Toronto East Network (TEN) DI/PACS Repository Project

VISION

Seamless, filmless, paperless imaging services…anytime, anywhere



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Today's Discussion

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Project History: Collaboration and Partnership (1)

- **The Toronto East Network (TEN) Diagnostic Imaging (DI) Picture Archiving and Communication System (PACS) Repository Project is a joint initiative commissioned by a voluntary consortium of 23 hospital corporations that span the central and southeastern regions of Ontario. The project launched in early 2005 to undertake a Phase 0/1 Planning Project sponsored by Canada Health Infoway (Infoway).**

- **In collaboration with the participating hospital partners, Infoway and the Ontario e-Health Program Office, TEN created a three-year phased implementation strategy for the creation of a shared diagnostic imaging repository service (DI-r) to store images and reports.**

Project History: Collaboration and Partnership (2)

- **This initiative is aligned with the digital imaging strategy and e-health strategy of the Ontario Ministry of Health and Long Term Care, as well as the electronic health record vision of Canada Health Infoway. As co-investors in the project, Ontario and Infoway will assist in supporting the cost of establishing the image archive and provide funding for recruitment of project subject matter expertise.**

- **Following the Phase 1 Planning Project, the first priority identified was to implement PACS in those hospitals that had not yet moved to a filmless digital environment and then implement the DI-r. An Infoway-sponsored coordinated RFP resulted in selection of a primary vendor for both the PACS and DI-r data centre service.**

- **Purpose of the DI-r is to integrate the DI results from the 23 hospital source system PACS to a regional DI repository within the IHE XDSi framework.**

Toronto East Network Collaboration

23 Corporations, 36 sites spanning 4 LHINs

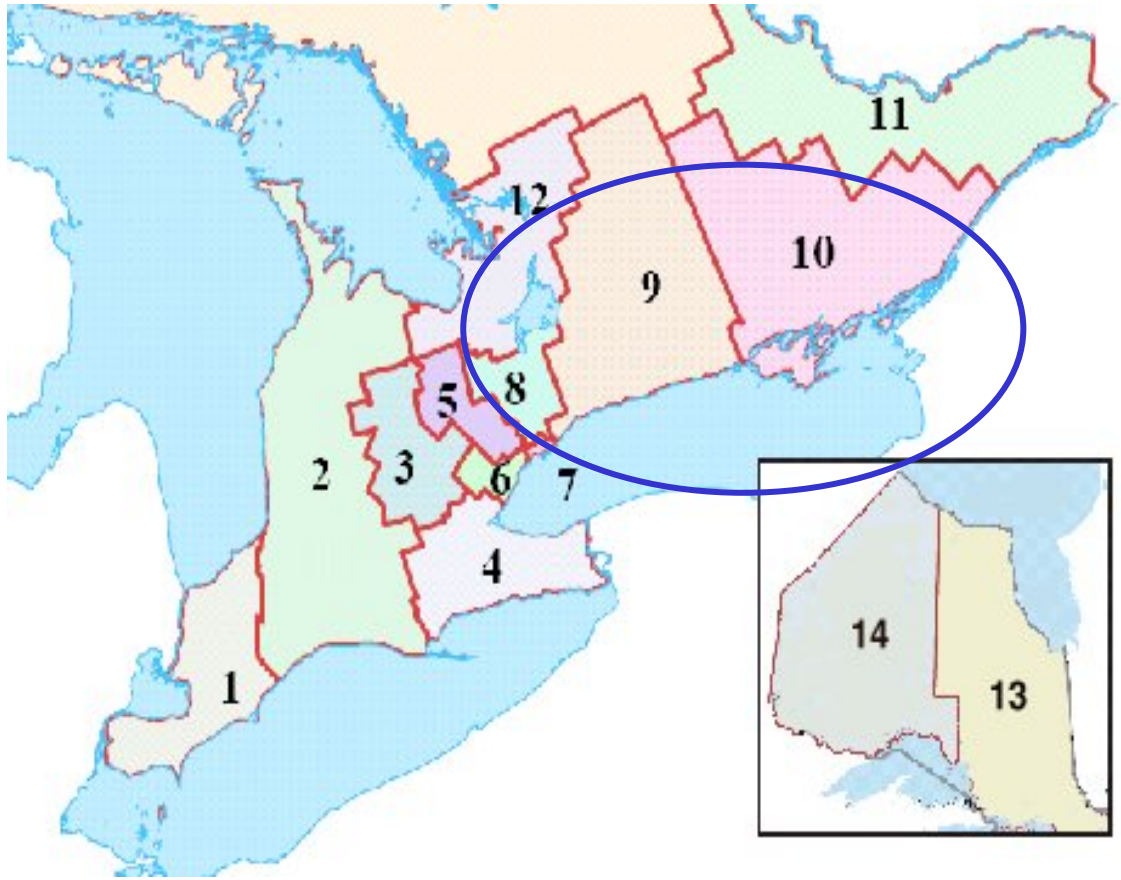
Central (LHIN 8)
Southlake Regional Health Centre
Stevenson Memorial Hospital
York Central Hospital
Markham Stouffville Hospital
North York General Hospital

Central East (LHIN 9)
Rouge Valley Health System
Peterborough Regional Health Centre
Haliburton Highlands Health Services
Campbellford Memorial Hospital
Lakeridge Health Corporation
The Scarborough Hospital
Ross Memorial Hospital
Northumberland Hills Hospital

Toronto (LHIN 7)
Toronto East General Hospital
St. Michael's Hospital
Sunnybrook Health Sciences Centre

South East (LHIN 10)
Providence Complex Continuing Care
Lennox & Addington County Hospital
Perth Smiths Falls District Hospital
Quinte Health Care
Brockville General Hospital
Hotel Dieu Hospital
Kingston General Hospital

	Existing PACs sites
	New PACS sites



~2.6 million DI exams/year

TEN DI-r Business Case

A detailed Business Case was presented to all the participating hospitals. The opportunity represents:

- **Unique collaboration of 4 geographic regions that include 23 hospital corporations coming together to improve quality of care**
- **Integration of multi-PACS systems and processes across 23 facilities**
- **Enhance the level of patient care by permitting faster, easier image access both at the point of care and wherever continuing care is required**
- **Real-time clinical collaboration**
- **Advancement of the EHR across the participating organizations**
- **Cost benefit from economy of scale pricing advantages for storage and disaster recovery based on coordinated RFP**
- **Leveraged Infoway funding to plan for collaboration**

Value Proposition

- **Moving towards an Electronic Health Record**
  - Integration with provincial EMPI / Client Registry Project
  - Will provide disaster recovery and business continuance options not available today
  - Address privacy issues for shared records
- **Improved Access**
  - Ability to recruit and retain radiologists, specialists, physicians and staff
  - Increase patient throughput, reduce patient transfers and wait times
  - Real-time collaboration and clinical consultations with improved access to specialists and second opinions
  - Education and training
- **Improved Productivity**
  - Radiologists, specialists and technologists
  - Ability for radiologists to share workload across the region
  - Reduce diagnostic images by 5-15% by reducing avoidable retakes
- **Improved Quality of Care**
  - Diagnosis and treatment and radiation exposure
  - Reduction of medical errors

Guiding Principles of Shared DI-r Service

- **Ontario's first interoperable heterogeneous Diagnostic Imaging Repository (DI-r) opens up the potential to deliver a range of benefits to patients. Clinicians can access images taken at different stages in a patient's health care journey, accelerating diagnosis and treatment and streamlining care.**

- **The deployment of a DI-r shared service will enable clinicians in any of the participating hospital sites to access and view images regardless of where the test was conducted.**

- **Centralized storage of images and reports optimizes the information flow, eliminates duplication and provides "any time – any place"access to images and reports to support an efficient, high quality and well communicated diagnosis.**

Launching the Shared DI-r Service

- **In late 2006, a not-for-profit company, *Hospital Diagnostic Imaging Repository Services (HDIRS),* owned by the participating 23 hospitals, was incorporated.**
- **On behalf of the TEN collaboration partners, HDIRS will manage the day-to-day operation of the shared DI-r service.**
- **HDIRS is a small company residing within one of the hospital sites. It will have 4 - 5 fulltime employees, contracted services from hospital sites for financial and privacy support, and 3 resources provided by the primary vendor as part of their value-add to the solution.**
- **HDIRS is governed by a Board of Directors with CEO representation from the collaborating hospitals with operating principles defined in an agreed-to-MOU by member hopsitals.**
- **A shared operating cost model has been developed for HDIRS to include software licenses, storage, web servers, staff and maintenance, data centre operations, network management costs between sites, refresh costs for software upgrades and service contracts.**

Governance of HDIRS

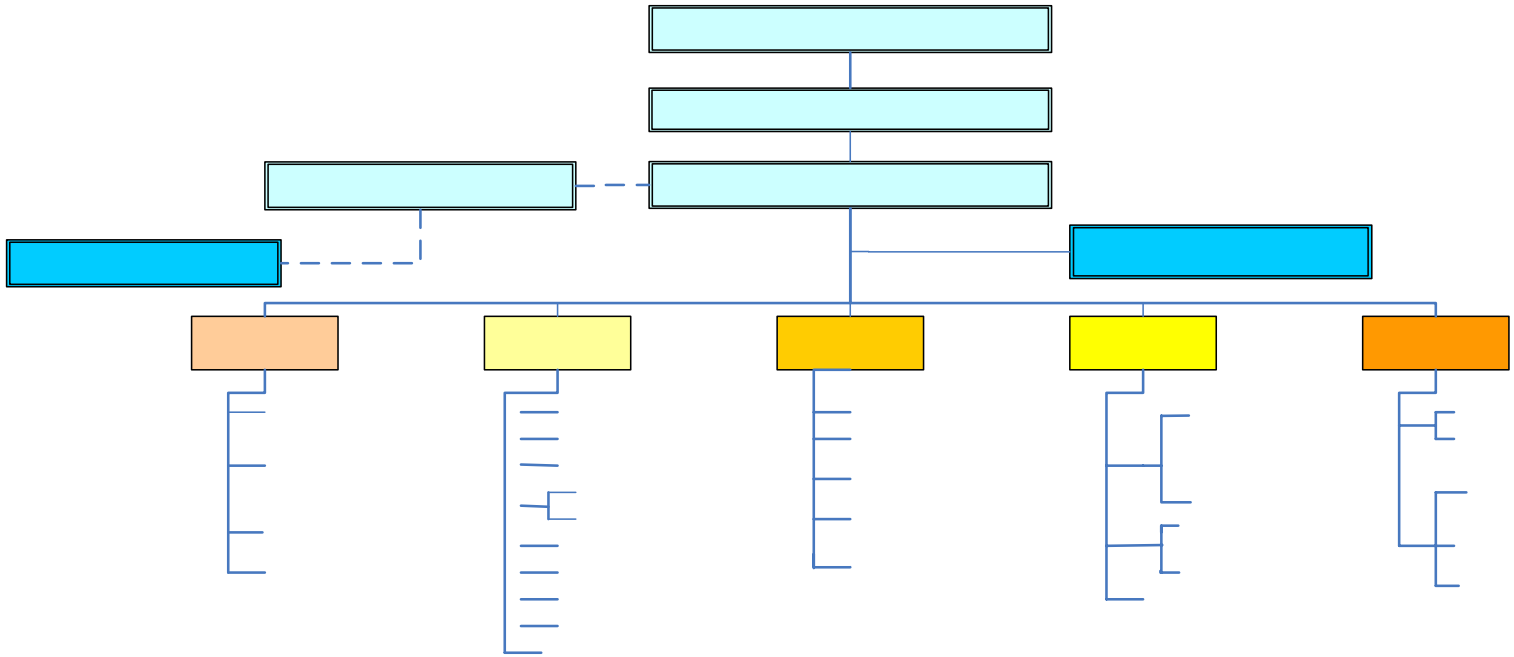
- **HDIRS Interim Governance Steering Committee evolved into an Interim Board with following composition:**
  - **Interim Chair**
  - **Interim Vice-Chair**
  - **Interim Treasurer**
  - **Interim Secretary**
  - **Interim General Manager**
  - **Subject Matter Expert**
  - **Interim Board Support provided by TEN PMO**
- **Interim Board meets monthly**
- **Mandate:**
  - **Ensure incorporation of HDIRS – Completed Dec. 13, 2006**
  - **Oversee sign off of Membership Agreement and Service Level Agreements**
  - **Recruit the HDIRS General Manager – Recruitment Agency engaged in March 2007**
  - **Transition to permanent Board – Early 2008**

Transition to HDIRS in 3 Phases

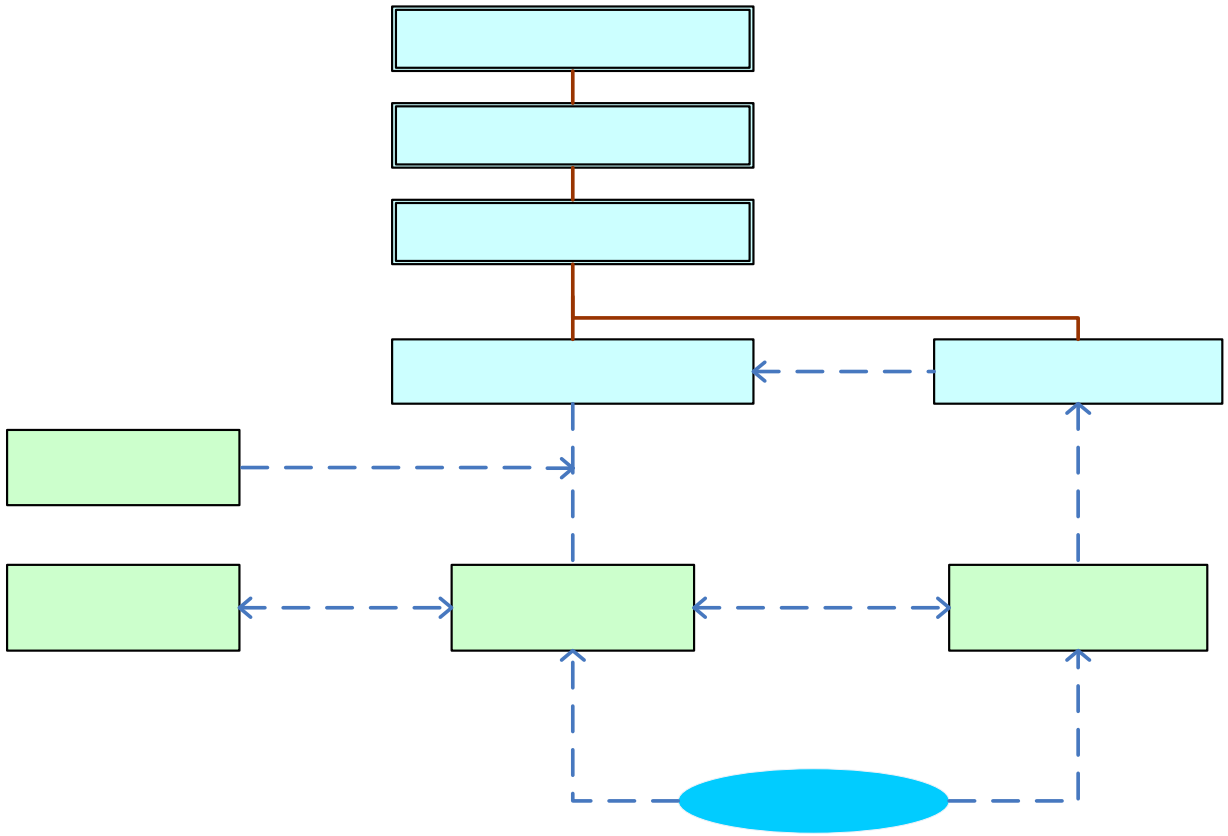
We are here

- **Stage 1**
  Creation of Newco ⇨ Appointment of Interim Board ⇨ Development of Documentation: MSA, SLA, Legal Agreements ⇨Recruitment of GM ⇨ High-level Business Plan ⇨ Communication planning in conjunction with E-Health Program Office and Infoway
- **Stage 2**
  Detailed 5-year Business Plan ⇨ Form Joint Operations Committee (JOC) ⇨ Clinical Advisory Committee Formation ⇨ Redefine projects and company organization structure ⇨Refresh Communication Plan ⇨ Review with new HDIRS General Manager and JOC for presentation to the Board for ratification
- **Stage 3**
  Build HDIRS organization operational policies and processes with new GM and execute on the delivery and future planning ⇨ Elect permanent Board

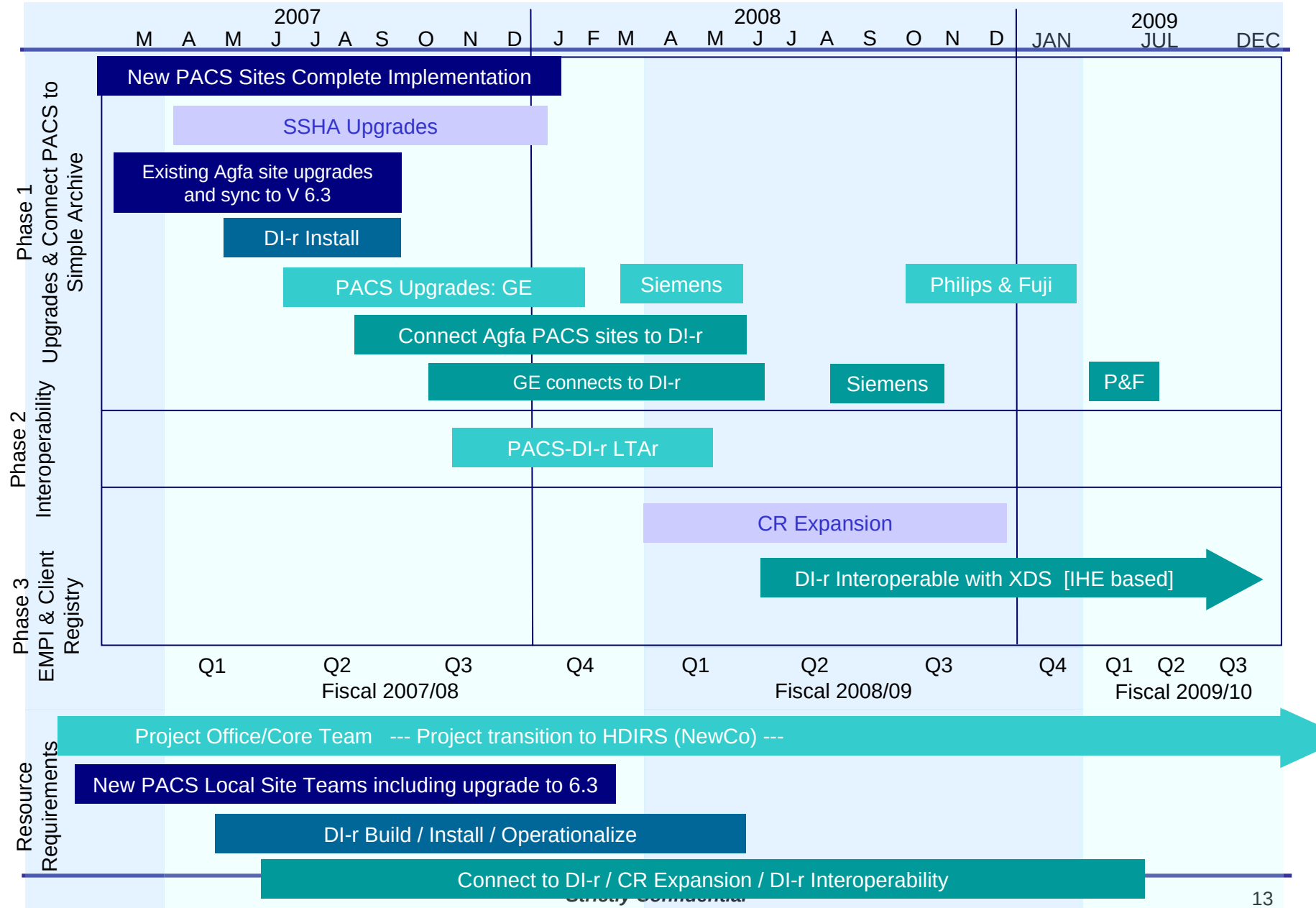
Project Structure



HDIRS Working Groups and Committees



Project Timeline



Success Factors and Lessons Learned (1)

The path to change takes time and planning resources. The journey has been insightful. Based on experience some key recommendations follow:

- **Making transformation happen takes leadership and buy-in -- craft a vision with all the partners to achieve seamless, filmless, paperless imaging services…anytime, anywhere.**
- **Retain a governance consultant to work with senior hospital representatives , e.g. CEO group.**
- **Set out clear guiding principles in an MOU, to be signed by all the partners.**
- **Obtain region-wide leadership support through group facilitated meetings and one-on-one discussions.**
- **Sign a *Letter of Intent* with CEOs of participating organizations prior to implementation phase.**

Success Factors and Lessons Learned (2)

A shared governance model can facilitate collaboration. Our experience is that:

- **Collaboration and belief in the common goal is key**
- **Achieving consensus in a multi-stakeholder environment takes time and effort**
- **Coordination of multiple vendors is complex**
- **Alignment activities require communications, standards and processes**
- **Learning aspect of collaboration takes time**
- **Maintaining frequent communication with all the partners is key**
- **Understand that multiple hospitals means multiple cultures and priorities**

Success Factors and Lessons Learned (3)

The process worked because of:

- **Flexibility: making changes and adapting as we moved through the process**
- **Strong leadership through the Project Steering Committee and HDIRS Interim Board. People were committed to the vision and process and took ownership**
- **A level of trust and cooperation developed between the participating hospitals**
- **Provincial and Infoway funding made the project viable**
- **Clear goals with clearly defined roles, responsibilities and accountabilities**
- **Ongoing evaluation and adapting the process to meet the needs of stakeholders**
- **Strong vendor relationships**

Benefits Summary

✓	**Phase 1 planning completed successfully with full support of TEN participating hospitals**
✓	**Alignment with provincial e-Health strategy and Canada Health Infoway vision of pan-Canadian interoperable EHR**
✓	**DI-r service creates a longitudinal record of DI data so that physicians can see the full DI history, irrespective of where the images were acquired and the report transcribed**
✓	**55% cost reduction in storage**
✓	**Quality managed service with state-of-the-art business continuity and disaster recovery facilities**
✓	**Scaleable service that can expand to other disciplines and sites**

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Thank you!

Appendices

- Scorecard
- Frequent Questions

Scorecard

Financial – Investment from two levels of government – 55%reduction in pricing on vendor storage, 28% reduction on software pricing, and 16% reduction on Agfa maintenance fees – Cost effective data centre service – Reduction of portable media costs – Reduction in patient transfer costs	**Productivity** – 5-15% avoidable retakes – Capacity to scale to include new disciplines – Increase in Radiologists and Technologists activity – Increase ability to reallocate resources – Decrease repeat procedures – Improve patient flow
Quality – Robust business continuance and disaster recovery solution not available today – Reduction of medical errors – Improve quality of care in diagnosis and treatment – Improved performance characteristic – Potential for data mining and reporting – Education and training	**Satisfaction** – Decrease patient transfer and wait times – DI longitudinal record allows rapid access to patient data – Real time clinical collaboration – Breaking ground in privacy – Ability to recruit and retain radiologists, physicians and staff – Alignment to Pan Canadian and provincial EHR objectives

Frequent Questions (1)

: **Q:What is the Evergreen Reserve and how does it work?**

A: The Evergreen Reserve is intended to refresh all hardware associated with the DI-r at end of life. The initial capital purchase will be funded through both Infoway and the ministry. The current financial model is based on 12% of purchased hardware on an annual basis based on proportional use by storage. The expectation is that the type of equipment and storage used as historically come down in cost by 15% a year.

Q: Why are we transitioning to operational state now?

A: The formation of NewCo (HDIRS) will act as a driver so that project momentum is maintained. A corporate entity provides fiscally responsible governance and quality service management. In transitioning the project to operations it will address the need to flow governance and administration through an established organization sooner rather than later. It also enhances the ability to recruit to deliver the project, and ultimately the data centre service.

Frequent Questions (2)

Q: How will the HDIRS location be decided?

A: To date the geographic location and availability have been the criteria. The Scarborough Hospital - Grace Campus has been identified as a central location for most of the group of hospitals in the Toronto East Network. The sponsoring CIO and our financial function is also are located at this site. There is sufficient space available for the project to be initiated at this location. There are existing services and procedures already established. It is also located within 10 minutes of Teranet, the future data centre provider who are located in Markham, ON. Agfa offices are located just east of Pearson Airport, and their research and development group is located in Waterloo, ON. The Grace location is also located centrally making it convenient for meetings with the downtown Ministry e-Health Program Office and Canada Health Infoway.

Q: Please explain the significance of the tiered storage pricing—e.g. Tier 1 vs. Tier 9?

A: This term is used by IBM to describe their client's profile as it relates to their volume purchasing characteristics. Since TEN will be purchasing as a group rather than as individual organizations, Tier 9 pricing has been negotiated on total volumes. Most sites would be in the Tier 1 and 2 level on an individual basis

Frequent Questions (3)

Q: What is the shared operating cost model being proposed?

A: The shared operating cost model is based on dividing the Diagnostic Imaging Repository (DI-r) operating costs by the image storage used and deriving a proportional cost for each site based on their own usage. Image storage can be forecasted based on a calculation using algorithms provided by the vendor, the volumes provided by the hospitals, and clinical assumptions provided by the DI teams. Storage utilization by site can be reported on a monthly basis to monitor use.