. **Collaborate with partners.** *Infoway* works with public and private sector partners to continue progress and alignment in strengthening Canada's health infostructure. This work is supported by the provinces' and territories' three-year jurisdictional electronic health record plans, joint investments and enhanced procurement initiatives.
3. **Target the investments.** *Infoway* continues to make significant progress in accelerating the implementation of electronic health record systems across Canada. Building on this success, *Infoway* continues to accelerate investment in, and replication of, systems supporting health transformation and innovation. *Infoway* also plans to target new investments in electronic medical records and consumer health solutions to support adoption of these emerging technologies by Canadian health providers and consumers.
4. **Support solution deployment.** To support successful implementation of electronic health record systems by its partners, *Infoway* continues to provide expertise concerning the health infostructure Blueprint, standards, privacy and security, replication and preferred pricing.
5. **Promote solution adoption and benefits realization.** *Infoway* continues to enable clinical leadership, advance best practices in the clinician adoption of solutions and support the measurement and realization of benefits.

2.4 2007 Funding Agreement

As noted in section 2.1, the purpose of the additional funding in the 2007 Funding Agreement was to provide funding to Committed PWTG jurisdictions or organizations to assist them in the development and implementation of Electronic Health Information and Communication Technology projects. The money was allocated, first, to completing the current job, and second, to catalyzing health system innovation. Specifically, as per the Board of Directors approval on May 30, 2007 and with the subsequent unanimous acceptance of the 2007/08 Corporate Business Plan by the Members of the Corporation, funding was allocated to the programs as follows:

- \$285 million to Electronic Health Records, specifically:
 - \$30 million for Diagnostic Imaging,
 - \$65 million for Drug Information Systems,
 - \$20 million for Laboratory Information Systems,
 - \$170 million for the Interoperability of Electronic Health Records;
- \$35 million for Public Health Surveillance; and
- \$50 million for the Patient Access to Quality Care [a new program].

As well, \$30 million was allocated over 5 years to funding of *Infoway's* associated governance and administration costs.

It is important to note the following contextual factors when reviewing these allocations and subsequent project approvals and actual expenditures:

- Investments in the Diagnostic Imaging, Drug Information Systems, Laboratory Information Systems, and iEHR programs, and the Public Health Surveillance program, made under the 2007 Funding Agreement were carried out in an integrated fashion building on existing investments and with new investments in the same programs. Therefore, the portion of the overall investment portfolio that is mapped to (funded under) the 2007 Funding Agreement includes new projects and, in the gated funding approach, new phases of projects that were funded by other funding agreements.
- Four current investment programs – Registries, Telehealth, Infostructure, and Innovation and Adoption – continue to be funded only under previous funding agreements, meaning that no projects in these programs were funded from the 2007 Funding Agreement.
- There is a time lag between each step – allocation, approval and expenditure. This will be explored more fully in section 4.1.

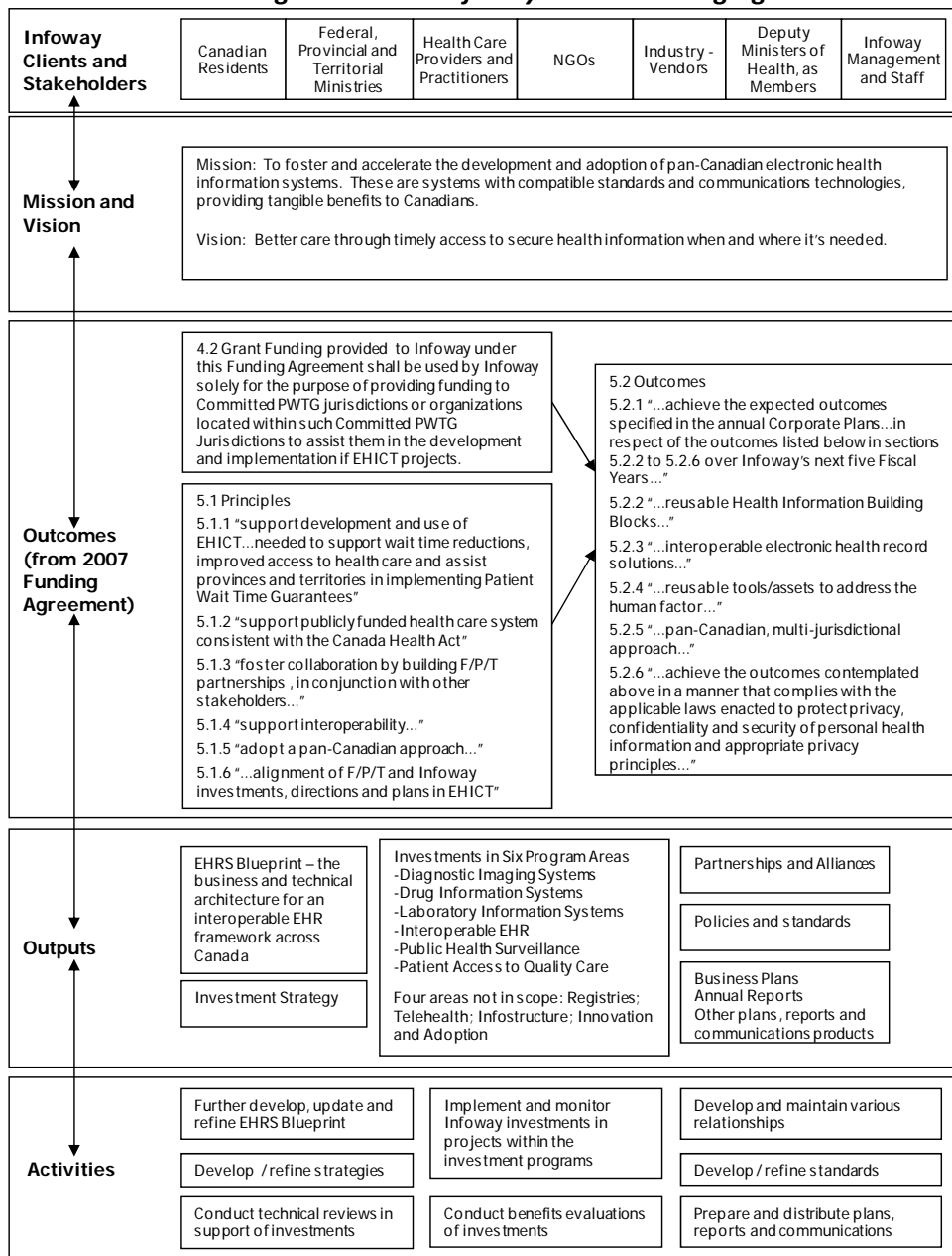
The following table summarizes allocations to the investment programs as presented in *Infoway's* annual reports and corporate business plans. The allocations from the 2007 Funding Agreement are highlighted. A total of \$370 million was allocated to the six investment programs, and the balance of \$30 million was allocated to associated governance and administration costs.

Exhibit 2.1: Allocations of Funding to Investment Programs

		Allocations to Investment Programs (\$ in 000's)			
	Source (AR - Annual Report, BP - Business Plan)	AR06-07	EHICT Projects	BP07-08	BP08-09
1	Interoperable EHR	\$ 195,000	\$ 170,000	\$ 365,000	\$ 365,000
2	Diagnostic Imaging Systems	\$ 310,000	\$ 30,000	\$ 340,000	\$ 340,000
3	Laboratory Information Systems	\$ 150,000	\$ 20,000	\$ 170,000	\$ 170,000
4	Drug Information Systems	\$ 185,000	\$ 65,000	\$ 250,000	\$ 250,000
5	Public Health Surveillance	\$ 100,000	\$ 35,000	\$ 135,000	\$ 135,000
6	Patient Access to Quality Care		\$ 50,000	\$ 50,000	\$ 50,000
	Total (1-6)	\$ 940,000	\$ 370,000	\$ 1,310,000	\$ 1,310,000
7	Infostructure	\$ 32,000	\$ -	\$ 32,000	\$ 32,000
8	Innovation and adoption	\$ 60,000	\$ -	\$ 60,000	\$ 60,000
9	Telehealth	\$ 100,000	\$ -	\$ 100,000	\$ 100,000
10	Registries	\$ 134,000	\$ -	\$ 134,000	\$ 134,000
	Total (7-10)	\$ 326,000	\$ -	\$ 326,000	\$ 326,000
	Total (1-10)	\$ 1,266,000	\$ 370,000	\$ 1,636,000	\$ 1,636,000
	Governance and Administration Costs		\$ 30,000		
	Grand Total		\$ 400,000		

The outcomes specified in the 2007 Funding Agreement are summarized in the following logic model. It should be noted that these outcomes are very consistent (although organized somewhat differently) with those in the previous funding agreements. This means that there is no discontinuity in the direction and guidance that the various funding agreements provide *Infoway's* Board and senior management in setting outcomes in *Infoway's* corporate plans. For example, a Diagnostic Imaging project investment under the 2007 Funding Agreement can be reviewed and approved in a very similar manner as one under the 2003 Funding Agreement. Although the funds are invested and reported separately, in everyday practical terms, the same operational management can be applied to both.

Exhibit 2.2: Logic Model for *Infoway's* 2007 Funding Agreement



Further, it should be noted that the mechanics of the 2007 Funding Agreement are different than those for the previous agreements. Quoting from the Auditor General of Canada's report:

4.95 The terms and conditions of funding agreements between Health Canada¹⁰ and *Infoway* have evolved over time as the expectations of governments have changed. Funding that *Infoway* received in 2001, 2003, and 2004 totalling \$1.2 billion was provided in a lump sum transfer of funds, and use of the funds was subject to fewer reporting and evaluation requirements.

4.96 The 2007 *Infoway* funding agreement included several new provisions to strengthen *Infoway*'s accountability to Health Canada. For example, under the 2007 funding agreement, funding to *Infoway* of \$400 million is to be provided only on a needs¹¹ basis. The funding agreement requires *Infoway* to submit annual cash flow statements estimating its financial requirements for the upcoming year.

¹⁰ Footnote added by evaluator. Note that this means the Government of Canada as represented by Health Canada.

¹¹ Footnote added by evaluator. Note that annual needs are expressed through annual cash flow statements.

3. Evaluation Approach and Methodology

The evaluation was approached through the use of a Logic Model for the 2007 Funding Agreement, as was shown in Exhibit 2.2 in section 2.4. The components of the Logic Model include the purpose statement (section 4.2), six principles (section 5.1) and six outcomes (section 5.2) specified in the funding agreement. Attached to each of the components of the Logic Model, evaluation questions were developed related, as appropriate, to compliance and progress. These questions and the lines of inquiry (or information sources) that were used to collect information about them were detailed in the Methodology Report¹².

The main lines of inquiry were document review, interviews and case studies.

The documents reviewed included corporate reports and material (e.g., corporate plans, annual reports, presentations to the Board of Directors), program reports and material (e.g., program descriptions, strategies and plans) and project reports and material (e.g., project plans and reports available through *Infoway's* project management system). The documents, as detailed in *Infoway's* Internal Review/Self Assessment, were also provided for our review.

Documentation also included previous audit and evaluation reports, including management responses. Specifically, the evaluation team examined the 2006 Performance Evaluation of *Infoway*, the 2009 Performance Evaluation of Canada Health Infoway Public Health Surveillance Program, and the Chapter 4 on Electronic Health Records in the Fall 2009 report of the Auditor General of Canada.

Interviews were conducted with 42 selected key informants who came from the following groups. The numbers in brackets give the number of key informants in each group.

- a. Deputy Ministers of Health (Members of the Corporation) and/or Members of *Infoway's* Board (5)
- b. Chief Information Officers (CIOs) (or equivalents) for federal, provincial and territorial governments as project sponsors (9)
- c. Associations that are representative of industry vendors and partners (2)
- d. Selected external leads for investment projects (note: projects were also discussed with CIOs) (5)
- e. Supporting areas – standards, privacy, project reference group (4)
- f. *Infoway's* CEO, senior executives, executive regional directors, group directors, group program directors, executive directors, other senior managers (17)

Case studies were prepared to provide more detail on specific areas and impacts/results of *Infoway's* investment. They are shown in Annex A.

¹² *March 2010 Performance Evaluation of EHICT Projects, Phase 1 – Planning / Scoping, Methodology Report, Version 2.0*, November 27, 2009

4. Findings and Specific Conclusions

This section outlines the findings and specific conclusions of the evaluation. It is organized into four main sections. The first section 4.1 describes the “footprint” that *Infoway* has achieved through its investments under the 2007 Funding Agreement. The “footprint” includes reach (i.e., the distribution of investments by investment program and jurisdiction), roll-out (i.e., conversion of allocations to approvals to funds spent) and results that have been achieved.

The second and third sections, 4.2 and 4.3 respectively, assess compliance with Section 4.2 of the 2007 Funding Agreement dealing with the use and purpose of the grant funding, and with Section 5.1 dealing with six principles of the funding agreement.

The fourth section 4.4 is more specific in terms of what progress has been made against each of the six outcomes in section 5.2 of the funding agreement. It takes the “footprint” in section 4.1 a step further in answering the “so what” question.

A fifth section 4.5 presents other observations and findings related to the 2007 Funding Agreement.

4.1 “Footprint” of the Investments – Reach, Roll-Out and Results

4.1.1 Reach – Distribution by Program and Jurisdiction

The \$400 million of funding in the 2007 Funding Agreement was allocated by *Infoway* to six of its investment programs, as shown in Exhibit 4.1 below. Information assembled by *Infoway* in its internal review¹³ in preparation for this evaluation shows, as of September 30, 2009, a total of 86 projects were receiving all or part of their funding under the 2007 Funding Agreement. As noted earlier, all of these projects were either new projects or new phases of existing projects.

Exhibit 4.1: Allocations and Number of Projects by Investment Program, as of September 30, 2009

The following table shows *Infoway*’s investment portfolio with approvals as of September 30, 2009.

Investment Program	Description	\$400M Funding Allocation by Program	Total Number of Projects
Diagnostic Imaging Systems	Projects designed to implement digital storage of diagnostic images (e.g., MRI, CT, X-ray, Ultrasound, Fluoroscopy, Nuclear Medicine) that permits clinicians to access and view images regardless of where they are located or where the test was conducted.	30	14
Drug Information	Projects designed to implement solutions that allow prescriptions to be sent, viewed and confirmed	65	13

¹³ Draft Internal Review, March 2010 Performance Evaluation of *Infoway*’s EHICT Projects, November 2009

Investment Program	Description	\$400M Funding Allocation by Program	Total Number of Projects
Systems	electronically. Also, drug-to-drug interactions are performed automatically and added to the patient's profile to warn of potential dangers.		
Laboratory Information Systems	Projects designed to implement solutions that allow clinicians to view laboratory results and reports from all hospital, community and public health laboratories.	20	13
Interoperable EHR	Projects designed to implement solutions that allow clinicians to view and update an integrated patient-centric health record that includes, demographic, diagnostic imaging, drug, laboratory, hospital clinical reports, infectious disease, immunization and other health information.	170	20
Public Health Surveillance	Projects designed to implement solutions that support the identification, management, and control of infectious disease cases and outbreaks that pose a threat to public health.	35	10
Patient Access to Quality Care (PAQC)	Projects designed to serve as a catalyst for health care innovation in the years to come. The projects are intended to leverage existing technologies and demonstrate how technology can contribute to transformative change that will improve patients' access to quality care.	50	16
Governance and administration expenses		30	
Total		400	86

It should be noted that a significant portion of the total \$400 million was allocated to moving ahead with Interoperable EHR.

The projects funded under the 2007 Funding Agreement span all provinces and territories, as well as a number of pan-Canadian and *Infoway* projects that support progress in the investment programs. The breakdown is shown in the following Exhibit 4.2. More detailed information is available from *Infoway's* internal review and project management system.

Exhibit 4.2: Number of Projects by Jurisdiction, as of September 30, 2009

Jurisdiction	Number of Projects	Jurisdiction	Total Number of Projects
British Columbia	11	Nova Scotia	4
Alberta	1	Prince Edward Island	1
Saskatchewan	3	Newfoundland and Labrador	5
Manitoba	7	Nunavut	4
Ontario	18	North West Territories	1
Quebec	12	Yukon	1
New Brunswick	2	Pan-Canadian	16
Total			86

4.1.2 Roll-Out – Allocations, Approvals and Funds Spent

As was noted in section 2.4, there is a time lag between the allocation of funding from the 2007 Funding Agreement, and subsequent project approvals and actual expenditures. The lag is due, in part, to the gated funding approach outlined in section 2.3 whereby funds are only released when agreed-upon milestones, including adoption targets, are met. It is also due to the pace at which various jurisdictions manage their own e-health programs, including identifying projects for consideration of *Infoway* investment, receiving funding approval for their own share of the project investment, and managing through their own project management processes. Sometimes, as has been the case with the audit and restructuring of eHealth Ontario during the last year, this can cause significant unforeseen delays.

The time lags are illustrated in the chart in Exhibit 4.3. The chart displays cumulative project approvals and expenses (i.e., life to date (LTD) actuals) for the six investment programs (i.e., DI, DIS, Lab, iEHR, PHS and PAQC) that are the focus of this evaluation. These cumulative project approvals and expenses relate to all funding agreements, including the 2007 Funding Agreement. The chart also shows EHICT cash outflows which are specific to the 2007 Funding Agreement.

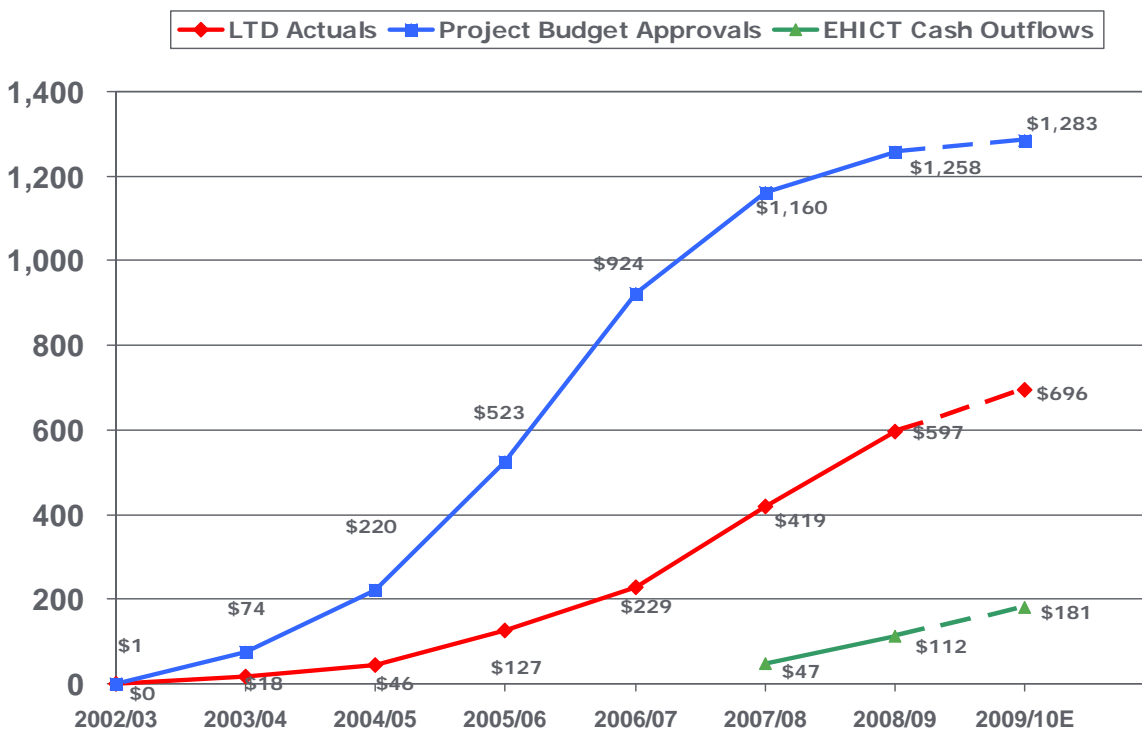
The “project budget approvals” line shows that, prior to the approval of the 2007 Funding Agreement, almost all of the funding allocated to the six investment programs was committed to approved projects. Project budget approvals were \$924 million compared to a total allotment of \$940 million for the six investment programs. During 2007-08, *Infoway* (and the jurisdictions) moved very quickly to bring new projects on-stream, so that by the end of 2008-09, again almost all of the funding was committed to approved projects, both new projects and new phases of existing projects. For example, by the end of

2008-09, project budget approvals were \$1,258 million compared to a total allotment of \$1,310 million for the six investment programs. The profile of these projects was shown in section 4.1.1.

The “LTD actuals” (cumulative project expenses) line is where the real time lag shows up. As one Board member observed, getting projects approved is the easy part – getting them implemented and seeing adoption is the tough part. As a result, it has and will continue to be the case that there are often several years between project approval and project completion when the full impacts are evident. Statements from key informants, both internal and external to *Infoway*, suggest that this same pattern applies for EHICT projects under the 2007 Funding Agreement. For example, as of the end of fiscal year 2008/09, a total of \$112 million was spent out of the \$400 million¹⁴.

Exhibit 4.3: Cumulative Project Approvals and Expenses, and EHICT Cash Outflows for the Six Investment Programs Funded by the 2007 Funding Agreement

*Since Inception (in millions of dollars).



¹⁴ Project approvals and expenses, and EHICT cash outflow amounts, and associated Exhibit 4.3, were prepared by *Infoway*, at the request of the evaluation team.

4.1.3 Results Achieved – Overall, by Program and by Jurisdiction

As stated in section 2.2, *Infoway*'s overall goal is that:

By 2010, every province and territory and the populations they serve will benefit from new health information systems that will help transform their health care delivery system. Further, by 2010, the electronic health records of 50 per cent of Canadians and by 2016, those of 100 per cent of Canadians, will be available to their authorized health care practitioner.

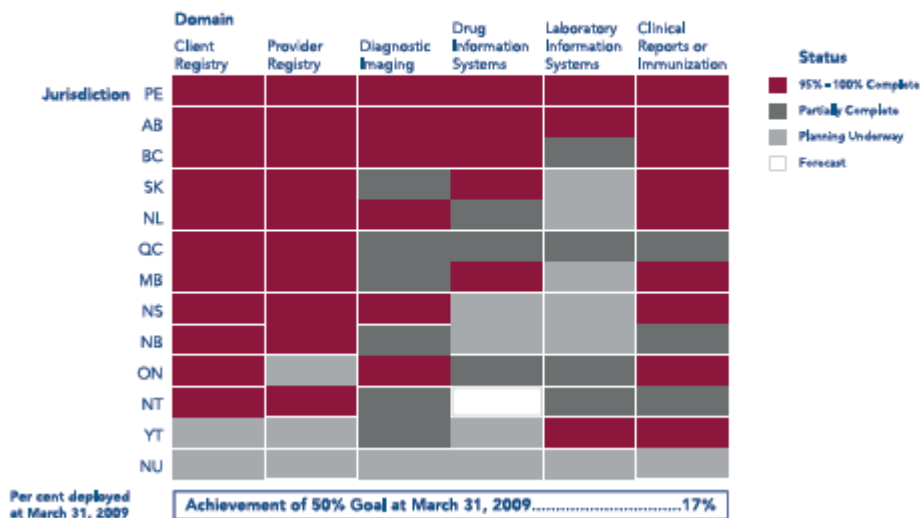
In 2006-07, the date for the more immediate call for action 50% target was adjusted from 2009 to 2010 by *Infoway*'s Board, and shown in the 2007-08 Corporate Business Plan, to reflect the pace at which jurisdictions were implementing projects.

The following Exhibit 4.4 presents tables extracted from the 2008-09 Annual Report and the 2009-10 Corporate Business Plan respectively, showing progress against the overall goal, as well as the status in each jurisdiction. It can be seen that by the end of March 2009, an electronic health record was put in place for 17 per cent of the Canadian population, and by the end of March 2010, it is anticipated for 38 percent. Progress towards completion is seen for every jurisdiction.

Exhibit 4.4: Overall and Jurisdictional Progress

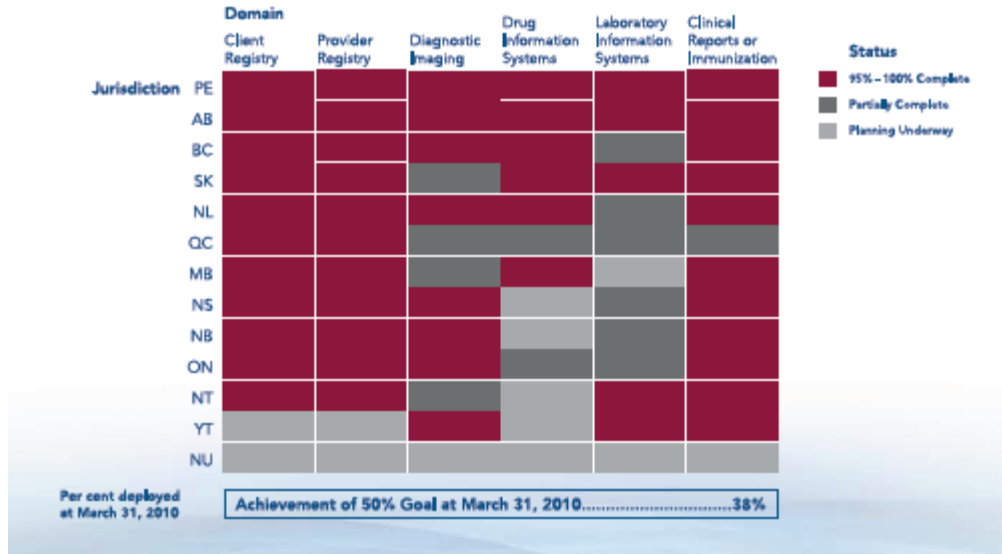
Jurisdictional Progress to March 31, 2009

Through its investment programs, *Infoway* and its partners have put in place an electronic health record for 17 per cent of the Canadian population.



Anticipated Progress to March 31, 2010

In addition to new investments in consumer health solutions and electronic medical records in 2009-10, *Infoway* will continue to work towards the goal of an electronic health record for 50 per cent of Canadians.



The investments made under the 2007 Funding Agreement are a key driver towards progress on the overall goal.

In its Internal Review, *Infoway* provided information about its key performance indicators (KPIs) and progress to date for each of the six investment programs. Our review of this information indicates that, between the two fiscal years 2007-2008 and 2008-2009, *Infoway* can show progress against the KPIs in each of the six investment programs. *Infoway* will report on this progress in its 2009-10 annual report. Progress is the result of projects being completed with funding from the previous funding agreements, and those being completed under the 2007 Funding Agreement. Indeed, given the time lags described in section 4.1.2, it can be anticipated that much of the progress on KPIs from projects funded under the 2007 Funding Agreement will become evident more so in 2009-2010 and subsequent years.

Targets from the 2008-09 Corporate Business Plan were added in the table in Exhibit 4.5. It should be noted that these targets are associated more with “supply side” indicators, whereas the KPIs reflect more of the demand side, and are more closely aligned with the “population-based” overall goal.

Exhibit 4.5: Performance Indicators and Progress to Date

Programs Receiving Of EHICT Funding	Key Performance Indicator (KPI)	Targets for Each Investment Program in the 2008-09 Corporate Business Plan
Diagnostic Imaging	<ul style="list-style-type: none"> Filmlessness (the availability of digitized diagnostic images in place of “hard copy” film images) 	<ul style="list-style-type: none"> Provide access to shared digital images in approximately 80 per cent of Canada’s acute care public hospitals by 2010 and 100 per cent by 2016.
Drug Information Systems (DIS)	<ul style="list-style-type: none"> Percentage of population residing in provinces and territories that have implemented a DIS which creates and maintains drug profiles covering all drug prescriptions dispensed for Canadians (excluding in-hospital medications) 	<ul style="list-style-type: none"> Electronically capture and store approximately 75 per cent of dispensed medication information by 2010 and 95 per cent by 2016 Provide approximately 50 per cent of retail pharmacies with access to patients’ medication profiles by 2010 and 100 per cent by 2016.
Laboratory Information Systems (LIS)	<ul style="list-style-type: none"> Percentage of population residing in provinces and territories that will have access to electronically published lab results through a LIS system 	<ul style="list-style-type: none"> Capture, store and share 75 per cent of laboratory test result information in Canada by 2010. Provide 95 per cent of hospital and public health laboratories in eight jurisdictions with access to patients’ laboratory test profiles by 2016.
Interoperable Electronic Health Record Systems	<ul style="list-style-type: none"> Percentage of population residing in a province or territory with available EHR solutions 	<ul style="list-style-type: none"> Electronically capture, store and share an electronic health record that includes medication profiles, laboratory test results, hospital discharge summaries and clinical reports, immunizations and diagnostic-imaging exams such as X-rays, MRIs, ultrasounds, CTs, nuclear medicine and fluoroscopy. Provide half of Canada’s acute care hospitals and at least 25 per cent of all eligible practicing clinicians, including family physicians, specialists, nurses and pharmacists with the capability of viewing and updating electronic health information about their patients by 2010; and Provide 85 percent of Canadian acute care hospitals and 50 per cent of practicing clinicians with the capability to view and update electronic health records for their patients by 2016.
Public Health Surveillance (PHS)	<ul style="list-style-type: none"> Percentage of population residing in a province or territory with an implemented PHS system 	<ul style="list-style-type: none"> Electronically capture, store and share approximately 50 per cent of reportable communicable disease cases detected and 50 per cent of immunizations administered to support the management of disease outbreaks by 2010. Provide 100 per cent of Canada’s local and regional public health departments with electronic public health surveillance capabilities by 2016.
Patient Access to Quality Care	<ul style="list-style-type: none"> (No specific indicators included. Dependent on the specific nature of each demonstration project.) 	<ul style="list-style-type: none"> Complete the first round of investment for five to eight demonstration projects with the majority of investments advancing to phase 2 in the fall of 2008.

4.1.4 Summary

The “footprint” description and analysis of the use of the 2007 Funding Agreement leads to the following findings:

- The funding under the 2007 Funding Agreement has been used to invest in EHICT projects, both new projects and new phases of existing projects, within six of *Infoway*’s investment programs. This constitutes \$370 million of the \$400 million total funding. The other \$30 million is being spent, on an annualized basis, on associated governance and administration costs.
- The EHICT projects include those with jurisdictions and those which deal with pan-Canadian and inter-jurisdictional matters. The latter enable progress on the former and support the principles of the funding agreement.
- The funding under the 2007 Funding Agreement was quickly allocated to the investment programs and then committed to the six investment programs. This funding was the major source of funding for these six investment programs from 2007 to the current date, and has supported projects in every jurisdiction. There is a lag in actual funds spent, which relates the gated funding milestones and the e-health context and plans in each jurisdiction. This lag appears to be similar for projects funded under the 2007 Funding Agreement as for the previous funding agreements.
- The projects funded under the 2007 Funding Agreement are contributing to *Infoway*’s progress in meeting its overall goal and its key performance indicators for each of the six investment programs. However, because of time lags, the majority of impact of these projects will be felt in coming years.

Related specifically to performance measurement;

- *Infoway* has adjusted its overall goal (i.e., achievement of the 50% target in 2010 rather than 2009) to reflect the reality “on the ground”. This was done prior to the 2007 Funding Agreement coming into play.
- The KPIs for each of the six investment programs are appropriately more reflective of the demand side than are the targets that have been presented in Corporate Business Plans. The KPIs are well aligned with the overall “population-based” goal.

4.2 Compliance with Section 4.2 – Use and Purpose of Grant Funding

Section 4.2: Grant Funding provided to Infoway under this Funding Agreement shall be used by Infoway solely for the purpose of providing funding to Committed PWTG Jurisdictions or organizations located within such Committed PWTG Jurisdictions to assist them in the development and implementation of EHICT projects.

Based upon the evidence examined, *Infoway* complies with Section 4.2 on the use and purpose of the Grant Funding under the 2007 Funding Agreement.

As was shown in the “footprint” in section 4.1 of this report, funds were used for the purpose of providing funding to Committed PWTG jurisdictions¹⁵ or organizations located within them, and used to assist them

¹⁵ Note that all provinces and territories are Committed Patient Wait Time Guarantee (PWTG) jurisdictions since the start of the 2007 Funding Agreement.

to develop and implement EHICT projects. Exhibits 4.1 and 4.2 in section 4.1 display the distribution of the entire \$400 million in funding.

4.3 Compliance with Section 5.1 – Six Principles of the Funding Agreement

4.3.1 Section 5.1.1 – Support Development and Use of EHICTs

Section 5.1.1: Support the development and use of Electronic Health Information and Communication Technologies including but not limited to Electronic Health Records and wait times information systems needed to support wait time reductions, improved access to health care and assist provinces and territories in implementing Patient Wait Times Guarantees (PWTGs).

Infoway complies with this principle (section 5.1.1) of the Funding Agreement, concerning support of the development and use of EHICTs, although it is too early to know their actual impacts on wait time reductions and improved access.

More specifically, although different in scope and type of projects, all jurisdictions reported having used *Infoway* funding to further the development and implementation of EHICTs, either in accelerating the development and implementation of various technologies or in undertaking new initiatives that provincial or territorial allocations would not have allowed for in the same time frame. The scope and variety of projects undertaken would point to the contribution of *Infoway* funding in developing and implementing a pan-Canadian EHR.

The individual projects themselves were not designed by jurisdictional sponsors specifically with the PWTG criteria in mind. Their intent was to ensure the development and implementation of various components required to ensure a Provincial/Territorial and pan-Canadian EHR, which are contributing enablers to a better monitoring and reporting against wait times and the eventual reduction in wait times for medical interventions. Various projects can be demonstrated to be mapped against existing wait time guarantees and have shown demonstrable results (e.g. the DI Benefit Evaluation Study).

It was also uniformly expressed that it is premature to assess the impact of the various projects against actual wait times, as projects are in development or implementation phases and have yet to accrue the full benefits of their implementation.

The DI Benefits Evaluation has identified potential increases in productivity in the order of 30%, thereby increasing the resource base of radiologists by an equivalent amount. Although the actual 30% figure was questioned by some provincial and territorial health authorities, there is recognition that this initiative has contributed to a significant reduction in wait times.

Some specific initiatives that are supporting the reduction in wait times are the:

- Patient Access to Quality Care (PAQC) Investment Program Strategy;
- PAQC demonstration projects (that support wait time reductions);
- Benefits evaluation component in PAQC projects;
- Updating *Infoway's* Blueprint (2015) to incorporate the pan-Canadian architecture and standards that are relevant to Patient Access to Quality Care; and

- Specific DI projects with documented benefits in PWTG.

It should be noted that projects funded under the Innovation and Adoption program, even though not part of investments under the 2007 Funding Agreement, also contribute to the achievement of this outcome.

4.3.2 Section 5.1.2 – Support A Publicly Funded Health Care System

Section 5.1.2: Support a publicly funded health care system consistent with the Canada Health Act.

Infoway is in compliance with this principle (5.1.2) to support a publicly funded health care system consistent with the Canada Health Act.

This principle is also present in *Infoway*'s other funding agreements. It sits behind *Infoway*'s investment strategy and funding approach, and its work with the provincial and territorial health ministries, across its entire portfolio of investments and activities. Further, all of the interview respondents identified that projects supported under *Infoway* funding are consistent with the Canada Health Act.

4.3.3 Section 5.1.3 – Foster Collaboration

Section 5.1.3: Foster collaboration by building on F/P/T partnerships, in conjunction with other stakeholders, to avoid duplication of efforts, to realize economies of scale, and to achieve Interoperability of information systems.

Infoway complies with this principle (5.1.3) concerning collaboration. Beyond simply collaborating on various initiatives, *Infoway* has promoted and fostered collaboration.

At the first instance, *Infoway*, through its membership, is a collaboration of the F/P/T Deputy Ministers of Health.

Collaboration with partners and stakeholders¹⁶ is one of the five strategic pillars of *Infoway*'s business model.

Infoway has fostered pan-Canadian collaboration with partners and stakeholders through its formation and support of various forums, working groups and collaboratives, such as:

- The CIO Forum, bringing together F/P/T Chief Information Officers (or their equivalent) of health;
- The Privacy Forum, bringing together F/P/T Privacy Commissioners;
- The Standards Collaborative, and its various governance and working-level committees and working group; and
- Peer-to-peer networks.

There was support voiced for such collaborations, with especially strong support for *Infoway*'s role and work in the standards area. It was noted by key informants involved in the Standards Collaborative that

¹⁶ *Infoway* works with public and private sector partners to continue progress and alignment in strengthening Canada's health infrastructure. This work is supported by the provinces' and territories' three-year jurisdictional electronic health record plans, joint investments and enhanced procurement initiatives.

such a group needs to focus on where there is most value, meaning that its scope may need to extend beyond technical issues to business and cultural issues.

Infoway has supported and worked through established jurisdictional collaborations, and created new opportunities, such as:

- Well established formal and informal communications mechanisms, and joint planning activities in Atlantic Canada;
- The already established Western Health Information Collaborative (WHIC), and its role in the patient registry (Newfoundland and Labrador is now involved);
- Cross-jurisdictional cooperation, for example, in diagnostic imaging; and
- Collaboration between northern territories and their southern neighbours (e.g. NWT and Alberta joint projects, BC and the Yukon joint projects). It was noted however, that the northern territories do become dependent upon the southern collaborators in terms of shifting priorities, delays due to restructuring of health authorities, funding allocation for projects, etc.

Collaboration is considered to be good between *Infoway* and the jurisdictions at the management and project levels. *Infoway* reorganized to a more regionally-focused collaborative structure. Led by Executive Regional Directors, at the regional level, projects are planned and reviewed by project teams on a regular basis with the jurisdiction to ensure that the objectives, plans, schedules, deliverables and budgets are up to date and meeting requirements. Regional project teams are supported in their roles by a corporate Project Management Office (PMO).

4.3.4 Section 5.1.4 – Support Interoperability

Section 5.1.4: Support Interoperability by promoting an open-architecture approach to allow the transparent flow of information among institutions and within and across jurisdictions.

Infoway complies with this principle (5.1.4) of supporting interoperability by promoting an open-architecture approach.

Even under previous funding agreements, *Infoway* developed and promoted the EHR Blueprint as an open-architecture approach to interoperability. *Infoway's* approach under the 2007 Funding Agreement has been no different. Further, jurisdictions have adopted and adapted the Blueprint for their own e-health systems.

A significant portion (\$170 million) of the total funding under the 2007 Funding Agreement was allocated and is being spent on approved Interoperable EHR projects. More about progress on the implementation of Interoperable EHR solutions is presented in section 4.4.3 of this report.

4.3.5 Section 5.1.5 – Adopt a Pan-Canadian Approach

Section 5.1.5: Adopt a pan-Canadian approach by collaborating with initiatives that have broad support and the capacity to be deployed across jurisdictions, to provide improved health services to all Canadians.

Infoway is compliant with this principle (5.1.5) concerning adoption of a pan-Canadian approach.

Infoway's pan-Canadian view is embedded in all five strategic pillars of its business model:

- Pillar 1: Participate in health care renewal, which speaks to “involvement with national, jurisdictional and local initiatives”;
- Pillar 2: Collaborate with partners, which notes “strengthening Canada’s health infostructure”;
- Pillar 3: Target the investments, which refers to “accelerating the implementation of electronic health record systems across Canada”;
- Pillar 4: Support solution deployment, which outlines that *Infoway* will continue to provide expertise in a number of areas applicable across jurisdictions, including “health infostructure Blueprint, standards, privacy and security, replication and preferred pricing”;
- Pillar 5: Promote solution adoption and benefits realization, which speaks to *Infoway*'s continuing work on challenges faced across the country, such as clinical leadership, clinician adoption of solutions and measurement and realization of benefits.

This pan-Canadian approach, embedded in the pillars, has been put into practice. The area of standards is one good example. *Infoway* has supported a pan-Canadian approach through the development of standards, both technical and business. This has been one of the most valuable contributions to a consistent approach across jurisdictions. The selection criteria and steps in projects are rigorous with a focus on a pan-Canadian approach. When projects are being prepared for approval, the *Infoway* team includes representatives from several business areas including Standards. While it is not always clear at the start of a project (e.g., the planning phase) what standards will be used, there are a number of deliverables which are required from the Sponsor to help make this determination (e.g., current state standards assessment, future state standards requirements which includes an analysis of current pan-Canadian Standards, gap analysis, etc.). Before Phase 2 (implementation) projects are approved there must be clarity (at least of intent) regarding which standards will be implemented before the completion of the project.

More about *Infoway*'s progress on development of its pan-Canadian, multi-jurisdictional approach is presented in section 4.4.5 of this report.

4.3.6 Section 5.1.6 – Seek to Achieve Alignment of F/P/T and *Infoway* Investments

Section 5.1.6: Seek to achieve alignment of F/P/T and Infoway investments, directions and plans in electronic health information and communication technologies.

Infoway is compliant with the principle (5.1.6) of seeking to achieve alignment of F/P/T and *Infoway* investments.

Mechanisms to achieve collaboration (discussed in section 4.3.3 of this report) also help to achieve alignment. These mechanisms for alignment include:

- Membership of *Infoway* itself;
- Important forums such as the sponsored CIO Forum, Privacy Forum and Standards Collaborative;
- *Infoway*'s regional structure to promote understanding, communication and alignment; and
- The majority of projects being brought forward by the jurisdictions.

In seeking to achieve alignment, key informant interviews with jurisdictional representatives suggested that there are two distinct perspectives. For jurisdictions that have only limited funding from within, there is a high degree of alignment, since *Infoway*'s investment is sometimes the primary source of funding. For other jurisdictions that have other funding sources, on occasion, existing plans have been revised or the timing of various components accelerated in order to align with *Infoway*'s investment strategy and the availability of funds from *Infoway*. In other cases, they have foregone opportunities for *Infoway*'s investment.

4.3.7 Summary

Based upon the evidence gathered in this evaluation, *Infoway* is compliant with the Principles outlined in Section 5.1 of the 2007 Funding Agreement. These include:

- Support of the development and use of EHICTs
- Support a publicly funded health care system consistent with the Canada Health Act
- Foster collaboration
- Support interoperability
- Adopt a pan-Canadian approach
- Seek to achievement alignment of F/P/T and *Infoway* investments.

4.4 Progress against Section 5.2 – Six Outcomes in the Funding Agreement

It is important to note that the following six outcomes in the 2007 Funding Agreement are also outcomes listed in the 2003 Funding Agreement. As such, the approaches taken by *Infoway* to achieve these outcomes are similar for both funding agreements.

4.4.1 Section 5.2.1 – Endeavour to Achieve Expected Outcomes in Annual Corporate Plans

Section 5.2.1: Infoway shall endeavour to achieve the expected outcomes specified in the annual Corporate Plans to be developed by Infoway and approved by its board of directors and presented to its Members in respect of the outcomes listed below in sections 5.2.2 to 5.2.6 over Infoway's next five Fiscal Years. In this regard, it is acknowledged that the ability of Infoway to achieve these outcomes is subject to, and conditional upon, the collaboration of F/P/T jurisdictions within Canada in which Infoway operates or seeks to operate.

Infoway has developed annual Corporate Business Plans since its inception. These plans set objectives, outcomes and targets, and are approved by *Infoway's* Board of Directors and presented to *Infoway's* Members. The plans are also made public on its website. Further, progress and achievements against the plans are analyzed and published in annual reports. The Corporate Business Plans provide the bridge between the outcomes in *Infoway's* funding agreements and its investment strategies, investment programs, and jurisdictional and internal projects.

As noted in *Infoway's* internal review in support of this evaluation, to help to guide the investment process, *Infoway* has established an Operations Management Committee (OMC), the membership of which includes several members of *Infoway's* Executive Management. OMC's role includes the definition, development and application of processes to ensure that approved projects are aligned with the Corporate Business Plan and with investment strategies. The OMC also receives regular performance reviews of the project portfolio as well as in depth project reviews. These and other standardized processes are in place to help ensure that projects are monitored against their approved scope.

Furthermore, at the regional level, projects are reviewed by project teams on a regular basis with the jurisdiction to ensure that the objectives, plans, schedules, deliverables and budgets are up to date and meeting requirements. This helps to cement the collaboration that is essential to *Infoway's* and the jurisdictions' success. The regional teams employ both the corporate Quality Assurance and Risk Management processes to ensure a consistent approach across all jurisdictions. Any major problems result in projects being rated according to the level of risk (risk register) and this along with risk mitigation strategies are presented to the Senior Executive and Board of Directors. Regional project teams are supported in their roles by a corporate Project Management Office (PMO).

Infoway's risk management processes have been in place for a number of years, and are an important contributor to the directive "*Infoway shall endeavour to achieve...*". They help to ensure appropriate project planning and oversight. Again, as outlined in *Infoway's* internal review, these processes operate at several levels and are continuously refined i.e. periodic corporate risk management reporting to the Board and/or its Finance, Investment and Audit Committee, quarterly assessment at Executive Management Committee, quarterly collaborative jurisdictional risk, program risk and project risk (including work book exercise focused on sizing and costing analysis). In addition, an Investment Risk Management Committee has been created to report regularly to OMC on the status of the most critical systemic risks and on the progress of the associated mitigation strategies. Also, monthly project status reports are provided to OMC and a risk update is provided to the Board on a quarterly basis.

More recently, *Infoway* has created a Program Health Review (PHR) process which focuses on assessing program performance including risk identification. Each investment program, including those that have received funding from the 2007 Funding Agreement, is subject to an annual Program Health Review. The PHR is informed by nine separate indicators which assess performance from several different perspectives including: strategy, financial, project risk, adoption and benefits evaluation. These reviews result in action oriented recommendations to address emerging program risks and issues. A check point Program Health Review which focuses on the status of any identified risks follows each full PHR and is scheduled approximately 6 months after the full review is performed.

The governance and management practices described above are applied across *Infoway*'s business and investment portfolio, and so have been applied equally to that portion funded by the 2007 Funding Agreement. Further, the governance and management practices were favourably reviewed in the 2009 Auditor General of Canada report.

The "footprint" described in section 4.1 of this report illustrates that *Infoway* has had considerable success in investing funds from the 2007 Funding Agreement. These investments build upon investments from previous funding agreements in order to move to new phases of existing projects and start new ones. They are consistent with the outcomes specified in the Corporate Business Plan and 2007 Funding Agreement.

Conclusion: Based upon its governance and management practices, and the "footprint" being achieved from the 2007 Funding Agreement, *Infoway* has and continues to perform strongly against the outcome – Endeavour to Achieve Expected Outcomes in Annual Corporate Business Plans.

4.4.2 Section 5.2.2 – Development of Reusable Health Information Building Blocks

Section 5.2.2: With respect to EHR solutions only, the development of reusable Health Information Building Blocks, such as mechanisms to uniquely identify clients (e.g. patients) and health care providers.

In the context of the 2007 Funding Agreement, the EHR solutions referred to in this outcome focus upon the Diagnostic Imaging, Drug Information System, Laboratory Information System and Interoperable EHR investment programs. Client and provider registries, given as examples in the outcome statement, were not allocated funds from this funding agreement, although work continued in these areas under previous funding agreements.

The notion of the development of reusable Health Information Building Blocks has been part of *Infoway*'s approach since its early days. It continues to be seen by internal and external stakeholders as a way to leverage investments, accelerate system implementation and, thereby, achieve increased adoption rates and earlier benefits. At the same time, key informants state that "one size fits all solutions" are not the answer. Both *Infoway* managers and jurisdictional sponsors emphasize the need for flexibility to adapt to jurisdictional realities and context (including their current systems) and acknowledge that *Infoway* is taking this approach.

Some key initiatives that demonstrate reusability are:

- iEHR initiatives components including the *WHIC* Provider Registry solution, *Initiate* Client Registry solution and *Orion* iEHR Viewer solution;
- Investment through the iEHR program in information integration capabilities e.g. HIAL (Alberta, British Columbia, Quebec);
- Investment in joint iEHR and Laboratory Information System projects in a number of jurisdictions (British Columbia, Manitoba, Saskatchewan, Quebec, New Brunswick);
- The purchase and adaptation of a Chronic Disease Management (CDM) system from British Columbia by Saskatchewan. Thirty per cent of clinicians in Saskatchewan now use the CDM to report on wait times;
- The DI system developed in Alberta shared with Saskatchewan; and
- The Lab Delivery system pilot project material and design from Alberta to Saskatchewan.

Infoway's project approval and management processes, and its adherence to the Blueprint, support this outcome. As outlined in *Infoway's* internal review, all project investments, including those supported by the 2007 Funding Agreement, are subject to extensive review – initially in advance of their funding approval, and following such approval. Each project is continuously monitored and guided by *Infoway* resources. From a solution perspective these *Infoway* resources include regional information technology architects, privacy and security subject matter experts, and health information standards experts. Once approved, and where appropriate, projects are required to comply with, and successfully complete, architecture and standards deliverables that are aligned with the *Infoway* Blueprint and interoperability standards.

In addition to *Infoway's* current activities and investments in reusable Building Blocks, suggestions from key informants included:

- Developing standard implementation guides (e.g., for DIS) so that when jurisdictions are ready to move ahead on a project, the standard guidelines would already be developed and would only need to be refined. This would lead to greater standardization, and better vendor response since they would be looking at similar requirements across Canada.
- Facilitating or helping to develop standardized conformance testing so that the process of vendors retesting systems to validate integrity would be streamlined with resulting cost savings.

Conclusion: Through the 2007 Funding Agreement, *Infoway* continues to contribute to the outcome of developing reusable Health Information Building Blocks, both in principle and in practice. *Infoway's* ongoing work on the Blueprint and leadership around standards will only increase in importance to support reuse. Development of standard implementation guides and support for standardized conformance testing for new systems could also help in reusability and adoption.

4.4.3 Section 5.2.3 – Implementation of Interoperable Electronic Health Record Solutions

Section 5.2.3: With respect to EHR solutions only, implementation of interoperable electronic health record solutions which enable integration of information flow between various points of the health system such as order entry and results management, and which takes into account F/P/T initiatives and priorities.

Infoway made a strong commitment to progress on this outcome, to implement interoperable EHR solutions through its allocation of \$170 million from the 2007 Funding Agreement to the Interoperable EHR investment program. This level of commitment appears appropriate since progress on iEHR solutions is ultimately most closely tied to the challenge of meeting Infoway's population-based goal of 50% by 2010.

As of September 2009, this funding helped support 20 iEHR projects (i.e., new phases or new projects) with total approved funding of \$275 million (i.e., some funding for these projects also comes from other funding agreements). Guidance for these projects is provided by the Board approved iEHR strategy, and the EHRS Blueprint Enhancement project and updates (2015). Examples of iEHR projects include:

- Alberta HIAL and Event Repository (SHR) Implementation Project, Phase 2.3
- Nunavut iEHR-Teleradiology Project, Phase 2
- Saskatchewan iEHR-Lab Project, Phase 2
- Nova Scotia iEHR-Lab-CR-PR Project, Phase 2
- British Columbia iEHR-Lab Project, Phase 2

In reviewing projects and based upon discussions with jurisdictional sponsors, it is apparent that the main focus to date has been upon iEHR within jurisdictions rather than interoperability across jurisdictions (provinces and territories). The focus within jurisdictions has been upon integrating various components of existing and new systems, getting agreement from regional health organizations and amending legislation to enable implementation of EHRs.

The majority of interviewees identified that the major impediments to inter-jurisdictional interoperability are not the technical aspects of interoperability but the differing privacy and security legislation regulating the release of information within P/T jurisdictions. Infoway has helped to address these impediments through its privacy forums, as well as investing and participating in a project examining the current situation related to trans-jurisdictional flows of EHR data, and impediments and potential technical and non-technical enablers to trans-jurisdictional disclosures¹⁷.

External and internal respondents also noted the lack of funding for implementation of EMRs within jurisdictions. Without this critical piece, an interoperable EHR remains at the conceptual level and would not be fully implemented. Investment in EMRs is part of Infoway's plan for the additional \$500 million funding announced in the Budget 2009, but not yet approved. In the shorter term, Infoway notes that its EHR Viewer strategy is key to mitigating the risk of not having an EMR, because the EHR Viewer makes available for viewing by a practitioner key data from other sources such as diagnostic imaging, laboratories and pharmacies.

¹⁷ *Trans-jurisdictional Flows of EHR Data in Canada: The current state and future requirements*, Infoway report, July 21, 2009.

For its part, *Infoway* has also fostered interoperability through the development and promotion of the Blueprint and related selection criteria for project selection. As previously noted, all project investments, including those supported by the 2007 Funding Agreement are subject to extensive review. Once approved, and where appropriate, projects are required to comply with, and successfully complete, architecture and standards deliverables that are aligned with the *Infoway* Blueprint and interoperability standards. As well, through the Privacy Forum, it has provided a platform for discussion of privacy requirements and issues within and across jurisdictions.

All P/Ts have adopted and are following the basic tenets of the Blueprint. However, as implementation of EHR solutions continues, it was noted that it may be necessary to:

- Revise the Blueprint to ensure it is designed for the future of health care, e.g., primary care, dispersed points of service delivery, and home care;
- Enable more HIALs at the regional level in some provinces, rather than a centralized provincial and/or regional HIAL model;
- Support auditing of data quality and integrity, across provinces¹⁸; and
- Support a data warehouse and data mining for reliable health information, referrals and case management, as well as secondary use for research¹⁹.

Conclusion: Through the allotment of funds from the 2007 Funding Agreement, *Infoway* has made a strong commitment to furthering the implementation of iEHR solutions. Twenty projects (both new and ongoing) have been approved for funding. These will support progress towards *Infoway*'s iEHR implementation targets and overall 50% goal for 2010. *Infoway* continues to work with jurisdictions on impediments, such as privacy legislation, to iEHRs. Ongoing revisions of the Blueprint will be needed to support the evolution of the health care system.

4.4.4 Section 5.2.4 – Development of Reusable Tools/Assets to Address the Human Factor in EHR Adoption

Section 5.2.4: The development of reusable tools/assets to address the human factor in EHR adoption, such as change management and process transformation and knowledge transfer and sharing.

Infoway's Innovation and Adoption investment program is a key means by which *Infoway* funds development of reusable tools/assets for addressing the human factor in EHR adoption. This program was not included in the allotments made under the 2007 Funding Agreement.

However, there is evidence of reusable tools/assets being used, and also being developed, in the projects funded under the 2007 Funding Agreement. As noted in *Infoway*'s internal review, these include the re-use of jurisdictional implementation materials through the Jurisdiction Implementation Group (JIG) meetings, RFP re-use and Joint RFPs. Presumably, lessons learned are used for continuous improvement of these tools/assets.

¹⁸ This is an important new area for investment. Today, it is not included in *Infoway*'s role or funding.

¹⁹ This is another area not currently part of any funding agreement.

The JIGs exist in all of the programs funded under the 2007 Funding Agreement. They meet regularly, and their membership is drawn from the senior ranks of the Sponsors' projects as well as from many of *Infoway's* lines of business. The PAQC project leads meet formally once annually but share knowledge informally as required.

Procurement is an area where re-usable tools have been developed. For example, the Diagnostic Imaging Procurement initially involved three jurisdictions, but benefitted all jurisdictions through the creation of preferred (national) solution pricing. Other examples include the NL Drug Information Solution RFP and the NB/NS Drug Information Solution RFP.

A recent web cast based workshop between BC and QC was also coordinated to share best practices and implementation strategies related to Laboratory Information Systems (e.g., Point of Service readiness; data quality; standardization; clinical acceptance). These types of opportunities are created on an ad hoc basis to address emerging needs and to facilitate timely sharing of information.

Another mechanism for sharing specific tools is the use of the *Infoway* Forums. This is a web-based document management repository that is accessible to all *Infoway* staff as well as jurisdictional staff who have been granted access. The forums are organized by investment programs and provide a collection of documents and tools from various projects.

A national benefits evaluation working group has also been successful in bringing together British Columbia, Alberta, Quebec and Newfoundland-Labrador to share approaches to benefits realization.

In January 2009, the Clinical Adoption Group within *Infoway* was restructured to strengthen internal capacity and provide for better integration into project planning. Regionally based change and evaluation specialists now report to both the Corporate Clinical Adoption group and the Executive Regional Directors within *Infoway*.

With respect to change management, currently the majority of *Infoway* funded projects are still in the implementation stage. Project teams and more specifically the regional *Infoway* Change and Evaluation Specialists work closely with the jurisdictional teams to ensure change management plans are aligned. If there are issues and risks identified, mitigation strategies are established to ensure successful completion of Change Management plans.

Internal and external key informants noted the importance of adoption by clinicians for future success. However, several challenges are faced, such as who deals with the clinicians, what is the value proposition that needs to be given to them to promote adoption (and does this include monetary incentives), and how is training provided to them. Peer-to-peer networks are seen as an important step in influencing the clinician community.

Conclusion: To-date, the investment of funds from the 2007 Funding Agreement has had only limited impact upon the development of re-usable tools/assets to address the human factor. The major reason is that the Innovation and Adoption investment program was not allocated funds from the 2007 Funding Agreement. The projects in the six investment programs where funds were allocated have made use of existing re-usable tools and assets, much in the same way as all other projects have done.

4.4.5 Section 5.2.5 – Development of a Pan-Canadian, Multi-Jurisdictional Approach

Section 5.2.5: The development of a pan-Canadian, multi-jurisdictional approach in the conduct of Infoway's work.

Even before the 2007 Funding Agreement, *Infoway* placed a heavy focus upon the ongoing development of a pan-Canadian, multi-jurisdictional approach in the conduct of its work. This approach (and its refinement) has continued for the work funded under the 2007 Funding Agreement.

As noted in *Infoway's* internal review, this approach has several complementary components, ranging from governance, frameworks and standards, to engagement and communication. *Infoway's* shared governance structure ensures a pan-Canadian, multi-jurisdictional approach to its investments. The Members of *Infoway* consist of the 14 F/P/T Jurisdictional Deputy Ministers (DMs) of Health. The Annual Corporate Business Plan is developed via a consultative approach and is submitted to the Board for approval and subsequently endorsed by the Members at the Annual General Meeting. The CEO/President meets regularly with the DMs. In addition, the *Infoway* regional model ensures input from the jurisdictions. Other stakeholder engagement mechanisms include the regular CIO Forums, Standards Collaborative and the annual e-health Conference.

A pan-Canadian approach was taken to the formulation of *Infoway's* Vision 2015 (e.g., consultation with a broad range of stakeholders), the establishment of frameworks (e.g., adoption; benefits evaluation), guidelines (e.g., cost eligibility), and standards (e.g., pan-Canadian messaging, certification).

The joint planning, procurement and re-use of existing implementation materials are also examples of multi-jurisdictional sharing of information and materials.

Also, from a pan-Canadian perspective the continued existence of the Privacy and CIO Forums, Peer-to-Peer Networks allow for continued work on common business issues.

More specifically, some of the key initiatives noted by *Infoway* as supporting the ongoing development of a pan-Canadian, multi-jurisdictional approach are:

- Collaboration with partners: Shared governance, Vision 2015, Jurisdiction Planning & Review, CIO Forum, Joint Investments, Common Procurement, Preferred Pricing, Standards Collaboration, Partnership Conference, Stakeholder Roundtables, Stakeholder Forums and Briefings, WIC and JI Leads
- Support of solution deployment: Common Blueprint, Privacy & Security Architecture, EHR Information Governance, pan-Canadian Standards, Replicated Solutions, Risk Management, Quality Assurance and Change Management
- Support of solutions governance e.g. Standards Collaborative, Architecture Review Board, Partnership, BC-QC-ON Governance projects
- Pan-Canadian approach in processes i.e. risk management, standards, project management and reporting, costing, benefits evaluation, etc.
- Annual consultation and planning processes with jurisdictional DMs and CIOs, to ensure better understanding and alignment between jurisdictional and pan-Canadian thinking (focus on risk management)
- Meetings with the jurisdictional Ministers and Deputy Ministers of Health
- Health Information Privacy Group (facilitating flow of information across boundaries)

- Pan-Canadian standards
- Education & Training Services (re: Standards)

Key informants, both external and internal, particularly noted the important contribution of *Infoway's* leadership on standards and support for the Standards Collaborative towards advancing pan-Canadian approaches and enabling multi-jurisdictional projects (including re-use across jurisdictions). They generally supported the move into certification, with the caution that this, like the other standards work, needs to be an ongoing commitment.

The Public Health Surveillance development project is cited by *Infoway* as a significant example of a multi-jurisdictional approach where several hundred public health stakeholders from across the country participated in the business requirements and design of the Panorama system. This system is currently planned to be implemented in all jurisdictions other than Alberta, Nunavut and North West Territories. Prince Edward Island does not yet have a project but the plan is to utilize the Panorama instance (i.e., solution) of Nova Scotia.

The 2009 Performance Evaluation of the Public Health Surveillance Program reports that the expected outcomes were met. However, the evaluators noted that key informants (from the Steering Committee and jurisdictional implementation projects) identified a number of common themes / lessons learned. These are “a function of the complexity of Panorama and the needs it is designed to satisfy, the need to build consensus across F/P/T jurisdictions, and the relative novelty of bringing public health and IT managers together to collectively identify needs and inform decision making”. They identified several factors:

- High level of expectations for the use of the funding;
- Significant level of effort to obtain input from a wide range of stakeholders into needs assessment and scope and requirements definition;
- Time required for public health and IT managers to understand each other and build a foundation for achieving consensus;
- Time taken for effective governance and oversight to develop and mature;
- The initial scope and vision of the pan-Canadian PHS system proving to be unworkable, and necessitating a much greater degree of custom building instead of relying on the integration of existing COTS products, meaning delays in meeting milestones;
- The initial strong engagement with and communication to stakeholders not being sustained to the same degree as the development of Panorama progressed. They note that “key informants with lead responsibilities for JI (jurisdictional implementation) were concerned that, during this period, communications regarding scope and design were not always effective, for example, they did not have opportunities to provide input on proposed scope changes or understand the potential implications of proposed changes prior to such decisions being made. These informants felt that JI leads should have been consulted as a matter of course regarding the scope and direction of the pan-Canadian project; and given all of the above,
- The need to close the “circle on expectations” created at early stages and ensure that intended end users understand the case for adoption and use.

In the current evaluation, the Panorama project was not revisited in similar detail. However, key informants made similar comments to what was reported in the previous evaluation – that the extensive up-front consultations resulted in far reaching expectations that could not all be met; and that the custom build led to a good solution for British Columbia where the first instance of Panorama was built, but

reduced its apparent replication value in other jurisdictions. Further, some jurisdictional respondents noted that P/Ts opting out reduced their confidence in the Panorama solution. The experience has led them to question *Infoway*'s involvement in promoting a single system (such as Panorama) rather than setting the blueprint and standards. Further it was noted that, at least in the federal jurisdiction, there may be issues in procurement of a prescribed solution, rather than using competitive bidding.

Conclusion: During the course of the last 2 ½ years through its overall corporate initiatives as well as projects funded under the 2007 Funding Agreement, *Infoway* has continued to develop and refine its pan-Canadian, multi-jurisdictional approach to its work. New opportunities have been developed (e.g., certification) while other have been refined (e.g., privacy, blueprint, stakeholder engagement). Useful lessons have been learned from the Panorama Public Health Surveillance project regarding development and roll-out of pan-Canadian systems.

4.4.6 Section 5.2.6 – Privacy, Confidentiality and Security

Section 5.2.6: Infoway shall achieve the outcomes contemplated above in a manner that complies with the applicable laws enacted to protect privacy, confidentiality and security of personal health information and appropriate privacy principles. In the event that Infoway collects, uses or discloses personal health information, it shall comply with the applicable privacy principles and assess and document its compliance.

The first part of this outcome requires that *Infoway* achieve its outcomes in a manner that complies with all applicable laws regards the protection of privacy, confidentiality and security of personal health information, as well as appropriate privacy principles. This part applies to *Infoway*. The second part outlines *Infoway*'s accountabilities if it collects, uses or discloses personal health information. This part does not apply to *Infoway* since it does not collect, use or disclose such information.

In support of this outcome, *Infoway* reports, in its internal review, that all *Infoway*-funded projects, where applicable, have extensive Privacy & Security requirements and deliverables which must be completed during Phases 1 & 2 (using *Infoway* standard Statement of Work wording). Specifically, where indicated, projects are required to complete a Privacy Impact Assessment (PIA) and a Threat Risk Assessment (TRA). This requires active participation of jurisdictional Privacy Officers to ensure alignment with jurisdictional legislation. In some cases, it also identifies gaps in the legislation that need to be addressed. *Infoway* privacy and security subject matter experts provide support and also review all the required deliverables on the projects.

This process is supported by a number of important *Infoway*-led initiatives, including:

- Privacy Impact Assessment Policy
- Privacy and Security Architecture and Version 2 of the EHRs Blueprint
- Privacy Forum
- Health Information Privacy Group
- Project on Trans-jurisdictional EHR data flows
- Submissions to health information and privacy legislative development and review processes
- Submissions to legislative reviews
- The White Paper on Information Governance of the Interoperable Electronic Health Record
- Privacy Impact Assessment of the iEHR Conceptual Architecture
- Standard contract wording

Key informants, both external and internal, made the following comments about this outcome and the initiatives in particular:

- More work is required around consent and inter-jurisdictional interoperability – as was noted earlier. The differing consent standards and privacy legislation in different jurisdiction is a major obstacle to interoperability across jurisdictions²⁰;
- The Health Information Privacy Group is working well. Suggestions were made that its reference documents should be shared with all jurisdictions and providers, and that it be more integrated with the Standards Collaborative Working Group #8 – IT Privacy and Security Services; and
- *Infoway* needs to ensure that work on privacy and security, although different, are considered together, with better structural links, understanding and communications.

Conclusion: *Infoway* has applied its standard corporate approach regarding privacy, confidentiality and security to its work under the 2007 Funding Agreement in the same manner as it has for the rest of its work. These have led to compliance with all applicable laws regarding the protection of privacy, confidentiality and security of personal health information, as well as appropriate privacy principles. Privacy issues will continue to be a challenge to pan-Canadian and inter-jurisdictional interoperability of EHRs. *Infoway* continues to enable the exploration of these issues.

²⁰ As noted earlier, *Infoway* supported and participated in a project on these issues. The report, *Trans-jurisdictional Flows of EHR Data in Canada: The current state and future requirements*, was published on July 21, 2009.

4.5 Other Observations from Interviews

There were a number of other more generalized opinions put forth by interview participants. Although outside the specific scope of this evaluation, they are included here as potential suggestions and areas that *Infoway* may consider in moving forward. In some cases, these opinions may go beyond what is within *Infoway*'s mandate or role, or perhaps indicate a lack of clarity or awareness of the approach being taken and what has been achieved. Such cases suggest key messages to be included in *Infoway*'s communications with stakeholders.

These observations concern:

- Design and Delivery
- Partnerships and Relationships
- Engagement and Communications

4.5.1 Design and Delivery

- Given the shift in overall health care, moving away from acute and facility based health care to primary health care and primary healthcare teams, *Infoway* should examine the implications of this shift (e.g. where do home and continuing care fit in) and incorporate other forms of health care not currently covered in the *Infoway* strategy. This will require a shift in focus from provider focus to patient focus.
- As technology systems within jurisdictions have matured since the inception of *Infoway*, *Infoway* should move from a techno-centric design and implementation and focus more on the business of e-health care delivery (i.e. business practices, processes etc.).
- Vision 2015 should be revisited in consultation with P/Ts . One thought is that the current version focuses too much on the long-term when the technological environment is consistently changing and evolving at a rapid rate.
- While the current projects are entirely consistent with the *Canada Health Act*, the Act itself needs to be modernized to reflect current and future health care delivery (i.e. hospital acute care centric to home care dispersed preventative care centric delivery).
- *Infoway* should consider targeted funding to ensure that all P/Ts are at same stage in development/ adoption stage in the implementation of EHR before going forward with inter-jurisdictional interoperability as an agenda.
- The suite of privacy and security, planning, governance frameworks, the conceptual PIA and other tools that *Infoway* has developed are excellent. *Infoway* now should develop guidelines on how the various tools and frameworks can be used together. The concern is that used separately, they may contribute to the development of too many silos of knowledge in the implementation of EHRs.

4.5.2 Partnerships and Relationships

- There are very few projects that link between jurisdictions. The lack of demonstration projects showing how diagnostic images could be moved between jurisdictions was given as an example. *Infoway* notes that in two projects – Nunavut-sourced diagnostic images being read by Nova

Scotia-based radiologists, and the plan for the three-jurisdiction telepathology project – the images are in fact not moved, but rather users are given remote access to the local system.

- *Infoway* should focus on demonstrating how the interoperability could function to allow for a pan-Canadian EHR and provide a place-mat (e.g., full description of all elements required to allow for true interoperability such as the development of MOUs between provinces/territories and the federal health care systems, and requirements for certain levels of infrastructure such as broadband).
- *Infoway* needs to demonstrate better consideration of P/T internal funding policies and practices and their inherent cycles and provide additional flexibility in project processes, especially in the processes related to the revisions of targets/deliverables and other factors.

4.5.3 Engagement and Communications

- *Infoway* should continue to engage vendors to support interoperability. There is a need to debate open source and use of open source²¹. *Infoway* should be examining options to further engage vendors, but maintain a careful balance so as not to intrude on P/T areas of responsibility.
- *Infoway* can consult more with the jurisdictions in terms of what they need for common messaging across the system and develop their strategy from there. Jurisdictions have years of experience now and are in a better position to know what is needed in terms of messaging than they were four years ago.
- There is a need to develop an *Infoway* approach to the engagement of Canadian citizens. There is a need to create a “push” by consumers of the health care system for EHR.
- The physician community needs to be more involved as leaders to influence uptake by the general community. As well, *Infoway* needs to be more engaged with the national associations and use their leaders to influence their respective communities.

²¹ *Infoway* notes that it embraces open source.

5. Overall Conclusions and Recommendation

5.1 Summary of Conclusions

As noted in section 1.0 Introduction of this report, the Board-approved framework for this evaluation states that *Infoway's* overall objectives for this evaluation were to:

- Verify compliance with the requirements as specified in section 4.2 (Purpose) and 5.1 (Principles) of the 2007 Funding Agreement; and
- Report on progress against the Outcomes (Section 5.2) including lessons learned.

Conclusions for each of these overall objectives follow:

- *Infoway* complies with Section 4.2 on the use and purpose of the Grant Funding under the 2007 Funding Agreement. The analysis of the “footprint” of the 2007 Funding Agreement demonstrates that funds were used for the purpose of providing funding to Committed PWTG jurisdictions or organizations located within them, and used to assist them to develop and implement EHICT projects.
- *Infoway* is compliant with the Principles outlined in Section 5.1 of the 2007 Funding Agreement. These principles are:
 - Support of the development and use of EHICTs
 - Support a publicly funded health care system consistent with the Canada Health Act
 - Foster collaboration
 - Support interoperability
 - Adopt a pan-Canadian approach
 - Seek to achieve alignment of F/P/T and *Infoway* investments
- *Infoway* has met or made progress on those Outcomes outlined in Section 5.2 of the 2007 Funding Agreement that map to investment programs that were allocated funds. Specific conclusions for each outcome are listed below:
 - Based upon its governance and management practices, and the “footprint” being achieved from the 2007 Funding Agreement, *Infoway* has and continues to perform strongly against the outcome – Endeavour to Achieve Expected Outcomes in Annual Corporate Plans.
 - Through the 2007 Funding Agreement, *Infoway* continues to contribute to the outcome of developing reusable Health Information Building Blocks, both in principle and in practice. *Infoway's* ongoing work on the Blueprint and leadership around standards will only increase in importance to support reuse. Development of standard implementation guides and support for standardized conformance testing for new systems could also help in reusability and adoption.
 - Through the allotment of funds from the 2007 Funding Agreement, *Infoway* has made a strong commitment to furthering the implementation of iEHR solutions. Twenty projects (both new and ongoing) have been approved for funding. These will support progress towards *Infoway's* iEHR implementation targets and overall 50% goal for 2010. *Infoway* continues to work with jurisdictions on impediments, such as privacy legislation, to

- iEHRs. Ongoing revisions of the Blueprint will be needed to support the evolution of the health care system.
- To date, the investment of funds from the 2007 Funding Agreement has had only limited impact upon the development of re-usable tools/assets to address the human factor. The major reason is that the Innovation and Adoption investment program was not allocated funds from the 2007 Funding Agreement. The projects in the six investment programs where funds were allocated have made use of existing re-usable tools and assets, much in the same way as all other projects have done.
 - During the course of the last 2 ½ years, through its overall corporate initiatives as well as projects funded under the 2007 Funding Agreement, *Infoway* has continued to develop and refine its pan-Canadian, multi-jurisdictional approach to its work. New opportunities have been developed (e.g., certification) while other have been refined (e.g., privacy, blueprint, stakeholder engagement). Useful lessons have been learned from the Panorama Public Health Surveillance project regarding development and roll-out of pan-Canadian systems.
 - *Infoway* has applied its standard corporate approach regarding privacy, confidentiality and security to its work under the 2007 Funding Agreement in the same manner as it has for the rest of its work. These have led to compliance with all applicable laws regarding the protection of privacy, confidentiality and security of personal health information, as well as appropriate privacy principles. Privacy issues will continue to be a challenge to pan-Canadian and inter-jurisdictional interoperability of EHRs. *Infoway* continues to enable the exploration of these issues.

Further, the Board directed that the evaluation would also answer the following high level questions:

- Has the Grant Funding been solely used for the purpose of providing funding to Committed PWTG Jurisdictions or organizations to assist them in the development and implementation of EHICT projects?
 - This question relates back to compliance with Section 4.2 (Purpose) in the Funding Agreement. As noted above, *Infoway* is in compliance with this requirement.
- Are the appropriate strategies in place to achieve the outcomes with respect to EHICT funding as outlined in the 2007 Funding Agreement?
- Are the EHICT projects being managed in a cost-efficient and effective manner?
- Is *Infoway* making progress relative to its strategies with respect to EHICT projects?
 - The “footprint” analysis of the use of the 2007 Funding Agreement led to the following findings that support positive responses to each of these questions.
 - The funding under the 2007 Funding Agreement has been used to invest in EHICT projects within six of *Infoway*'s investment programs. This constitutes \$370 million of the \$400 million total funding. The other \$30 million is being spent, on an annualized basis, on associated governance and administration costs. Funding is being directed by investment strategies for each of the investment programs.

- The EHICT projects include those with jurisdictions and those which deal with pan-Canadian and inter-jurisdictional matters. The latter enable progress on the former and support the principles of the funding agreement.
- The funding under the 2007 Funding Agreement was quickly allocated to the investment programs and then committed to approved projects in the six investment programs. This funding was the major source of funding for these six investment programs from 2007 to the current date, and has supported projects in every jurisdiction. There is a lag in actual funds spent, which relates to the gated funding milestones and the e-health context and plans in each jurisdiction. This lag appears to be similar for projects funded under the 2007 Funding Agreement as for the previous funding agreements.
- The projects funded under the 2007 Funding Agreement are contributing to *Infoway*'s progress in meeting its overall goal and its key performance indicators for each of the six investment programs. However, because of time lags, the majority of impact of these projects will be felt in coming years.
- Specifically related to performance measurement and telling its performance story, *Infoway* is better positioning itself. The KPIs for each of the six investment program are appropriately more reflective of the demand side than are the targets that have been presented in Corporate Business Plans. The KPIs are well aligned with the overall "population-based" goal.

5.2 Overall Observations and Recommendation

The findings and conclusions of this performance evaluation lead to the following three overall observations and one recommendation:

- Observation 1: *Infoway* should continue its current program of investments, approaches and processes related to the 2007 Funding Agreement. Improvements and refinements to approaches and processes that derive from work related to this funding agreement, or more broadly, from *Infoway*'s overall work, should continue to be applied to work funded under the 2007 Funding Agreement.
- Observation 2: The sustainability of results/outcomes from projects funded under the 2007 Funding Agreement has a dependency upon funding announced in Budget 2009, but not yet provided to *Infoway*. Health Canada should clarify the future funding situation to *Infoway* as soon as possible, so that expectations for jurisdictional sponsors and *Infoway* are clear.
- Observation 3: The Auditor General of Canada's report recommends that *Infoway* report on adoption and use of the EHR by health care providers, in addition to availability of an EHR to them, as part of *Infoway*'s overall goal. The findings of this evaluation are consistent with the AG's recommendation.
- Recommendation 1: *Infoway* should revisit and update its Vision 2015 to reflect changes since its initial publication. Any revisions should drive down through *Infoway*'s Corporate Business Plan and linkages should continue to be made, where appropriate, with the outcomes in the 2007 Funding Agreement.

6. Management Response

Recommendation 1: *Infoway* should revisit and update its Vision 2015 to reflect changes since its initial publication. Any revisions should drive down through *Infoway's* Corporate Business Plan and linkages should continue to be made, where appropriate, with the outcomes in the 2007 Funding Agreement.

Infoway management agrees with this recommendation. As new strategies are developed and executed in support of *Infoway's* Vision 2015, revisions are continuously made to our plans and goals taking into account the outcomes of current programs. New strategies are normally validated with stakeholders and are reviewed/approved by the *Infoway* Board of Directors.

Annex A: Case Studies

A.1 Case Study – Alberta HIAL and Event Repository (Shared Health Record-SHR) Implementation

The Interoperable Electronic Health Record (iEHR) Systems Program is one of Canada Health Infoway's investment programs. The iEHR program was allocated \$170 million as a component of the March 2007 Funding Agreement, primarily for the implementation of interoperable electronic health record solutions which enable integration of information flow between various points of the health system such as order entry and results management, and which takes into account F/P/T initiatives and priorities.

The iEHR program is directed to projects that are designed to implement solutions that allow clinicians to view and update an integrated patient-centric health record that includes, demographic, diagnostic imaging, drug, laboratory, hospital clinical reports, infectious disease, immunization and other health information.

Under the March 2007 Funding Agreement, *Infoway* undertook twenty (20) iEHR projects.

Eligible costs for these projects included the following:

- Project planning and implementation;
- Solution software and hardware;
- EHR integration; and
- Change management.

Since its inception, *Infoway*'s investments in Alberta's network of EHR systems have included:

- AB Netcare Portal 2006 Provincial Deployment;
- Alberta Cancer Board - Cancer Surgery Synoptic Report;
- Alberta Chronic Disease Management;
- Alberta Client Registry;
- Alberta Clinical Telehealth Innovation;
- Alberta Diagnostic Imaging;
- Alberta First Nations Change Management;
- Alberta pan-Canadian Lab Standards Adoption;
- Alberta Pharmacy Information Network (PIN) Implementation;
- Alberta Provider Registry System (PRS) Implementation;
- Alberta Telehealth Stroke Overlay;
- Capital Health Enterprise Master Patient Index; and
- Viewer Development and Limited Production Rollout.

The Alberta Provincial Health Information Exchange and Shared Health Record Implementation project focuses on the implementation of Alberta's HIAL or Provincial Health Information Exchange (pHIE), including EHR Index and Longitudinal Record Services (LRS), and the implementation and provincial deployment of Alberta's Event Repository (Shared Health Record-SHR).

It is important to note that of the 13 projects listed above, seven (7) are in progress with only six (6) fully completed²². The implementation of Alberta's HIAL or Provincial Health Information Exchange (pHIE) is dependent on corollary projects to deliver EHR services (CR, PR, Security Services) or clinical domain data (PIN, RSHIP and Calgary Lab data).

The project was approved for funding in December 2007 and began in January 2008. At the project's inception, Alberta was well on its way to having an integrated system in place. As early as January 2008, the Alberta Netcare EHR made available various types of information²³ such as the following:

- **Patient Demographics:** ID numbers and demographic data for anyone registered with AHW with a Personal Health Number (PHN) or Unique Lifetime Identifier (ULI). Data went back to 1993.
- **Drug Information:** Approaching 80 per cent of information on all dispensed drugs province-wide. Information on prescriptions, allergies and intolerances went back to March 2002.
- **Lab Data:** General, microbiology, and pathology data is now available for all regions. Note that there are many regional variations in how far back certain specific categories of data are available. For many regions, lab data reporting was initiated in 2007. Capital Health data, however, dates back to April 2002.
- **Diagnostic Imaging Reports:** Now available from all regional facilities across the province. For most regions data goes back to mid-2007. Capital Health data dates back to August 2003.
- **Transcribed Reports:** Alberta Cancer Board reports are available back to May 2006 and include Physician Progress Notes, Admission Histories, Discharge Summaries, and Initial Consultations. Capital Region reports are available back to July 2003 and include Consultations, Histories, Letters, Discharge Summaries, and Operative Procedure Reports.

As of March 31, 2008, Alberta Netcare had approximately 25,000 registered Alberta Netcare EHR users.

It was at project inception that the Minister of Health and Wellness, Government of Alberta announced the creation of Alberta Health Services (AHS) on May 15, 2008. Alberta Health Services brought together 12 formerly separate health entities in the province: nine geographically based health authorities (Chinook Health, Palliser Health Region, Calgary Health Region, David Thompson Health Region, East Central Health, Capital Health, Aspen Regional Health, Peace Country Health and Northern Lights Health Region) and three provincial entities working specifically in the areas of mental health (Alberta Mental Health Board), addictions (Alberta Alcohol and Drug Abuse Commission) and cancer (Alberta Cancer Board). Ground ambulance service was added to the responsibilities of AHS in an announcement from Alberta Health and Wellness on May 30, 2008.

This had a severe impact on the original timelines envisioned in the project deliverables. However, it also had the benefit of eliminating the necessity of negotiating with numerous geographic health authorities and three provincial entities plus the municipal services of ground ambulance with respect to technological solutions and standards.

²² Canada Health Infoway website, <http://internet.infoway-inforoute.ca/lang-en/about-ehr/ehr-progress-map?view=province&id=1%3Aalberta>

²³ Alberta Netcare EHR Newsletter, www.albertanetcare.ca Vol. 4, No. 1, January - May 2008

In terms of the original project plans, the restructuring of the delivery of Alberta Health Services has pushed back the completion dates of deliverables in the Alberta Provincial Health Information Exchange and Shared Health Record Implementation project by roughly 12 to 18 months from the milestones identified in the original project plans.

Today, in spite of the delays incurred as a result of the restructuring process and inherent delays as roles and responsibilities were reallocated and personnel moved to new functions, the Alberta Netcare EHR continues to add clinical and patient information available, such as the following:

- **Patient demographics:** demographic data and ID numbers are available for anyone registered through Alberta Health with a Personal Health Number (PHN) or Unique Lifetime Identifier (ULI). Data is available as far back as 1993.
- **Drug information:** 92 per cent of all prescription dispenses expected in an average month are being added to Alberta Netcare.
- **Laboratory data:** general lab, microbiology, pathology and blood bank data is available for all of the former regions. Note that there are many regional variations of when specific categories of data became available.
- **Diagnostic imaging (DI) text reports:** The Alberta Netcare Portal includes reports from the Cross Cancer Institute, Tom Baker Centre, and all of the former regions. Note that there are many regional variations of when specific categories of data became available. DI text reports from Amiha Diagnostics in Edmonton were added September 2009. DI text reports from Calgary's Canadian Medical Laboratories were added October 2009. DI text reports from Calgary's Canadian Diagnostic Centres were added September 2009.
- **Transcribed reports:** From the former Capital Region, admission histories, consultations, discharge summaries, operative/procedure reports, emergency discharge summaries, ECGs, community care client profiles and letters are available as far back as July 2003. Reports from the Cross Cancer Institute and Tom Baker Centre, including physician progress notes, admission histories, discharge summaries and initial consultations, are available back to May 2006. Operative reports from Cancer Surgery Alberta are available for the entire province as of June 2007. Consultations, discharge summaries, admission histories, operative reports and procedure reports from Calgary facilities were added September 2009.
- **Immunizations:** the former Capital Region records from public health sites are available back to January 1995. These records do not include emergency or private office immunizations.
- **ECG:** the former Capital region ECG results are available for: Sturgeon Misericordia, University of Alberta, Leduc and Grey Nuns Hospitals. ECG results from the Royal Alexandra Hospital were added September 2009. Holter and Stress Test results from the Mazankowski Alberta Heart Institute were added December 2009.

Full completion of the Alberta Provincial Health Information Exchange and Shared Health Record Implementation project is slated for January 31, 2011.

A.2 Case Study – Patient Access to Quality Care (PAQC): New Brunswick Tertiary Telerehabilitation Project Phase II

Patient Access to Quality Care (PAQC) is one of Canada Health Infoway's investment programs. The PAQC program was allocated \$50 million as a component of the March 2007 Funding Agreement, primarily targeted for electronic health information communication technologies and other projects related to establishing patient wait time guarantees and improving access to quality care.²⁴

The PAQC program is directed to projects that support wait time management. Specifically, the PAQC program will “demonstrate patient-focused clinical management transformation and its impact on timely access to care and reduction in wait times”.²⁵ Under the March 2007 Funding Agreement, *Infoway* undertook six (6) PAQC demonstration projects that were intended to “leverage existing investments in physician office EMRs, hospital CPOE, patient portals, chronic disease management systems and wait time management systems, as well as planned clinical and administrative transformations that can enable a sustainable reduction in patient wait times”.²⁶ Eligible costs for these projects included the following:

- project planning and implementation;
- solution software and hardware;
- EHR integration;
- change management; and
- benefits evaluation.²⁷

The New Brunswick Tertiary Telerehabilitation project is a national PAQC prototype that combines the use of traditional telehealth technology with a secure web-based patient access to specialized rehabilitation recourses and services. The services are intended to be accessible on a secure patient access across the internet. The project began in 2005 and is aligned with the New Brunswick Telehealth Strategic Plan, which identified tertiary and rehabilitation services as a priority.²⁸ The project is also supported by the findings of a provincial telerehabilitation seminar that was undertaken to inform and gain input and support for this initiative. Symposium attendees (over 100 rehabilitation professionals from all Regional Health Authorities (RHAs), Department of Health and IWK Health Centre) had the opportunity to learn from international experts in telerehabilitation.²⁹

Telehealth can be defined as the use of information and communication technologies to deliver health and healthcare services and information over large and small distances.³⁰ Telehealth is an innovative way of using information and telecommunications technology (e.g. computers, internet, video-conferencing) to improve the quality and accessibility of health care services, regardless of geographical boundaries. For

²⁴ Canada Health Infoway. Patient Access to Quality Care Investments Program Strategy. Power Point presentation. Trevor Hodge, Senior Vice President, Investment Strategies and Alliances (September 19, 2007). Pg 5

²⁵ National Research Council of Canada. Patient Portal Technologies (2009). Pg. 6. Provided by Stan Cassidy Centre of Rehabilitation.

²⁶ *Ibid.*, pg 46

²⁷ *Ibid.*, pg 47

²⁸ River Valley Health, Telehealth Services: Health Information Division. Telehealth Strategic Plan. June 2002 Available at: http://www.rivervalleyhealth.nb.ca/en/programs/patient/Telehealth_Strategic_Plan_Eng.pdf

²⁹ A summary of the proceedings from this event was provided by the Stan Cassidy Centre of Rehabilitation.

³⁰ Industry Canada. Sector Competitiveness Frameworks Series-Telehealth Industry (Ottawa: Industry Canada Communications Branch, 1997),1.

the region's patients, telehealth has resulted in bringing high quality services closer to home, reducing the travel costs associated with accessing care, and bringing new services to the region that may not have been possible.

Telerehabilitation focuses on the use of telehealth in the rehabilitation field. Telerehabilitation provides new opportunities to make provincial specialty services, such as those provided by the Stan Cassidy Centre of Rehabilitation, more equitably accessible province wide.³¹ Tertiary care refers to the restoration of mobility and independence that each patient can appropriately attain. Early intervention tertiary rehabilitation can dramatically improve outcomes for patients.³²

The New Brunswick PAQC Phase I activities were conducted during the period of November 2008 to March 2009 with the objective of defining the business requirements, architectural purpose and implementation plan for the tertiary telerehabilitation demonstration project.³³

Phase I of the project identified key benefits that could be achieved as a result of the completion of the tertiary telerehabilitation efforts. These included:

- Improved utilization of local, regional and provincial resources (i.e. the correct treatment in the most appropriate location by the most appropriate provider);
- Reduced gaps in service delivery across the continuum of care by supporting a collaborative, team-based practice model;
- Reduced duplication of examinations and tests ; and
- Increased skills and capacity of local providers to provide more care locally.³⁴

The New Brunswick PAQC Phase II project is a planning and feasibility project that seeks to enable the building blocks necessary to implement the telerehabilitation demonstration project.

The Telerehabilitation Phase II project involves two key planning and feasibility activities as follows:

- Patient Portal: A single entry point to a patient to receive various communications from service providers (i.e. appointment requests and reminders, secure email communication and access to specialized content via video, audio and text;
- Mobile devices investigation (e.g. Fieldview);
- Integrated Telerehabilitation (Synchronous) Operational Model; and
- Telehealth infrastructure (includes technology, people, processes, physical plant) in four (4) regional hospital rehabilitation areas and the Stan Cassidy Centre of Rehabilitation³⁵.

³¹ River Valley Health Summary of Proceedings: Provincial Tertiary Telerehabilitation Seminar: Seizing New Opportunities to Improve Access to Services. Summary Proceedings. September 22 & 23, 2005.

³² Stan Cassidy Centre of Rehabilitation. What is Tertiary Rehabilitation. Available at: <http://www.stancassidyfoundation.ca/about/>. Last viewed on 2010.02.08

³³ Legal Agreement between Regional Health Authority B and Canada Health Infoway. April 2009. Schedule A. Project Charter. Phase II: Patient Access to Quality Care (PAQC Implementation Phase. Pg. 4

³⁴ Legal Agreement between Regional Health Authority B and Canada Health Infoway. April 2009. Schedule A. Project Charter. Phase II: Patient Access to Quality Care (PAQC Implementation Phase. Pg. 10-11

³⁵ The Stan Cassidy Centre for Rehabilitation (SCCR) is New Brunswick's provincial tertiary neurological rehabilitation centre. Specialized services are provided to adults and children with traumatic brain injuries, spinal cord injuries, progressive neurological disorders, neuromuscular disorders, a wide range of acquired or inherited neurological disorders, serious developmental disorders, and upper extremity amputations. SCCR also provides tertiary services that need an interdisciplinary team, specialized equipment or expertise not available to the client

The clinical areas of focus for the Tertiary Telerehabilitation project are patients with a diagnosis of stroke, neuromuscular disease, traumatic brain injury and cerebral palsy, and patients requiring highly specialized assistive technology services.³⁶

The Tertiary Telerehabilitation project is structured around a long term vision to be compliant and consistent with the *Infoway* EHRS Blueprint. Alignment with the EHRS Blueprint provides a number of benefits for efforts towards the establishment of the New Brunswick Tertiary such as:

- Compatibility with current and future repositories for entities such as patients, providers and service locations;
- Reducing operational costs for Tertiary Telerehabilitation by leveraging a common set of centrally maintained datastores;
- Benefits demonstrated by the Tertiary Telerehabilitation project are more easily replicated by other jurisdictions when based on common data and messaging standards; and
- Reduced implementation costs by leveraging existing infrastructure; — Real time data consistency with systems that share common data (i.e. referral data, discharge summaries, etc.).³⁷

The Patient Portal is the central component of the Tertiary Telerehabilitation Project and includes a website for patient workspaces, calendars for patient appointments and secure messaging interfaces. The Patient Portal will enable patients as follows:

- view documents and videos shared with them by the care providers;
- share their own documents and videos with their Care Providers and/or Support Providers;
- communicate with any provider using a secure email system;
- keep up to date with scheduled appointments;
- have access to a list of the members of their circle of care;
- receive email notifications of any changes to information available to them; and
- receive email reminders of up-coming appointments.³⁸

The Patient Portal is intended to go live in May 2010. A benefits evaluation will be conducted during the following months. The Benefits Evaluation is due to be completed by October 2010.

locally. Source: River Valley Health Summary of Proceedings: Provincial Tertiary Telerehabilitation Seminar: Seizing New Opportunities to Improve Access to Services. Summary Proceedings. September 22 & 23, 2005. Available at: <http://www.rivervalleyhealth.nb.ca/en/programs/patient/telehealth.aspx>

³⁶ Canadian Health Care Technology. October 2009. "Stan Cassidy Centre to Implement web portals for patients, caregivers". Available at www.canhealth.com

³⁷ Stan Cassidy Centre of Rehabilitation. Tertiary Telerehabilitation Demonstration Project Fact Sheets. Provided by Stan Cassidy Centre of Rehabilitation. (nd)

³⁸ Ibid.

A.3 Case Study – Diagnostic Imaging Projects in Ontario

Canada Health Infoway's Diagnostic Imaging (DI) Systems investment program, “supports jurisdictional projects that enable authorized health care providers to access and view diagnostic images regardless of where the image was created”.³⁹

As a component of the Ontario e-health strategy, the Ontario Diagnostic Imaging and Picture Archiving and Communications System (DI/PACS) program provides a secure computer-based system that contains patient radiology reports and diagnostic images i.e. CT scan, ultra sounds, MRIs and x-rays. The DI/PACS program is constituted by six regional projects and covers 148 hospitals. It is estimated that approximately 12 million digital images will be produced annually in Ontario hospitals.⁴⁰

DI/PACS enables secure communication of radiology reports and diagnostic images between Local Health Integration Networks (LHINs) and hospitals. The DI/PACS system allows for the elimination of film and paper diagnostic images and time-savings for physicians, patients, clinicians and radiologists. More specifically, the DI/PACS system derives the following benefits for patients:

- Eliminates unnecessary patient travel every year;
- Reduces wait times and lengths of stay thanks to quicker examination reports and clinical decisions by physicians and specialists;
- Reduces duplicate and unnecessary examinations;
- Improves access to radiologists by 30 to 40 per cent for patients in remote areas; and
- Eliminates the need to physically transfer images or CDs to the specialist.

Further, benefits for physicians include the following:

- Faster and easier access to images and reports;
- Remote access to images for off-hours coverage;
- Enhanced remote reporting capabilities; and
- Real-time clinical collaboration, increasing access to a broader range of specialists.⁴¹

A recent Benefits Evaluation reported that more than half of referring physicians indicate PACS improved efficiency of clinical decision making by 30 to 90 minutes per week, with an average of 52 minutes; almost half of referring physicians (43%) identified a reduction of patient transfers between facilities per month and; turnaround times, in both rural and urban centres, have improved by 51% and 23% respectively (41% overall).⁴² Further the Benefits Evaluation indicated the PACS has resulted in 25-30% improvements in both technologists' and radiologists' productivity.⁴³

³⁹ <http://www.infoway-inforoute.ca/lang-en/about-infoway/approach/investment-programs/diagnostic-imaging-systems>

⁴⁰ eHealth Ontario. Media Release Communiqué. July 15, 2009. Available at: <http://www.ehealthontario.on.ca/programs/dipacs.asp>

⁴¹ <http://www.ehealthontario.on.ca/programs/dipacs.asp>

⁴² Canada Health Infoway PACS Benefits Evaluation Data; Videre Team Analysis. Pg. 6 Available at http://www2.infoway-inforoute.ca/Documents/CHI%20Diagnostic%20Imaging%20Report_ENGreport.pdf

⁴³ Ibid., pg. 22

To date, the DI/PACS collaboration has resulted in all hospitals in Ontario accessing digital images instead of film. Further, the collaboration has achieved the following:

- 70 per cent of all Emergency Neurosurgery Image Transfer System (ENITS) sites have been deployed and the ENITS service has been used in the neurological diagnosis of 250 critical encounters to date, avoiding 102 unnecessary emergency patient transfers and saving the Ontario health system an estimated \$10 million.
- The South Western Ontario Diagnostic Imaging Network (SWODIN) Project has 36 hospitals connected to its repository and completed its first integration of a dissimilar vendor's PACS application into SWODIN's DI repository.
- The Hospital Diagnostic Imaging Repository Services (HDIRS) now has 18 of its 23 hospitals connected to the repository and the project completed the sharing of images between its Agfa Healthcare PACS hospitals.
- The Northern & Eastern Ontario Diagnostic Imaging Network (NEODIN) DI project (Champlain, North East and North West LHINs) repository went live on September 1, 2009, with North Bay hospital being the first hospital to be connected to the repository.
- The current state analysis for the DI images generated in the Independent Health Facilities (IHF) is in progress.⁴⁴

SWODIN connects radiologists, referring physicians and specialists across South Western Ontario enabling them to instantly access diagnostic images. SWODIN includes thirty hospitals in LHINs 1 and 2.⁴⁵ It is estimated that by 2011, sixty hospitals across LHINs 1-4 will be connected.⁴⁶

The Northern & Eastern Ontario Diagnostic Imaging Network (NEODIN) DI project (Champlain, North East and North West LHINs) repository went live on September 1, 2009. The Champlain LHIN Diagnostic Imaging repository (DI-r) is now fully in implementation phase. The Champlain DI-r is fostered by a collaborative partnership with the Pan Northern Ontario PACS project (PNOP).⁴⁷

The partnership between PNOP and Champlain LHIN is referred to as the Northern and Eastern Ontario DI Network. This partnership furthers the agenda to establish a fully integrated and interoperable pan-provincial electronic health record. The NEODIN partnership will include two governance groups. First, the Physician Champion Group will be convened as an advisory group to the steering committee to provide input on workflow, standards and change management efforts. Second, the Privacy Working Group will leverage the existing Champlain Privacy Committee and work in conjunction with the PNOP privacy team.

At recent meeting (February 2010) the Ontario Ministry of Health, eHealth Office met with individuals from four Ontario DI projects to discuss how to link existing DI-r's together. Ongoing efforts towards DI-r linkages are intended to enable image transfer between DI-r's by mid-2011.⁴⁸ By the fall of 2011,

⁴⁴ <http://www.ehealthontario.on.ca/programs/dipacs.asp>

⁴⁵ Diagnostic Imaging Network. South Western Ontario. Media Release. Tuesday, August 18, 2009. Available at: http://www.ehealthontario.on.ca/pdfs/News/listowel_wingham_MR.pdf

⁴⁶ Diagnostic Imaging Network South Western Ontario. About SWODIN. Available at: <http://www.swodin.com/about-swodin>

⁴⁷ The PNOP is a PACS alliance between the North East and North West LHINs in Northern Ontario.

⁴⁸ NEODIN News. Issue 01, March, 2009.

eHealth Ontario estimates that 100 per cent of the images taken in the delivery of hospital-based health care to Ontarians will be digitally stored and shareable among health care providers.⁴⁹

⁴⁹ eHealth Ontario. Media Release Communiqué. July 15, 2009. Available at:
<http://www.ehealthontario.on.ca/programs/dipacs.asp>

A.4 Case Study – Evolution of the Standards Collaborative

The Standards Collaborative was formed in 2006 and is hosted by *Infoway*. The Collaborative originates from a project, carried out between 2004 and 2006 to launch and operationalize a standards collaboration process. Then in 2006, *Infoway* and the Canadian Institute for Health Information (CIHI) agreed to establish a new Canada-wide coordination function to support and sustain health informatics standards on a national scale. The process involved extensive consultation.

This agreement was reached after extensive consultation with and approval by, both *Infoway*'s and CIHI's boards as well as the federal/provincial/territorial Conference of Deputy Ministers of Health. There was also a thorough engagement and consensus-building consultation with domestic as well as international health information standards stakeholders and interests.⁵⁰

Since then, *Infoway* has made significant investments in standards development projects, as well as the Standards Collaborative itself for the support and maintenance of the standards, services to health information standards stakeholders in Canada and liaison with international Standards Development Organizations (SDOs).

The mandate of the Standards Collaborative is to:

- Establish standards to support the *Infoway* EHR mandate;
- Provide services to support and maintain these standards; and
- Act in formal liaison role to international SDOs.

A more detailed elaboration of the scope of the mandate⁵¹ is presented in the box at right.

⁵⁰ Standards Collaborative, *Infoway* publication, 2007

⁵¹ Ibid

Scope of the Standards Collaborative's Mandate

Standards to support the *Infoway* EHR mandate:

- Client Registry Standards
- Diagnostic Imaging Standards
- Drug Standards
- iEHR Clinical Messaging Standards
- iEHR Technical Standards
- Laboratory Messaging and Nomenclature Standards
- National e-Claims Standards
- Patient Access to Quality Care Standards
- Physician Office Systems Requirements
- Provider Registry Standards
- Public Health Surveillance Standards
- Security and Consent Standards
- SNOMED® CT

Provision of services to support and maintain these standards:

- Client Services & SDO Relations
- Development Support
- Education and Training Services
- Implementation Support Services
- Conformance Services
- Maintenance Services
- Standards Collaborative Engagement and Process Services

International SDO Ambassador

- Canadian ambassador for the domestic distribution, quality assurance, copyright, maintenance and support of standards through agreements with international SDOs
- Support for Canadian delegates to international SDOs
- Official liaison for Canada to the following SDOs: Digital Imaging and Communications in Medicine (DICOM); Health Level 7 Inc. (HL7); International Health Terminology SDO (IHTSDO); International Organization for Standardization's Health Informatics Technical Committee (ISO/TC 215), in conjunction with the Standards Council of Canada and the Canadian Standards Association; Logical Observation Identifiers Names and Codes (LOINC®)

The Standards Collaborative is a member-based organization, with both individual (including students) and corporate members contributing annual dues. Corporate members come from a variety of communities including:

- Health Service Delivery organizations;
- Laboratories;
- Pharmacies;
- Government health agencies/departments;
- Health solution providers; and
- Health information consultants.

The Standards Collaborative has four complementary strategies through which it is assisting provinces and territories to accelerate the implementation of standards and health information solutions:

- Increase awareness and understanding of *Infoway*, the Standards Collaborative and pan-Canadian health information standards and how they enable interoperability of health IT solutions;
- Engage a broad spectrum of stakeholders throughout the standards life cycle to ensure the ongoing relevance of standards for all;
- Stimulate market demand for standards to facilitate the uptake of pan-Canadian standards locally, regionally and nationally. In addition, influence, leverage and align with international standards; and
- Reduce the risks and costs associated with the uptake of standards by continuing to provide products and services for pan-Canadian standards throughout the standards life cycle.

The governance model for the Collaborative has developed with three levels of committees and working groups: strategic, coordinating and domain levels.

- **Strategic level**
 - Standards Collaborative Strategic Committee (SCSC)
 - Strategic direction on standards and services, and decisions regarding key milestones in the standards life cycle
- **Coordinating level**
 - Standards Collaborative Coordinating Committee (SCCC)
 - Coordination and guidance of standards through the standards life cycle, and on processes and services
 - Standards Collaborative Clinical Sub-Committee (CSC)
 - Clinical alignment and harmonization, and clinical guidance on services and activities
 - Standards Collaborative Technical Sub-Committee (TSC)
 - Technical alignment, and technical guidance on services and activities
- **Domain level**
 - Standards Collaborative pan-Canadian Standards Group (pCSG)
 - pan-Canadian review and validation
 - Standards Collaborative Working Group (SCWG)
 - Recommendations on adoption and use of standards, and review and voting on content of standards
 - Nine Working Groups:

- SCWG 1: Population Health (Delivery of Care)
- SCWG 2: Individual Care (Delivery of Care)
- SCWG 3: Managing the Health System
- SCWG 4: Medication Management
- SCWG 5: Labs and Diagnostics
- SCWG 6: Infostructure and Architecture
- SCWG 7: Non-Clinical Registries
- SCWG 8: IT Privacy and Security Services
- SCWG 9: Terminology Representation and Services

Through the use of the governance model, the process for selecting and approving standards moves through three key decision points. These are described below⁵².

#1: Standard Strategy Selection (SSS) Decision

At this first key decision point, because of the significant impact on the implementation of systems, a strategy on whether a standard should be adopted, adapted or developed is required before initiating further work on the standard. An in-depth options analysis is conducted and one or more of the following strategic recommendations may be accepted in order to meet a defined business need:

- Adopt an existing standard with no modifications;
- Adapt existing standard while doing some modifications or additional development work; and/or
- Develop a new standard using existing SDO frameworks like HL7.

#2: Stable for Use (SFU)

At this second key decision point, the Stable For Use approval indicates that the standard is ready for use by early adopters including both limited production roll-outs as well as pilot implementations. Users of such specifications should understand that changes may arise from the experiences of these implementations as well as from potential ballot activities that may be underway. However, it is expected that these changes will be well understood and documented for the benefit of potential adopters.

#3: Formal Approval (FA)

At this third key decision point, the Formal Approval designation indicates that a standard has completed any formally recognized and appropriate Standards Development Organization balloting or approval processes as well as completed a pilot test or early adopter implementation recognized by the SC committees.

⁵² Ibid

In February 2009, *Infoway* launched Certification Services to “accelerate the introduction of private, secure, interoperable health information solutions that leverage Canada’s substantial investments in EHR systems”⁵³. The objectives of *Infoway*’s Certification Services are to:

- Increase the recognition, acceptance and adoption of trusted, interoperable health information solutions in the Canadian marketplace;
- Reduce the cost and risk to vendors, purchasers and users of these solutions in Canada; and
- Ensure privacy, security and interoperability requirements are met.

The Certification Services complement the mandate and work of the Standards Collaborative. At launch, *Infoway* offered pre-implementation certification for consumer health platforms.

In November 2009, *Infoway* announced the addition of four new pre-implementation certification offerings – consumer health applications, client registries, provider registries and immunization registries.

At the heart of Certification Services is the review of vendors’ products to determine whether it conforms to the *Infoway* assessment criteria. The assessment framework has two classes of criteria: Solution, which includes functionality, privacy, security and interoperability; and Management. The criteria were developed using accepted standards within the Canadian and international health information communities, and enhanced with input and feedback from a broad range of health industry stakeholders.

⁵³ <http://www.infoway-inforoute.ca/lang-en/working-with-ehr/solution-providers/certification>