

Univ. Montréal/McGill RUIS Joint Project

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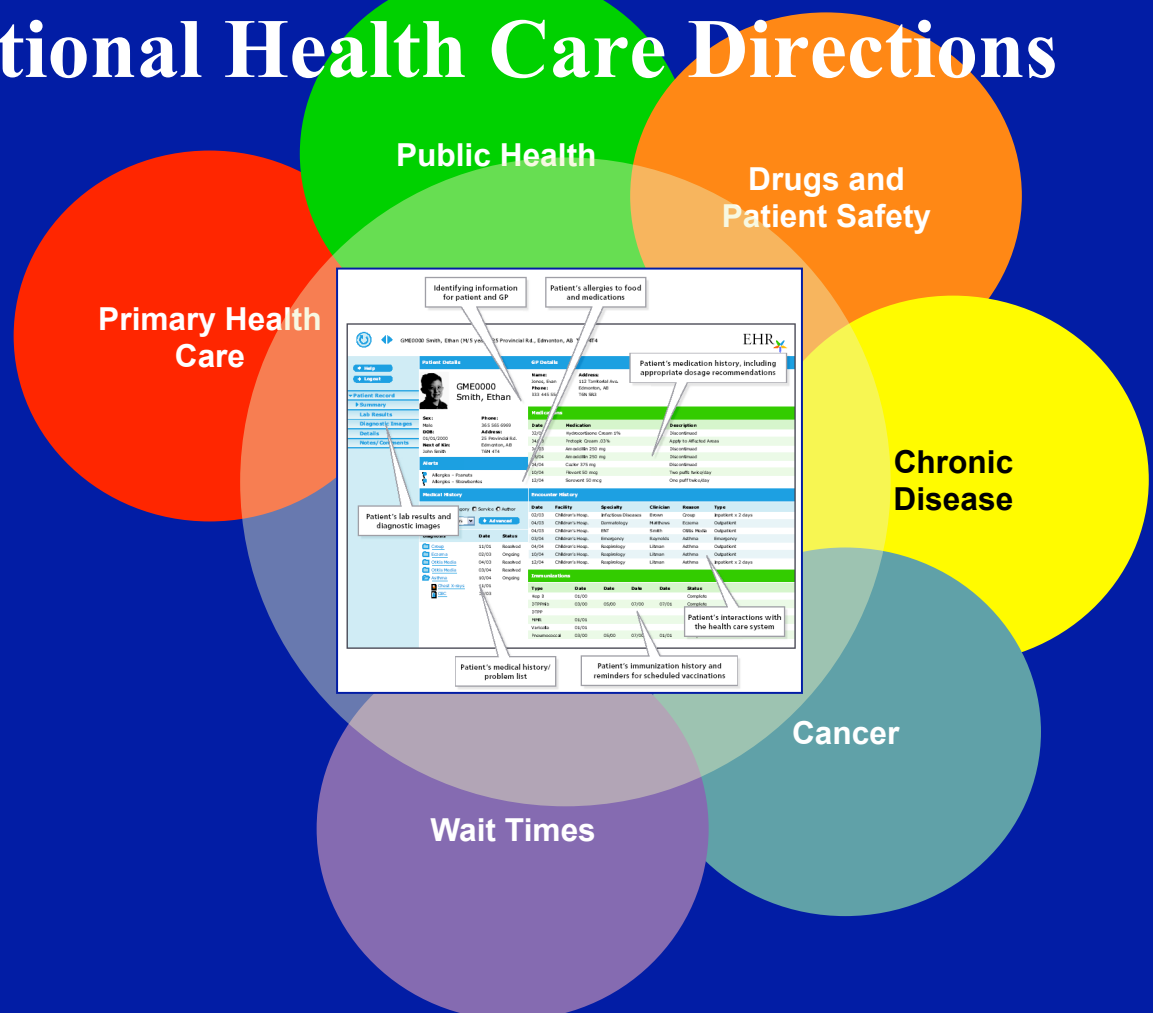
Infoway

- An independent, not-for-profit organization
- Mission: to foster and accelerate the development and adoption of compatible electronic health information systems
- Approach: to invest strategically and work in partnership with stakeholders including the private sector
- Goal: to implement and reuse compatible health information systems which support a safer, more efficient healthcare system

Electronic Health Records Supporting National Health Care Directions

Electronic health record systems can help improve patient health outcomes, decrease duplication, error and costs; and reduce waits. Without electronic health records, national directions to improve primary health care, public health, drugs drug and patient safety, chronic diseases, cancer and wait times will not be successful.

Electronic health record systems form the foundation for a health information and communications infrastructure that can enable modern health care delivery.



Infoway and Quebec

- Eight projects very diverse and sponsored by the Integrated University Health Networks (RUIS)
 - **Telehomecare** centres for patients with complex chronic diseases in the territory covered by U. de Montréal's RUIS
 - A **telepathology** network linking the RUIS clinics of U. Laval with its faculty of medicine
 - A **virtual health centre** to support the work of the health professionals of McGill University's RUIS
 - A **teleconsultation and tele-education** network geared toward professional development for U. Laval's RUIS

Infoway and Quebec (cont.)

- **Telehomecare** to improve the availability, efficiency and coordination of ultra-specialized services for patients requiring ventilatory assistance at home for McGill University's RUIS
- **Real-time clinical support for wound** treatment for U. de Sherbrooke's RUIS
- A **multidisciplinary tele-education** and clinical support network linking U. de Montréal's RUIS clinics to its faculty of medicine
- A real-time and **remote medical consultation** network including teleconsultation, teleassistance, telementoring and tele-education on the territory covered by U. de Sherbrooke's RUIS

Investing in Shared Diagnostic Imaging Systems

- Enables health care providers to view online a patient's test images from anywhere
- Benefits:
 - faster turnaround times for report and image results
 - better access to radiologists' services
 - immediate retrieval of images
 - lower costs by eliminating duplicate procedures and printing of film
- Quick and affordable access to the required underlying technology for the smaller hospitals and clinics that comprise 80% of Canadian facilities

Programme Benefits

- Access
 - Ability to Access Care: Reduced wait times
 - Availability: Increased diagnostic imaging interpretations by remote specialists
- Quality
 - Effectiveness: Improved quality of diagnostic image interpretation through the use of viewing tools and access to diagnostic imaging history
- Productivity
 - Efficiency: Reduced costs and enhanced radiologist productivity
 - Care Coordination: Increased access to images and reports

Historical perspective:CHI&QC (Imaging)

- IHC:2002-2003
- QC enrollment:2004
- Creation of RUIS&Tele-Health committees
- Pre-0 projects for each of the RUIS(feasibility)
- Fusion of both projects:spring2006
- Phase 1:choice of vendors/audit:2006-07
- Phase2 take-off:spring 2007

Réseau

Universitaire

Intégré de

Santé



Integrated

University

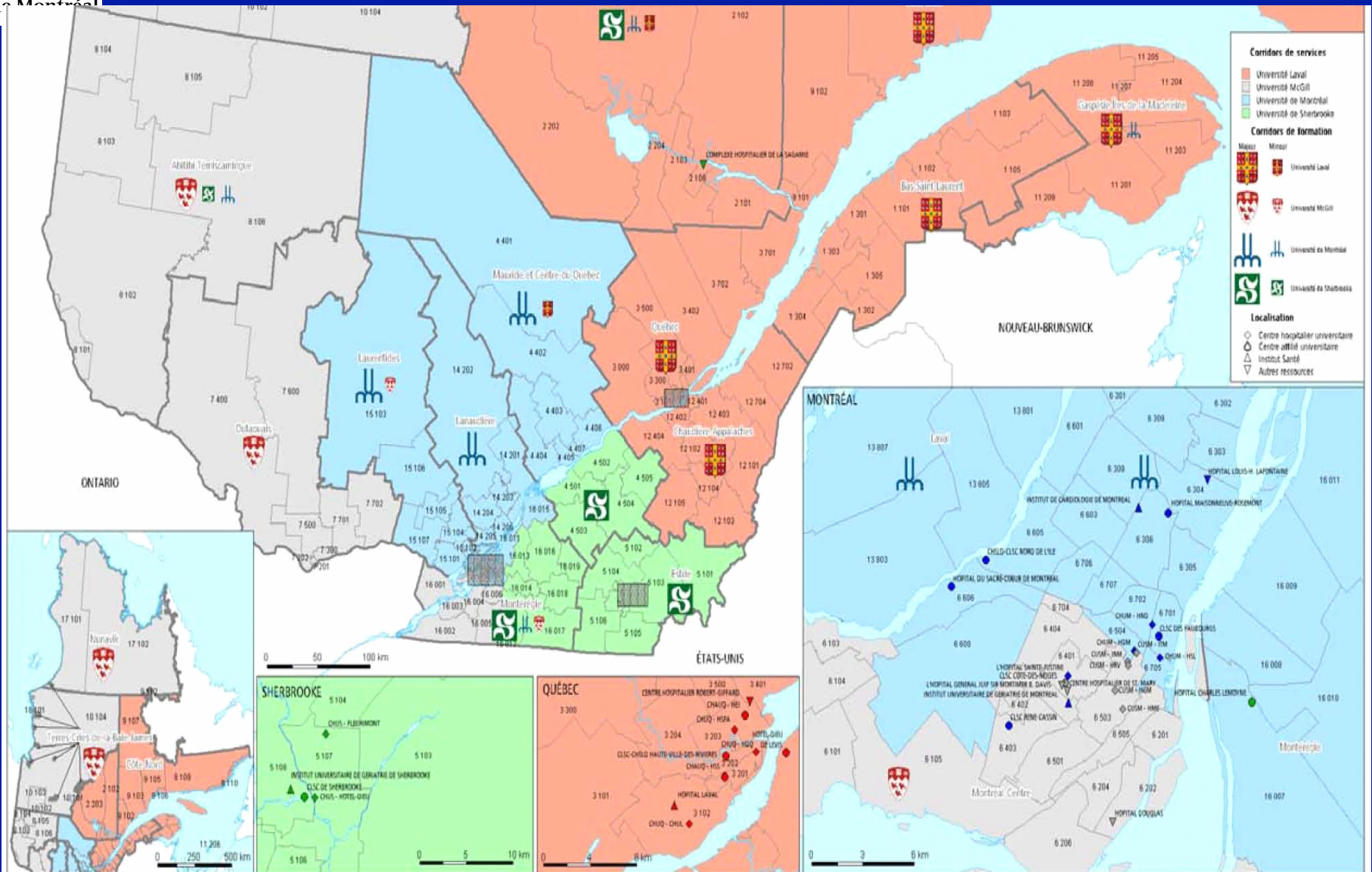
Health

Network

RUIS MANDATE

- To create a team dedicated to telehealth in collaboration with local health authority
- Prepare a plan of development of telehealth activities, including DI for 95 local health networks
- This plan must take into consideration, the ministry of health priorities in mental health, cancer care, and needs of the elderly.

Province of Quebec Stakeholders



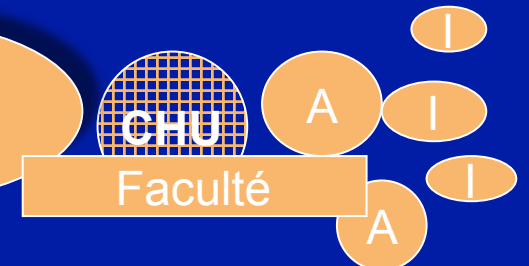
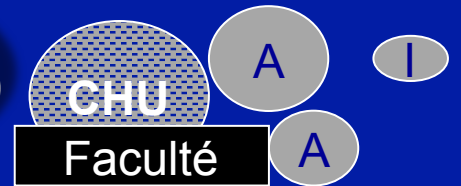
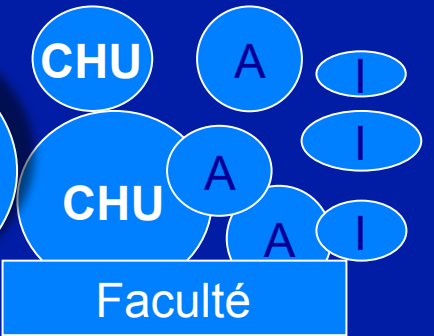
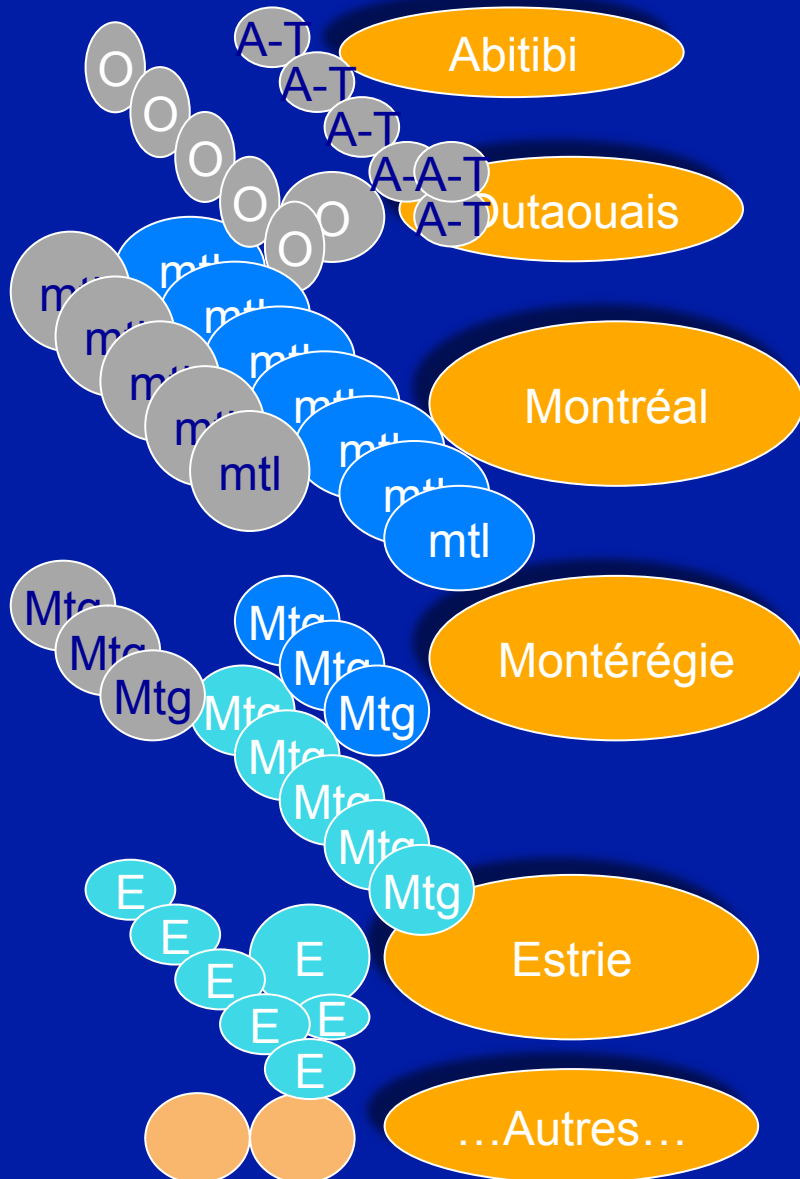
Direction des études et des analyses
Direction générale adjointe de la planification stratégique
14 Mai 2004

Source : Direction des affaires universitaires,
Direction générale des services de santé et médecine universitaires

95 RLS 18 AGENCES

4 RUIS

5 CHU, 9 CHAU, 8 IU



Mtl-Mc Project Description

- Virtual dossier of DI for the patients of RUIS Montreal+McGill
- Integration of existing PACS/RIS/digital dictation
- Completion for other institutions
- Robust architecture
- Training of personnel
- Change management
- Long term contract (2+5+3 optional)

Our Project

- 58 hospitals + 40 clinics (more to come)
- volume close to 6 million exams/year
- 50% had PACS /about 70% of total exams
- RIS 70%
- DD 70%
- RTSS: dedicated digital Health network (100 Mbps)

Description (*cont.*)

- DIR for Radiology, NM, radiation oncology, obstetrics
- Coordination with EHR
- Includes PACS'ed clinics & imaging centers
- Excludes (for the moment) mammography and cardiology

Project

- Integration is the essential part
- Adding greenfield institutions
- Characteristics:
 - Access within 15 minutes of production
 - IHE compliant
 - 99.9% available
 - 3 sec / image
 - 2 DIRs: active/active/asynchronous

A system designed for...

- Covering areas lacking radiologists
- Supporting regional "on call"
- Managing the replacement of radiologists on holidays or on week end.
- Sharing of exams both from public and private facilities
- Viewing exams with automatic availability of priors
- Decreasing delays between examination and the availability of the report
- Access of images from the hospital, the private office or home.



Université de Montréal

Sites already equipped

47/ 58 RIS et 29/ 58 PACS



Canada Health

Inforoute Santé du Canada



Région 6 MONTRÉAL	RIS	Pacs	Région 4 MAURICIE-CENTRE DU QUÉBEC	RIS	Pacs	Région 13 LAVAL	RIS	Pacs
Centre universitaire de santé McGill			Centre Hospitalier Régional de Trois-Rivières			CSSS de Laval		
Centre hospitalier de Lachine			CSSS de la Mauricie			Région 14 LANAUDIÈRE	RIS	Pacs
Centre hospitalier de Lasalle			CSSS de la Vallée de la Batiscan			CSSS du Sud de Lanaudière		
Centre hospitalier de St-Mary's			CSSS de l'Energie			CSSS du Nord de Lanaudière		
Hôpital Shriners			CSSS de MASKINONGE			Région 15 LAURENTIDES	RIS	Pacs
Hôpital général juif-Sir Mortimer B. Davis			CSSS de Trois-Rivières			CSSS d'Antoine Labelle		
Hôpital général du Lakeshore			CSSS Nicolet-Bécancour	?	?	CSSS d'Argenteuil		
Centre hospitalier Verdun			Région 7 OUTAOUAIS	RIS	Pacs	CSSS des Sommets		
Centre hospitalier Douglas			CSSS de Gatineau (2 sites)			CSSS Deux-Montagnes/Nord de Mirabel		
Clinique de radiologie privée (# ?)	?	?	CSSS Vallée de la Gatineau			CSSS Deux-Montagnes/Sud de Mirabel		
Centre Hospitalier de l'Université de Montréal			CSSS du Pontiac (2 sites)			Région 16 MONTÉRÉGIE	RIS	Pacs
CSSS d'Ahuntsic et Montréal-Nord			CSSS de Papineau (2 sites)			Centre hospitalier Anna-Laberge		
CSSS de la Petite Patrie et Villeray			CSSS des Collines			Centre hospitalier régional du Suroît		
CSSS de la Pointe de l'Île			Région 8 ABITIBI-TÉMISCAMINGUE	RIS	Pacs	Hôpital Barrie Memorial		
Hôpital Sacré-Cœur de Montréal			CSSS des Aurores boréales			CSSS de Sorel-Tracy		
Hôpital Maisonneuve Rosemont			CSSS du Lac Témiscamingue			CSSS Pierre Boucher		
Hôpital Sainte-Justine			CSSS Les Eskers de l'Abitibi			Hôpital Charles Lemoyne		
Hôpital Santa Cabrini			CSSS de Rouyn-Noranda			Région 17 NUNAVIK	RIS	Pacs
Institut de cardiologie de Montréal			CSSS de Témiscamingue-et-de-Kipawa			CS Inulitsivik		
Institut de réadaptation de Montréal			CSSS de la Vallée-de-l'Or			CS Tulattavik		
Institut universitaire de gériatrie de Montréal			Région 10 NORD DU QUÉBEC	RIS	Pacs	Région 18 TERRES-CRIES-DE-LA-BAIE-JAMES	RIS	Pacs
Clinique de radiologie privée (#?)	?	?	CSSS de la Baie-James			Hôpital de Chisasibi		

Montréal-McGill

4,8 millions exams done in public network
 1,6 millions exams done in private clinics

6 vendors of existing PACS to integrate
Few vendors of RIS
Few vendors of Dictation systems
Many vendors of radiographic, USound equipments to interface.

Laval

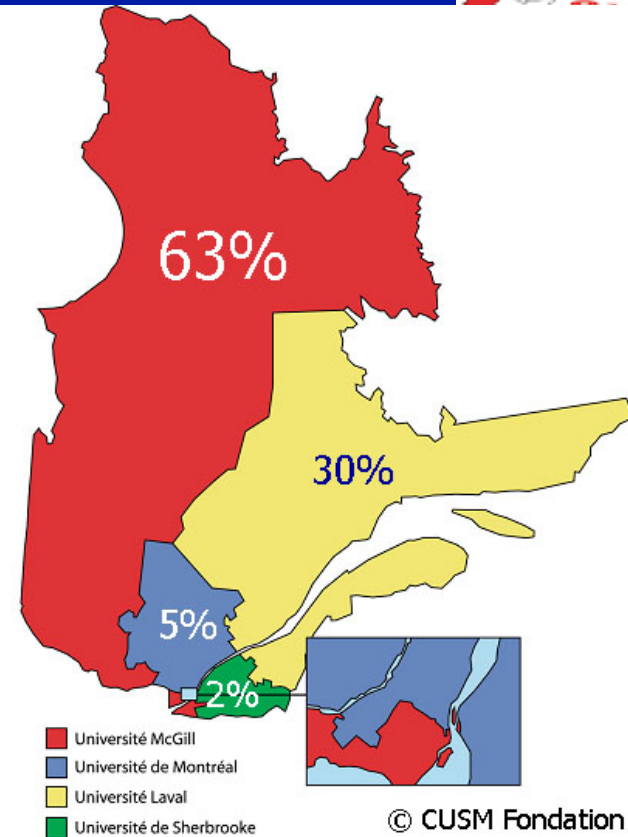
2,35 millions exams done in public network
 0,35 millions exams done in private clinics

Regions relatively « greenfield »

Sherbrooke

0,91 millions exams done in public network
 0,25 millions exams done in private clinics

Two different vendors: DIR and PACS



Total: 8,2 millions (public)
 and 2, 2 millions (private)

1,4 exam/person/year
 Annual growth: ~ 7-10 %

Overall investment 184 M\$

Evaluation of proposals

- Quality evaluation: 50 % : 2 groups of criteria:

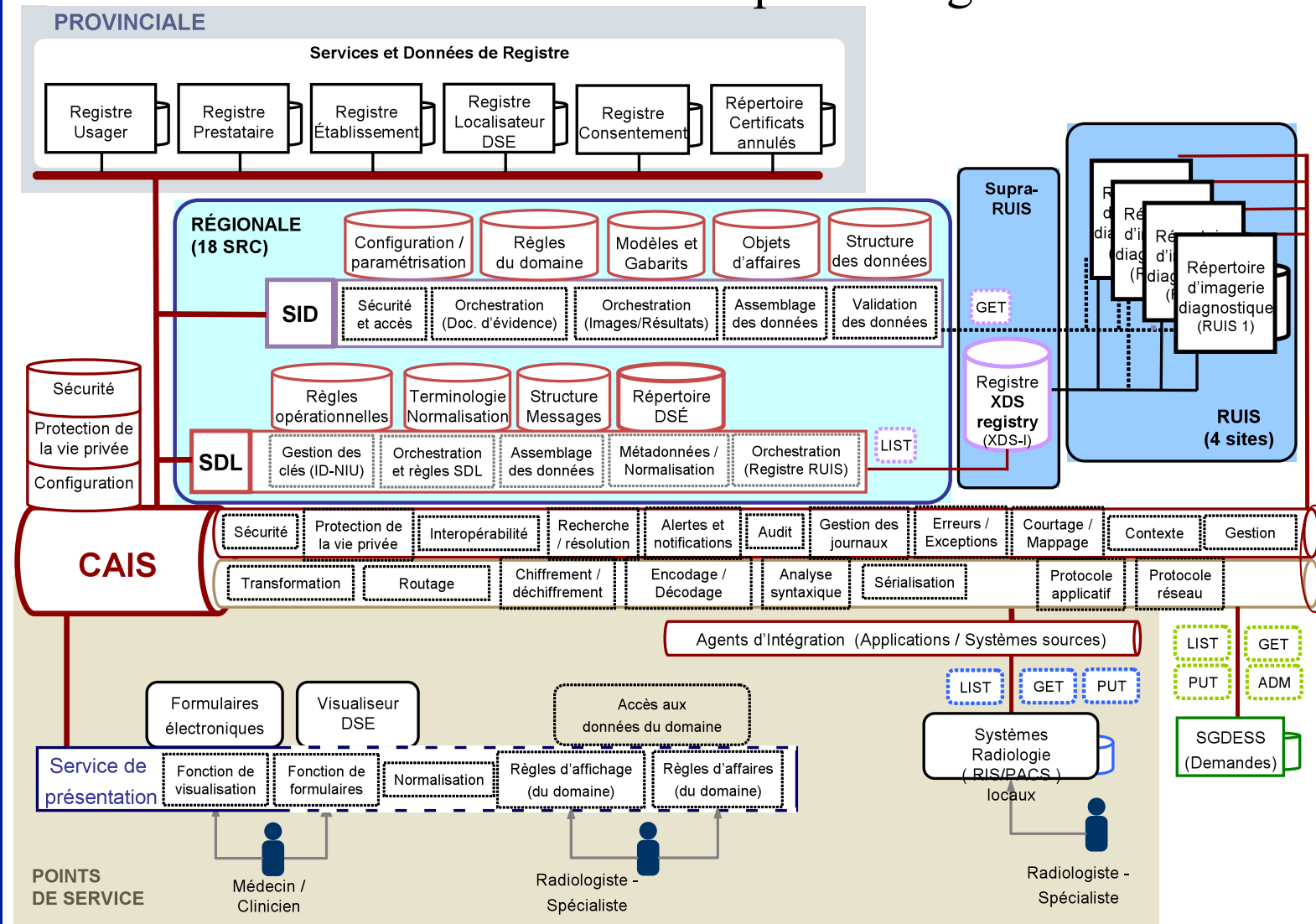
Group 1 : the Company	<u>clinical</u>	<u>technical</u>
<ul style="list-style-type: none"> ■ Experience and capability of the vendor ■ Deployment and operation 	10 points	15 points
Groupe 2 : the Solution		
<ul style="list-style-type: none"> ■ interoperability and integration ■ Functionalities and solution user-friendly ■ infrastructure (architecture) 	50 points	25 points
TOTAL	60 points	40 points

The vendor has to obtain 70% of the points in each group and each dimension of criteria.

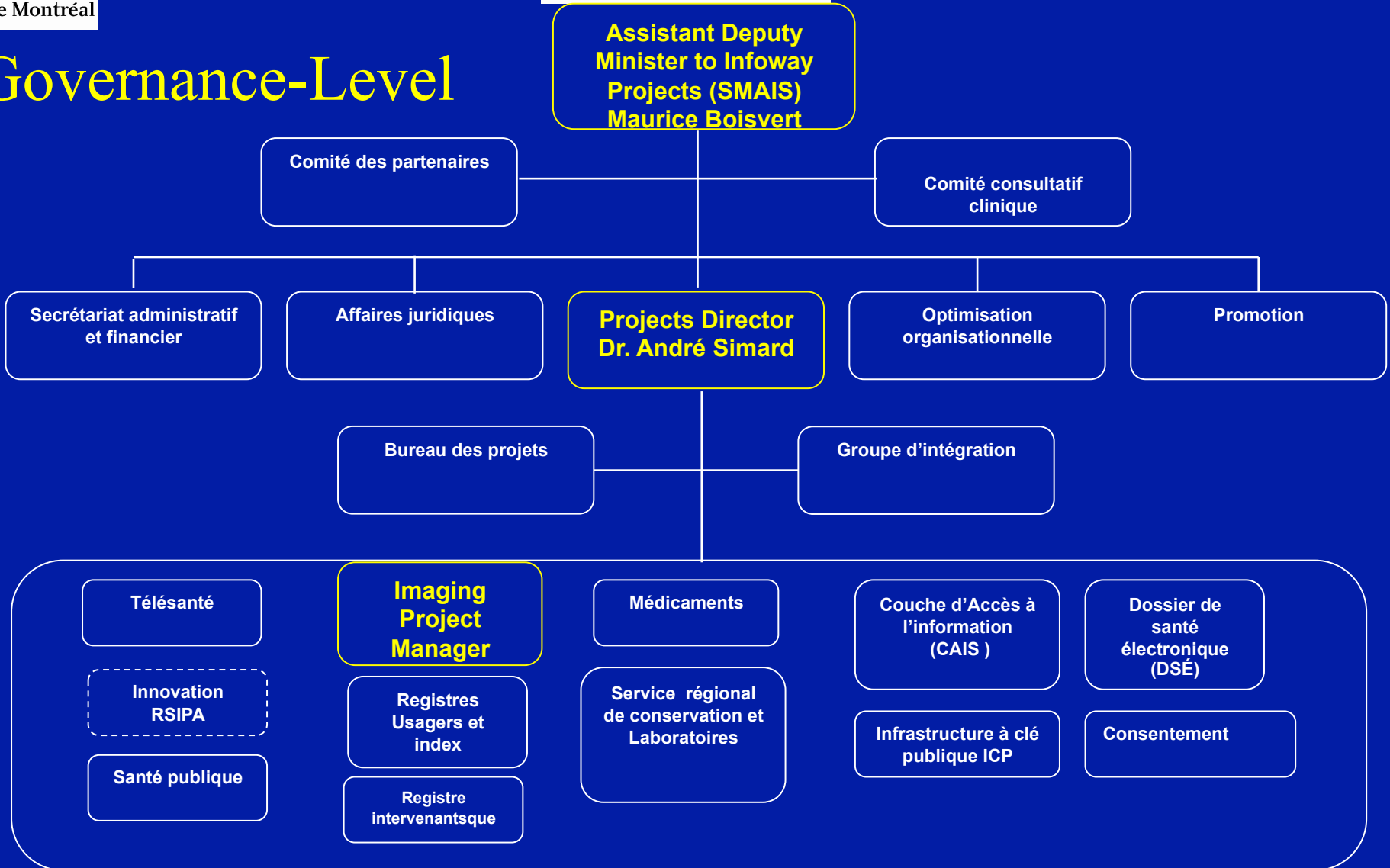
- Financial evaluation: 50 %

- Includes investments, service contracts for 5 years, professional services

Conceptual Target Architecture



Governance-Level



Prerequisites for success

- Robust network (RTSSS) and sufficient bandwidth.
- Levelling of existing modalities: SICOM, IHE, XDS-I standards
- Human resources, super-users.
- Change management.
- \$ \$ \$ Budget
- Single identifier.
- Bureaucracy: will of all official agencies to work together!!!

Archiving needs

- Annual need for archiving: 140 Tb
- (2:1) compression
- 10% annual growth
- 5 year contract, 3 year option
- fully managed
- evergreen based on SLA
- one year minimal warranty
 - should request 5 years

Deployment
period

Janv. 2007	140 Tb
Janv. 2008	
Janv. 2009	155 Tb
Janv. 2010	170 Tb
Janv. 2011	185 Tb
Janv. 2012	200 Tb
Janv. 2013	225 Tb
TOTAL	1 075

Tb

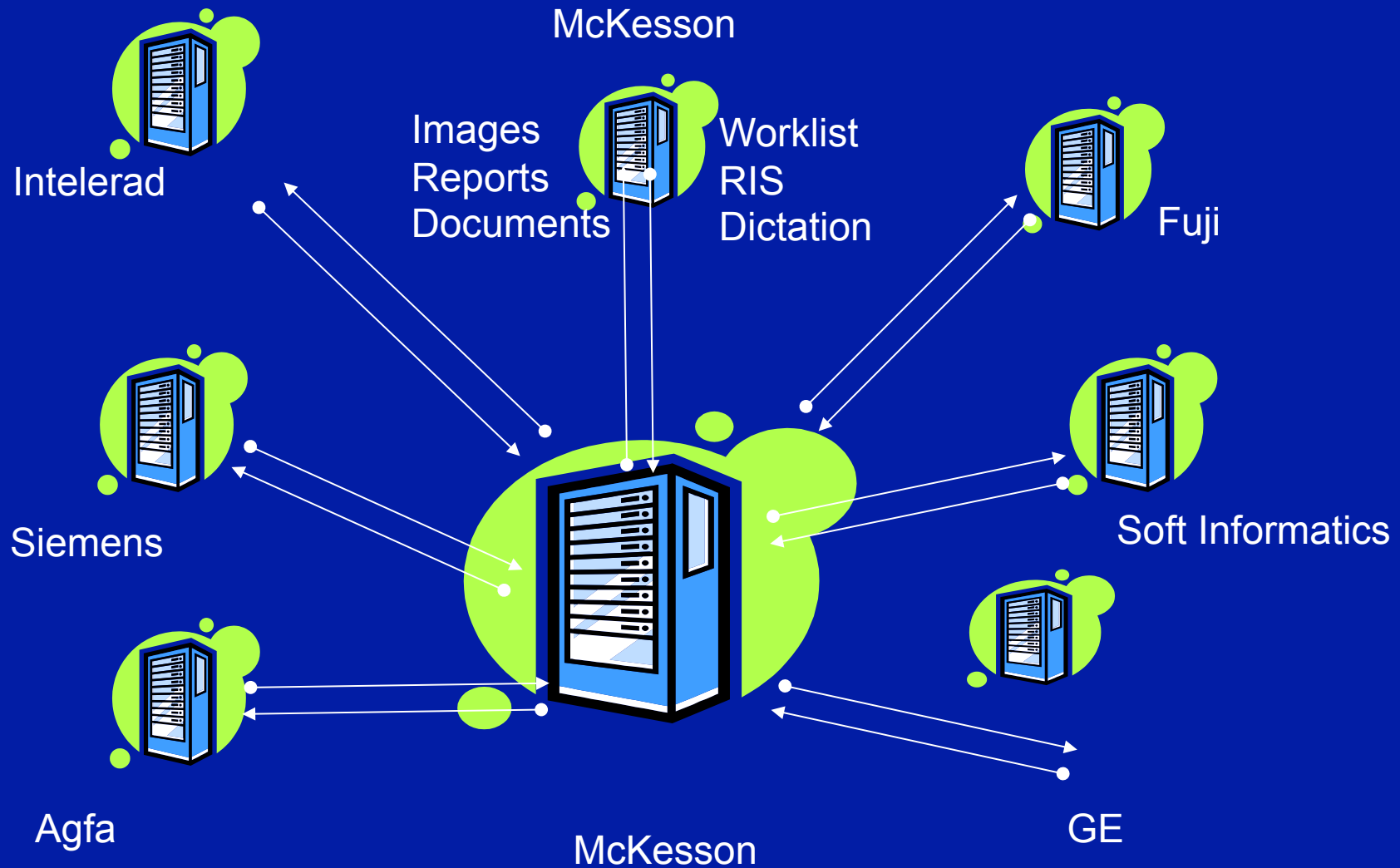
LES PROJETS D'IMAGERIE DIAGNOSTIQUE AU QUÉBEC

Les fournisseurs du projet

RID	PACS	SIR	SDN	CR
Mckesson	Mckesson	Artefact	COMDIC	Groupe Christie FUJI

+ XDS-I : Artefact (IBM)

The challenge...



PACS RUIS PROJECT

Call for tender



June-july 05

Jan-decembre 2006

Jan 07 – decembre 10

Pre-phase 0

Phase 0

Phase 1

Phase 2

EVALUATION

PLANIFICATION

INSTALLATION

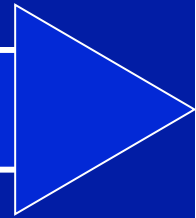
6-8weeks

12 months

4 Years

X weeks

CIM
 consultants

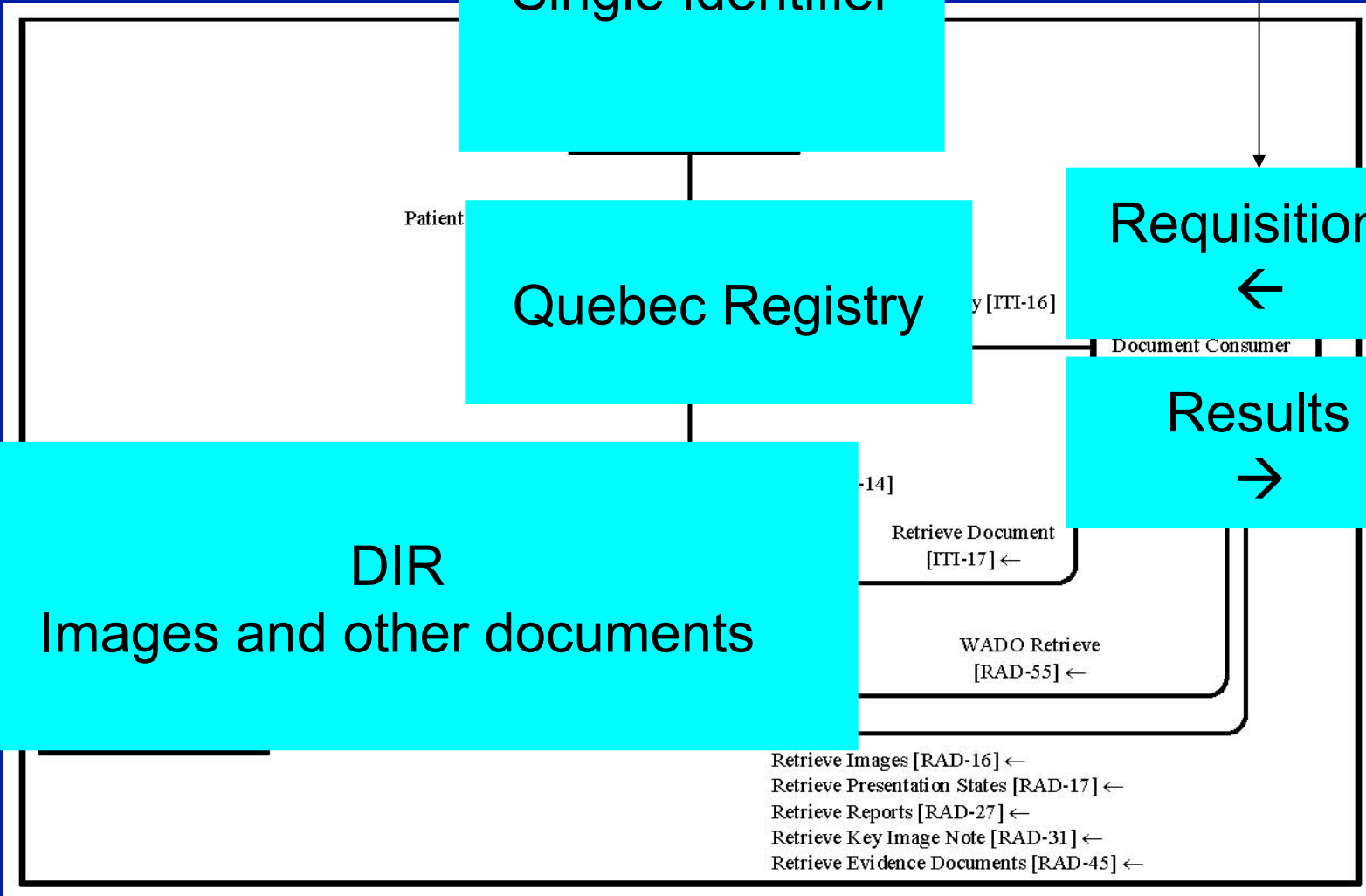


Where are we with the PROJECT?

- Coming from phase 0 with some metrics
- Finishing phase 1 with a known provisional cost for the project less than what was identified in phase 0.
- Analysis done
- Vendors selected (DIR/PACS, RIS, Dictation and CR)
- Final recommendation to be accepted by the health authority.
- Audit of the process done.
- Evergreens installed
- Evergreens archived on DIR(delay in stabilisation)
- Upgrading network(new provincial contract for Telus):RITM.
- Preparing other sites&Clinics

Single Identifier

User consent



Common Nomenclature for anatomic Sites(17 sites)

Objectives:

Easy pre-fetching from any source or site:

- Easy communication, especially from sites with PACS previously in place
- Ability from all RIS&PACS vendors to adapt
- Are all vendors able to pre-fetch according to those protocols?



Domaine Imagerie diagnostique



EHR



Services longue durée



Domaine laboratoires



GMF

Domaine médicaments



CSSS

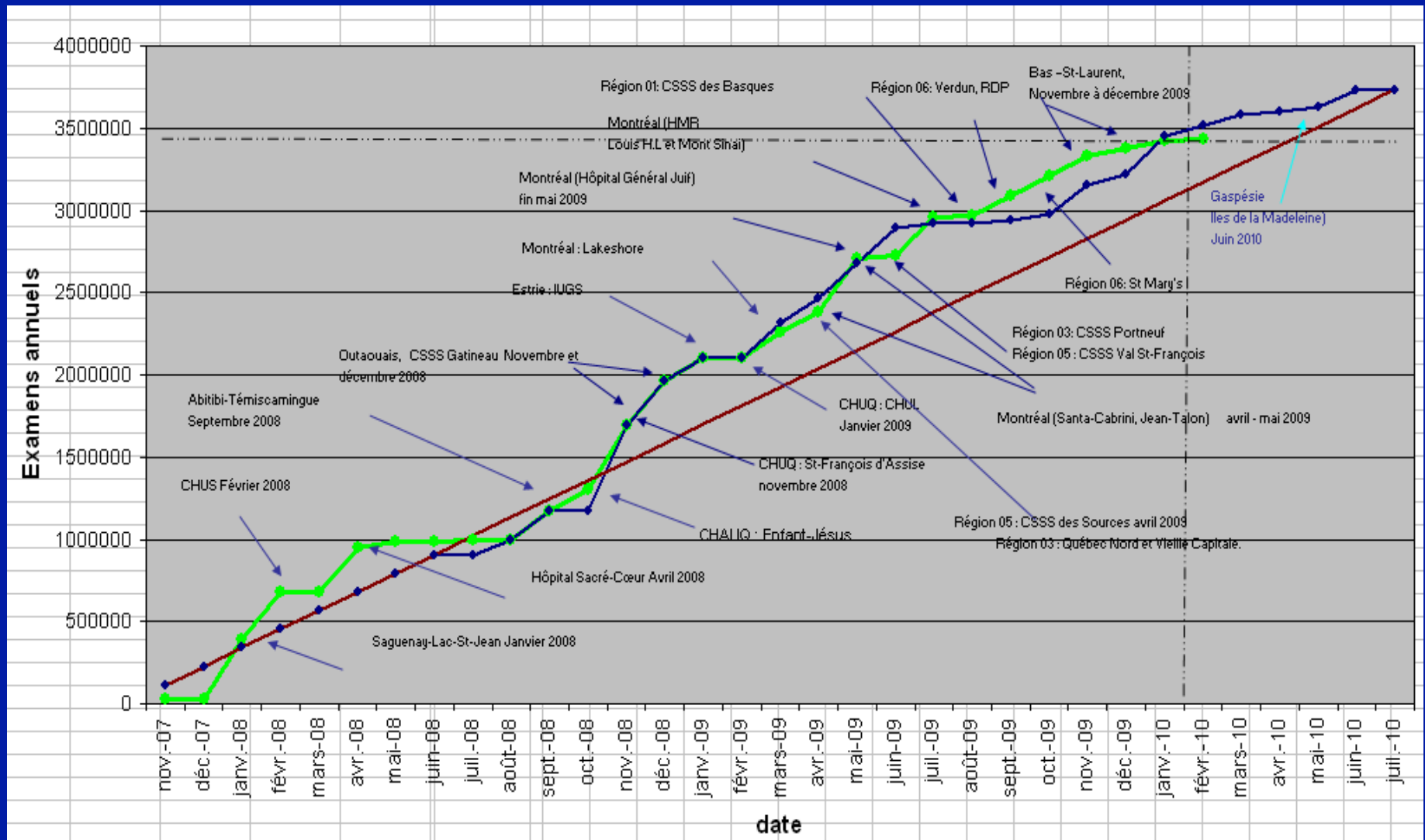


Soins à domicile

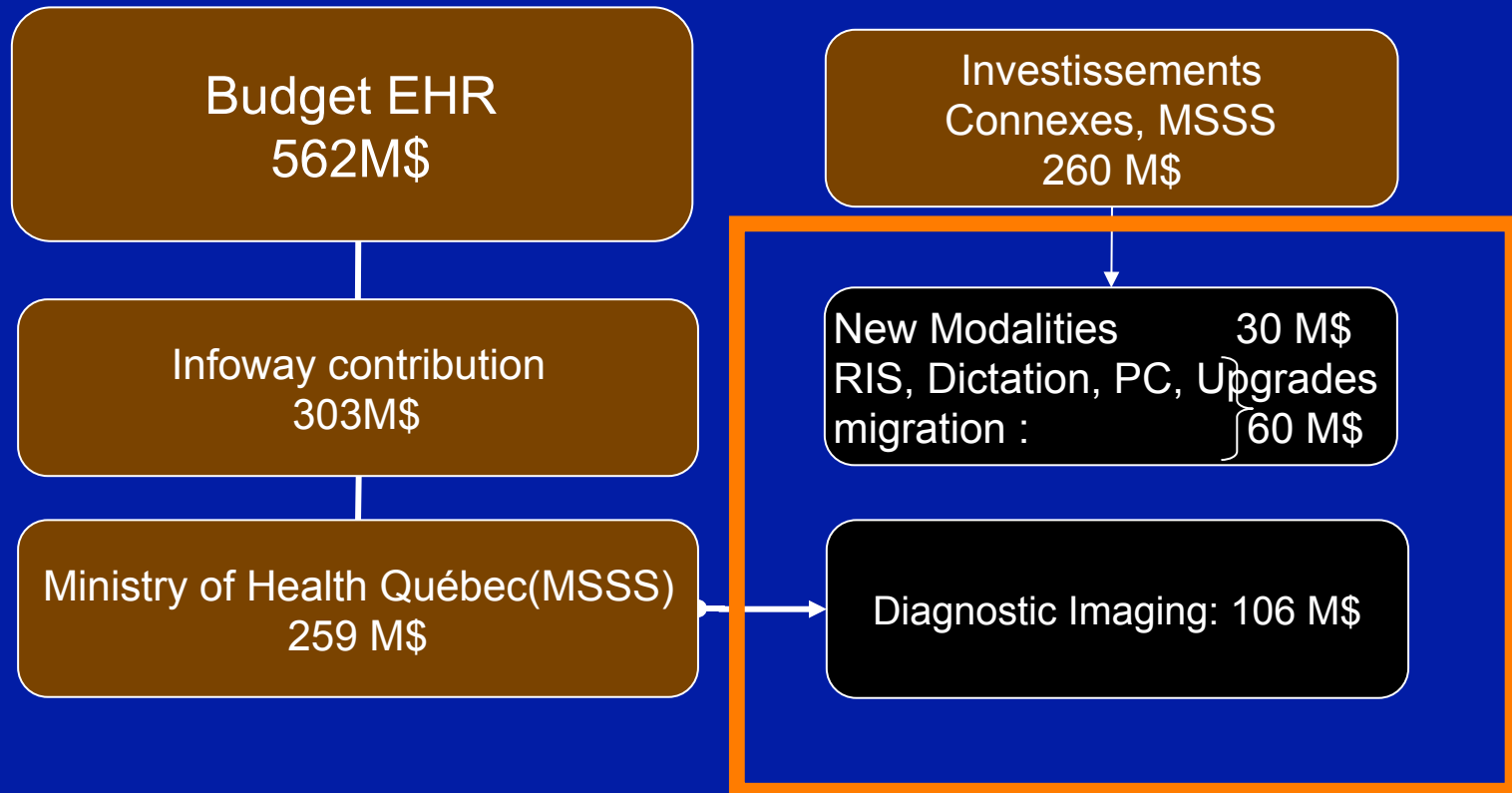


CHU, Institut

Progression des déploiements PACS



Finances



DI PACS DIR – Market Shift

- Overall DI PACS project costs reduced significantly over 4 years.
- The key contributors to this reduction
 - Software costs have reduced from \$10/exam to \$3/exam
 - Storage costs have gone from estimated \$20,000/TB to less than \$2,000/TB

DI PACS DIR – Market Shift

- Reductions have been driven by
 - Centralized shared PACS repository architecture and national procurement activities.
 - Software pricing model shifted from concurrent licensing to enterprise unlimited licensing.
 - Storage pricing shifted from “healthcare specialty pricing” to “consumer pricing”
- Quebec overall DI project cost reduced by 50% from 2005 estimates
- Montreal – McGill storage costs below \$2,000 per Terabyte

Some metrics

- 1,1 – 1,4 exam/person/year
- ~ 33 Mb/exam
- Annual growth: ~ 7-10 % (new modalities rather than more exams...)
- Service contract : ~ 18%
 - 80 % to vendor
 - 20% to in house organisation
 - highly contract dependent (penalty, up-time, evergreening, upgrades...)

Montreal - McGill Project

Annual recurrent cost

- ✓ Service contracts ~6 M\$
- ✓ Potential savings (~3 M\$)
- ✓ Support team ~2 M\$

~ 5 M\$/yearly

Some project considerations

- Change management
- Communication plan
- Governance
- Risks management
- Security
- Legality

1

ISSUES

PROVINCIAL DIR GOVERNANCE

Strategic

- The three DIRs should support the MSSS's goals and strategic direction
- Diagnostic Imaging information sharing any time, any place.

Clinical

- The purpose of the DIRs is to support integrated healthcare services delivery.
- The DIRS must meet the needs of the radiologists and clinicians to improve the services offered to the population.

Technological

- The DIRS must meet today's technical performance needs and also allow future development.
- Standards for quality, availability, accessibility and security must apply to the DIR.

Financial

- Shared assets must be centrally financed.
- Investments in the three DIRs must be planned as one.
- The MSSS must take responsibility for the recurring costs for management and support of the DIRs.

Legal

- Many laws apply to the governance and management of the DIRs:
 - Act respecting health and social services
 - Act respecting Access to documents held by public bodies and the Protection of personal
 - Archives Act

Standard

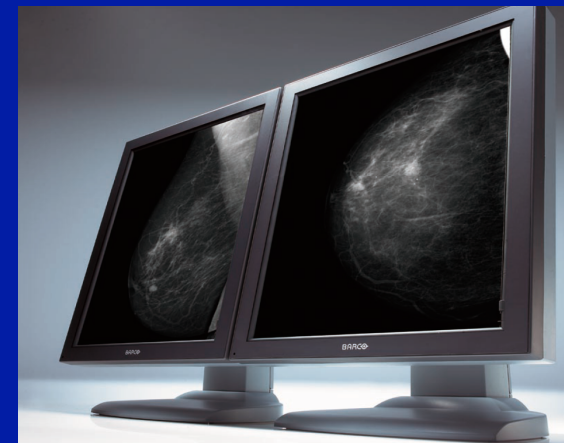
- National norms and standards for clinical systems and equipment.
- Clinical norms and standards for professional orders and associations.

Mammography

Objective:

Modification of the initial project. Including archiving of mammography, similar to other modalities

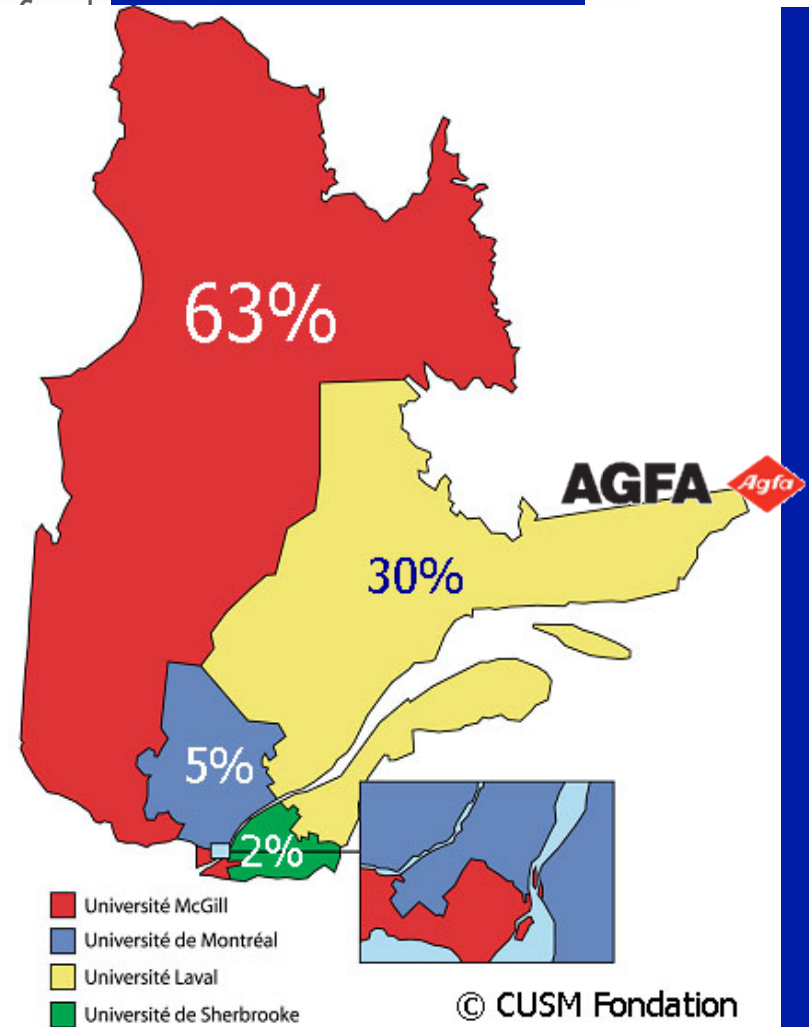
- Acceptance by the QC screening programme, CAR(PAM) participation & agreement
- Getting the Radiologists on board
- 60% of volume in private facilities



RFP (lessons learned)

- Experts (knowledgeable persons) to be involved
- Participation of radiologists and physician experts
- Documentation of everything
- Rigorous approach and process
- Plan reactions, deal with biased individuals
- Doing fast does not mean doing “Sloppy”

	PACS # /an
	2 402 204
	2 265 501
	1 708 619
	586 019
	430 308
	197 201
Soft Info	57122
<i>Total:</i>	<i>7 646 924</i>



Total :
7,7 millions examens/an (public)
2,2 millions examens/an (privé)