Infoway Public Health Surveillance Program:

Overview, Current Status of Pan-Canadian Public Health Surveillance System

Public Health Agency of Canada

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Creating Healthy Connections

Purpose of this presentation

- Provide an understanding of the Canada Health Infoway;
- Provide an understanding of the Public Health Surveillance Program;
- Summarize program activities and achievements to date;
- Clarify scope and key characteristics of Pan-Canadian Public Health Surveillance system;
- Address standards development, implementation and maintenance.
- Discuss implications for PHAC.

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Canadian Healthcare Renewal Drivers

- Dramatic rise in cost of health care
- Aging population
- Insufficient supply of healthcare professionals
- Care in remote and rural communities (2003 Cdn. population: 31,629,700 or 3.3 people/km^2)
- Patient safety and access issues
- Public health threats

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The EHR - Key Objectives/Benefits

- Improve the **quality, safety, accessibility and timeliness** of care for Canadians
- Support **more informed** healthcare decision-making, research and management
- Improve the **efficiency** of the healthcare system and reduce costly duplication

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The Creation of *Infoway*

- Created in 2001 through original Funding Agreement with Government of Canada
- Government consensus on IT's role in renewing the healthcare system
- Government decision to take a collaborative approach to EHR implementation
- *Infoway* created as an independent, shared-governance corporation
- Members: Deputy Health Ministers from the federal, provincial and territorial governments
- Infoway capitalization: $1.2 billion Canadian.

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Canada Health Infoway

Mission

To foster and accelerate the development and adoption of electronic health information systems with compatible standards and communications technologies on a pan-Canadian basis, with tangible benefits to Canadians.

Goal

Interoperable electronic health record in place across 50 per cent of Canada (by population) by the end of 2009.

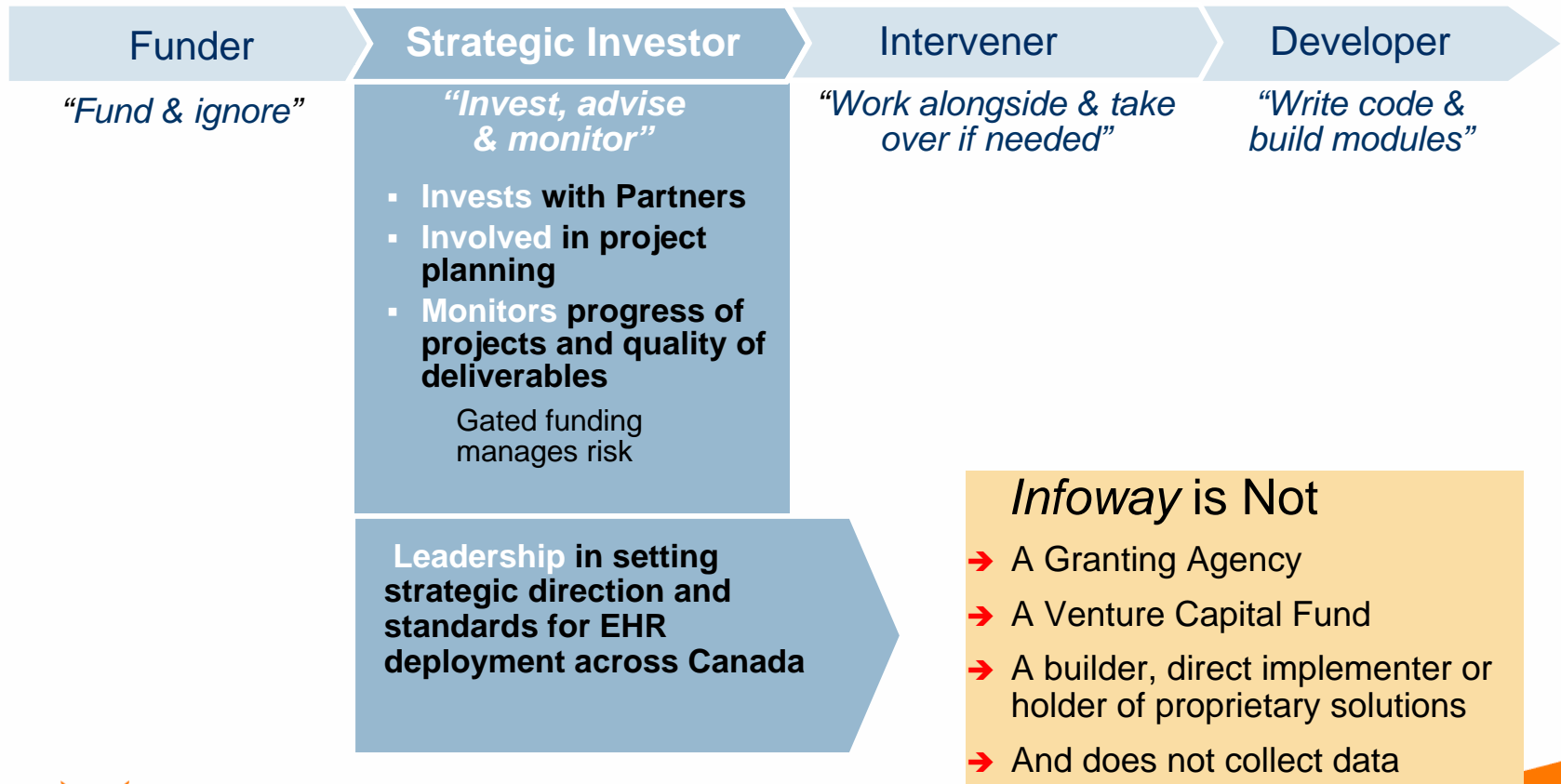Canada   Inforoute
Health   Santé
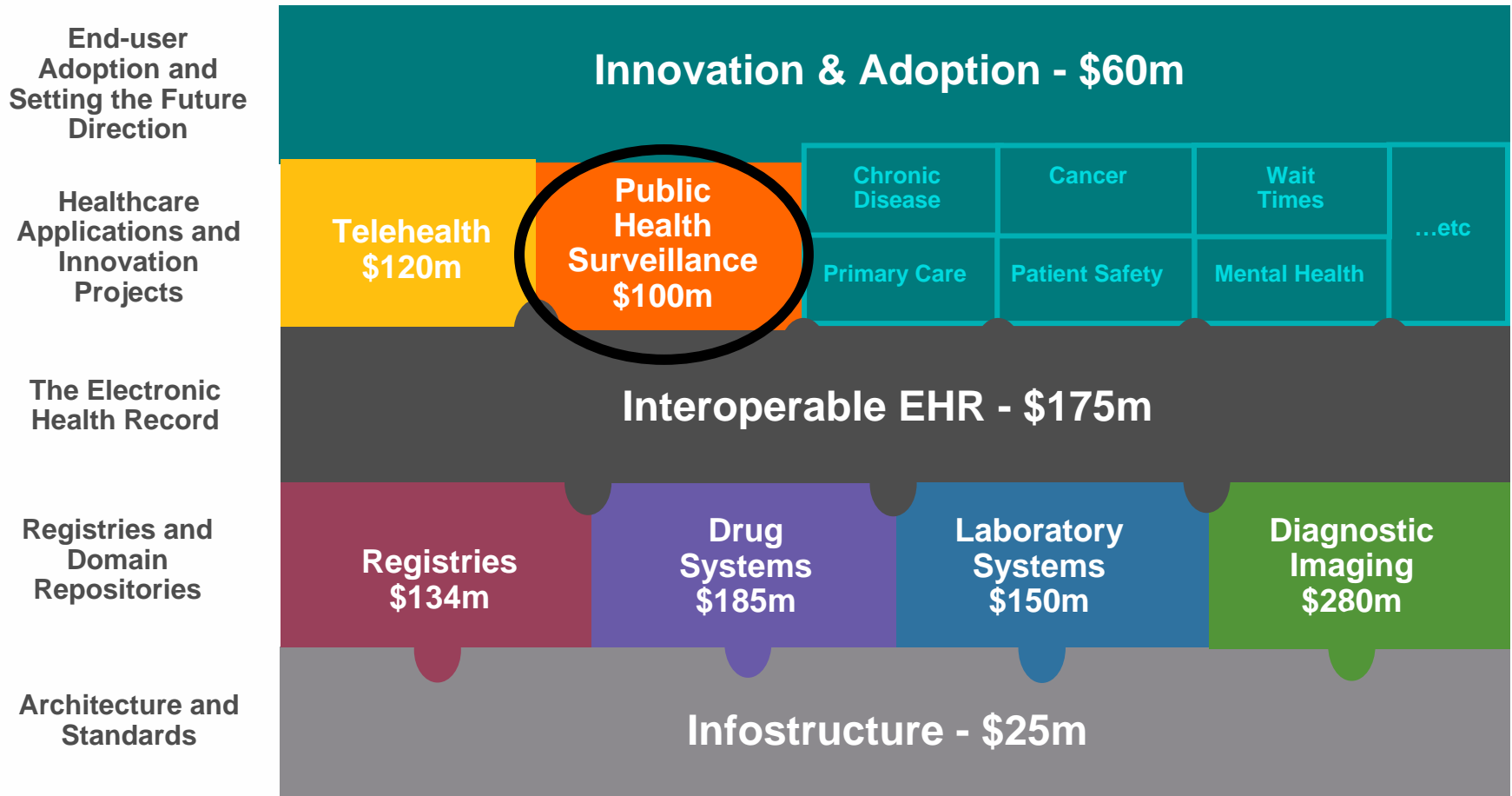Infoway   du Canada
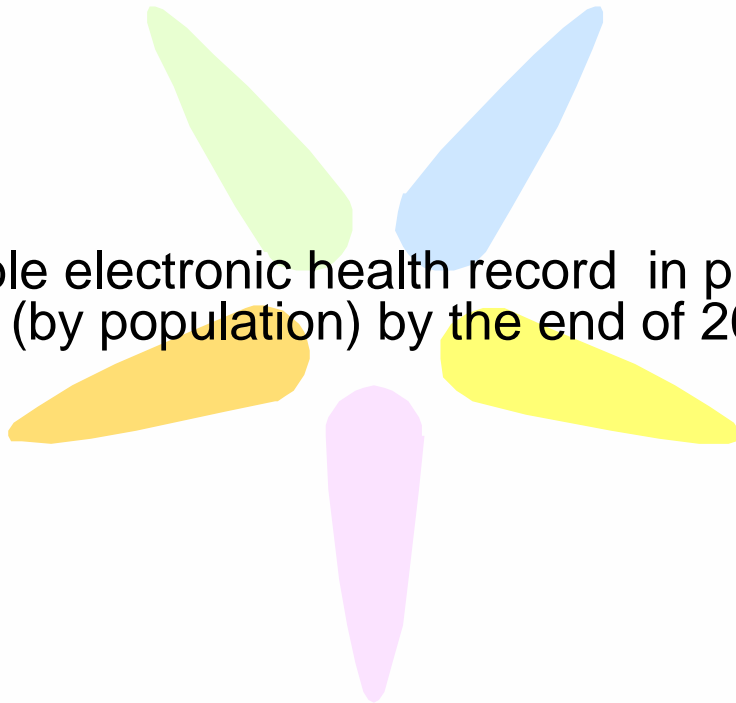
Infoway's Business Strategy

➢**Targeted Investment Programs** – focused on nine investment programs

➢**Collaboration with Health Ministries and Other Partners** – joint planning with health ministries and other parties to ensure alignment

➢**Co-Invest with Public Sector Partners** – share the investment in projects with our public sector partners

➢**Leveraged Investment** – invest in solutions that can be replicated across the country

➢**Form Strategic Alliances with the Private Sector** – form strategic alliances with the private sector to implement standards-based commercial solutions that reduce cost and risk

➢**Focus on End-User Acceptance** – early and ongoing focus on end-users to gain acceptance and adoption

➢**Measure Benefits and Adjust** – continually measure the benefits achieved against those planned and make the necessary adjustments

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Infoway's Role – Strategic Investor

Infoway focuses on initial investment in a solution & its deployment. Our unique role is in providing strategic leadership.

Funder	Strategic Investor	Intervener	Developer
"Fund & ignore"	*"Invest, advise & monitor"*	*"Work alongside & take over if needed"*	*"Write code & build modules"*

Strategic Investor

- **Invests** with Partners
- **Involved** in project planning
- **Monitors** progress of projects and quality of deliverables
  - Gated funding manages risk

Leadership in setting strategic direction and standards for EHR deployment across Canada

Infoway is Not

➜ A Granting Agency

➜ A Venture Capital Fund

➜ A builder, direct implementer or holder of proprietary solutions

➜ And does not collect data

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Strategic Investment Programs

| End-user Adoption and Setting the Future Direction | **Innovation & Adoption - $60m** | | | | |

Diagram layers (top to bottom):

End-user Adoption and Setting the Future Direction — Innovation & Adoption - $60m

Healthcare Applications and Innovation Projects — Telehealth $120m | Public Health Surveillance $100m | Chronic Disease | Cancer | Wait Times | ...etc | Primary Care | Patient Safety | Mental Health

The Electronic Health Record — Interoperable EHR - $175m

Registries and Domain Repositories — Registries $134m | Drug Systems $185m | Laboratory Systems $150m | Diagnostic Imaging $280m

Architecture and Standards — Infostructure - $25m

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EHR Architectural Blueprint (simplified)

EHR Solution (EHRS)

| Client Registry | Provider Registry | **EHR** | Domain Repository *(Lab)* | Domain Repository *(Pharmacy)* | Domain Repository *(Diagnostic Imaging)* |

Common Services

Communication Bus

HIAL

HIAL Provides standards-based message set for securely exchanging patient information

Patient Info	
Patient History	Drug Profile
Laboratory	Diagnostic Imaging

EMR

Applications

Tele-Health

Public Health Surveillance

An interoperable EHR captures all key clinical data on one screen (role-based)

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Health Surveillance – Program Genesis

- Increased investment in surveillance systems was one of the recommendations of the Naylor Commission report on SARS, October 2003.

- Funding Agreement between Government of Canada and Canada Health Infoway signed March 2004.

- $100 million for health surveillance systems.

- Five-year timeframe for investment.

- Specifically to support the management of infectious diseases and immunization.

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Funding Agreement Stipulations

- Specifically directs Infoway to construct a **pan-Canadian Health Surveillance System,** and adopt a pan-Canadian approach;

- Funds to be invested in **development & implementation** of the solution, not operation & maintenance;

- System must be **bilingual**;

- Implementation projects should be **80/20 cost-shared** with jurisdictions;

- Solution must be developed consistent with **EHR solution architecture**, and responsive to public health needs;

- Initial prescribed step was to complete a "**Needs Assessment** and Costed Implementation Strategy"

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Pan-Canadian Steering Committee

- Senior public health decision-maker and senior IT manager from each Canadian Province and Territory;

- Federal representatives from:
  - Public Health Agency of Canada (2)
  - Health Canada
  - Statistics Canada

- Representatives from other stakeholder organizations:
  - Canadian Public Health Association
  - Canadian Institute for Health Information
  - Canadian Medical Association
  - Council of Chief Medical Officers of Health

- Approved Terms of Reference and operating procedures

- Able to spawn subcommittees and Working Groups to focus on specific issues and projects.

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Approved Investment Strategy

INVESTMENT PROGRAM

- Invest in the implementation of a Health Surveillance system that can be implemented in **all jurisdictions**, incorporating the high-priority business applications:

  - Infectious disease case management

  - Immunization management

  - Infectious disease outbreak management

  - Health alert network

  - Infectious disease surveillance and reporting, as well as

  - integration to jurisdiction registries and laboratory repositories

- Facilitate the establishment of a **model for solution ownership** and support,

- Invest in a bilingual health surveillance solution that will serve the public health community and, where appropriate, **integrate into the EHR**

ACTIONS

- Commence jurisdiction implementation planning in FY 2005-06, with all jurisdictions fully implemented by 2009

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Approved Investment Envelope

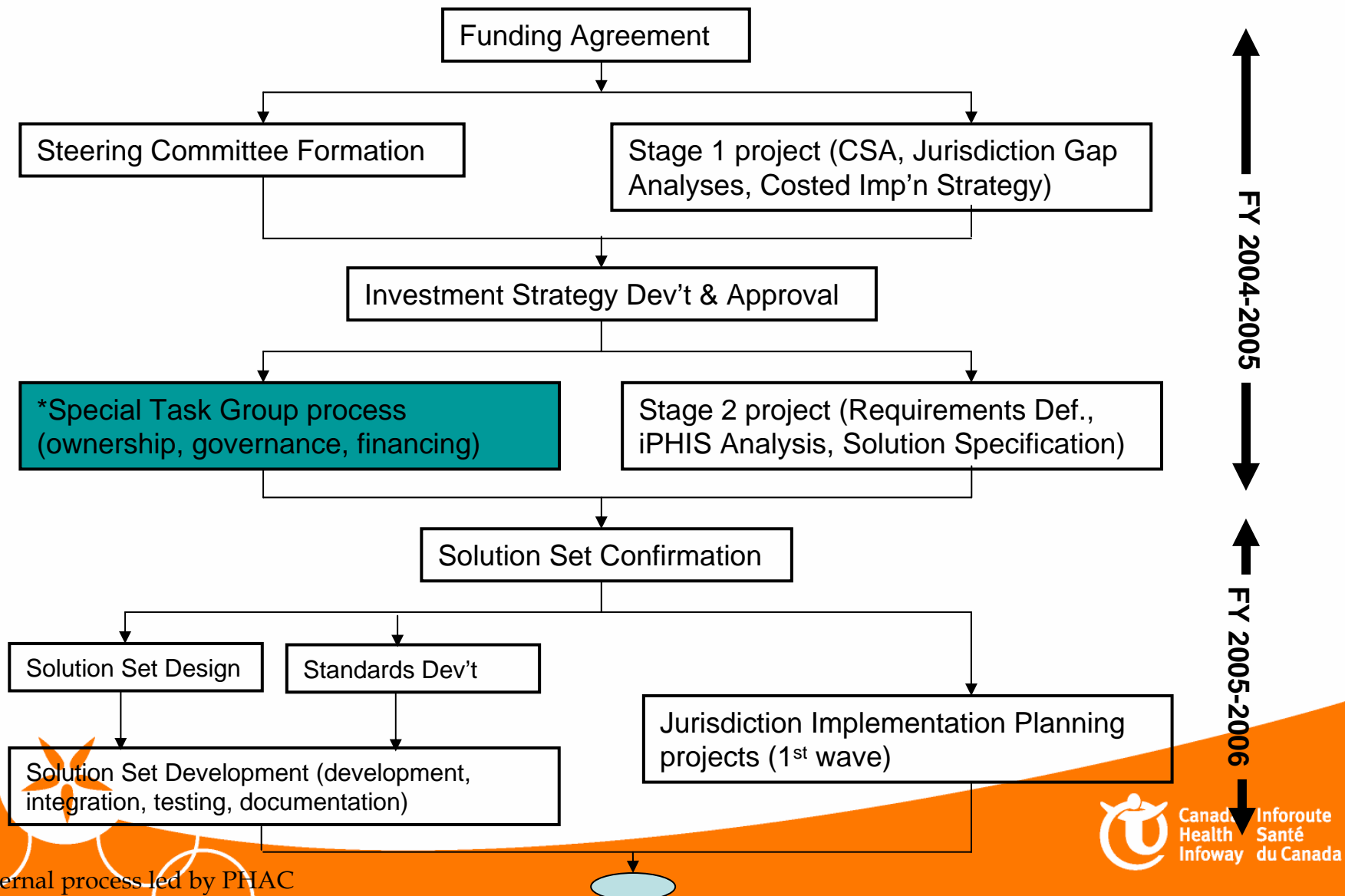- A total of $100 million for the Health Surveillance program

- Subject to further verification, the allocation of amounts are as follows:
  - Need Analysis and Costed Implementation Strategy $ 1.7m
  - Common (Pan-Canadian) solution & standards development $ 29.3m
  - Jurisdiction planning & implementation Projects $ 69.0m

  $100.0m

Investment Strategy Highlights

- Construct Pan-Canadian Solution Set, consisting of multiple modules.

- Select off-the-shelf software products as cornerstones of required modules where possible (i.e., buy, vs. build).

- Ensure integration of solution with EHR standards and Blueprint architecture.

- Assist all Canadian jurisdictions in implementing Pan-Canadian solution set, and interfacing it with local applications.

- Fund Pan-Canadian projects at 100%, jurisdiction scoping and planning projects at 75% (phase 0,1) and jurisdiction implementation projects at 80% (phase 2).
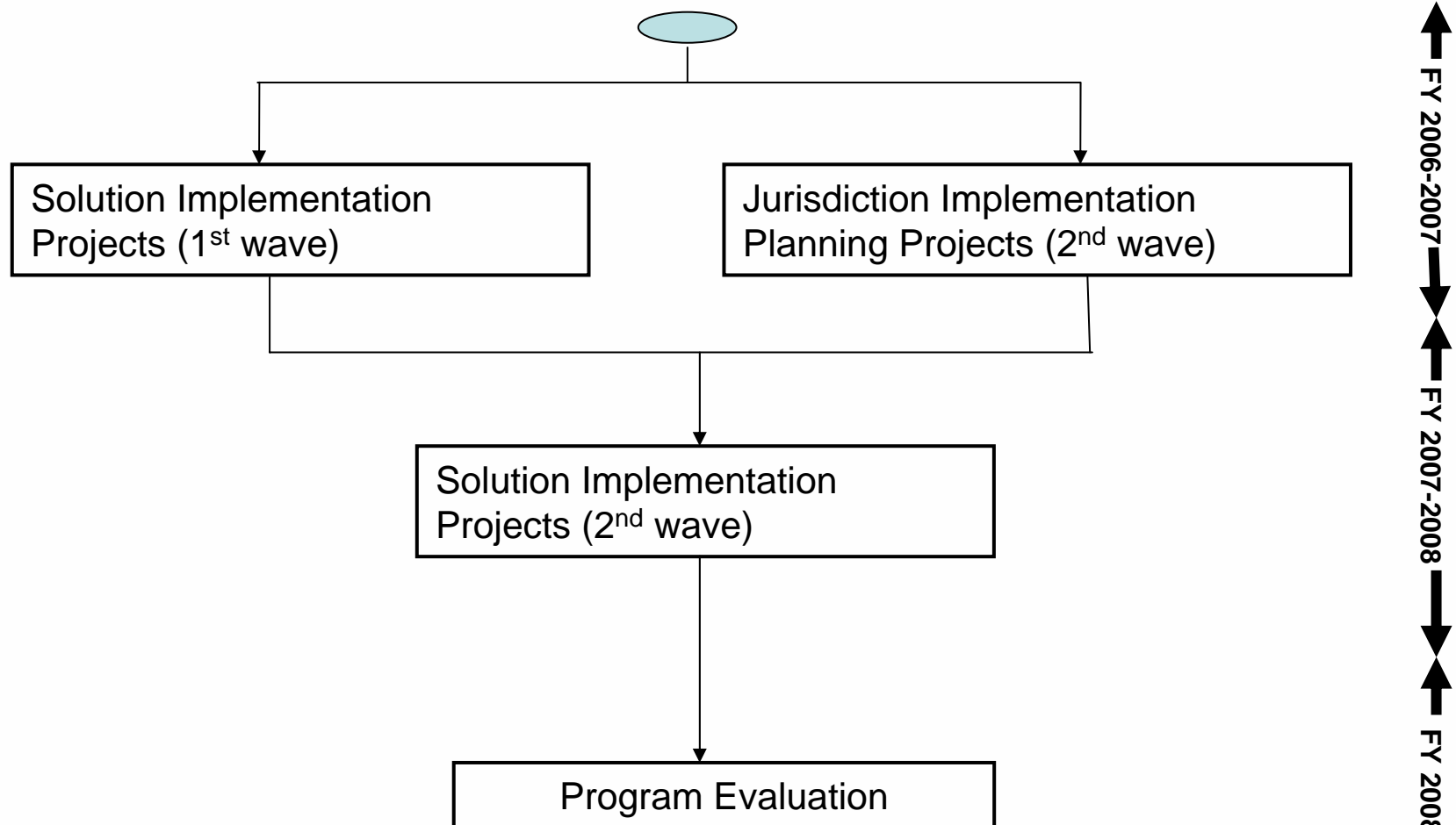
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Public Health Surveillance Program Plan

Funding Agreement

Steering Committee Formation

Stage 1 project (CSA, Jurisdiction Gap Analyses, Costed Imp'n Strategy)

Investment Strategy Dev't & Approval

*Special Task Group process (ownership, governance, financing)

Stage 2 project (Requirements Def., iPHIS Analysis, Solution Specification)

Solution Set Confirmation

Solution Set Design

Standards Dev't

Jurisdiction Implementation Planning projects (1st wave)

Solution Set Development (development, integration, testing, documentation)

FY 2004-2005

FY 2005-2006

*External process led by PHAC

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Public Health Surveillance Program Plan (cont'd)

Completed Activities and Achievements

STAGE 1 ACTIVITY (April – November 04)	RESULT(S)
Scope definition	Conceptual Solution Architecture
Current situation assessment	Jurisdiction Gap Analyses (14)
Cost estimation	Costed Implementation Strategy

STAGE 2 ACTIVITY (December 04 – April 05)	RESULT(S)
Requirements analysis	Requirements Definition
Analysis of iPHIS	iPHIS Analysis
Solution analysis & recommendations	Solution Specification

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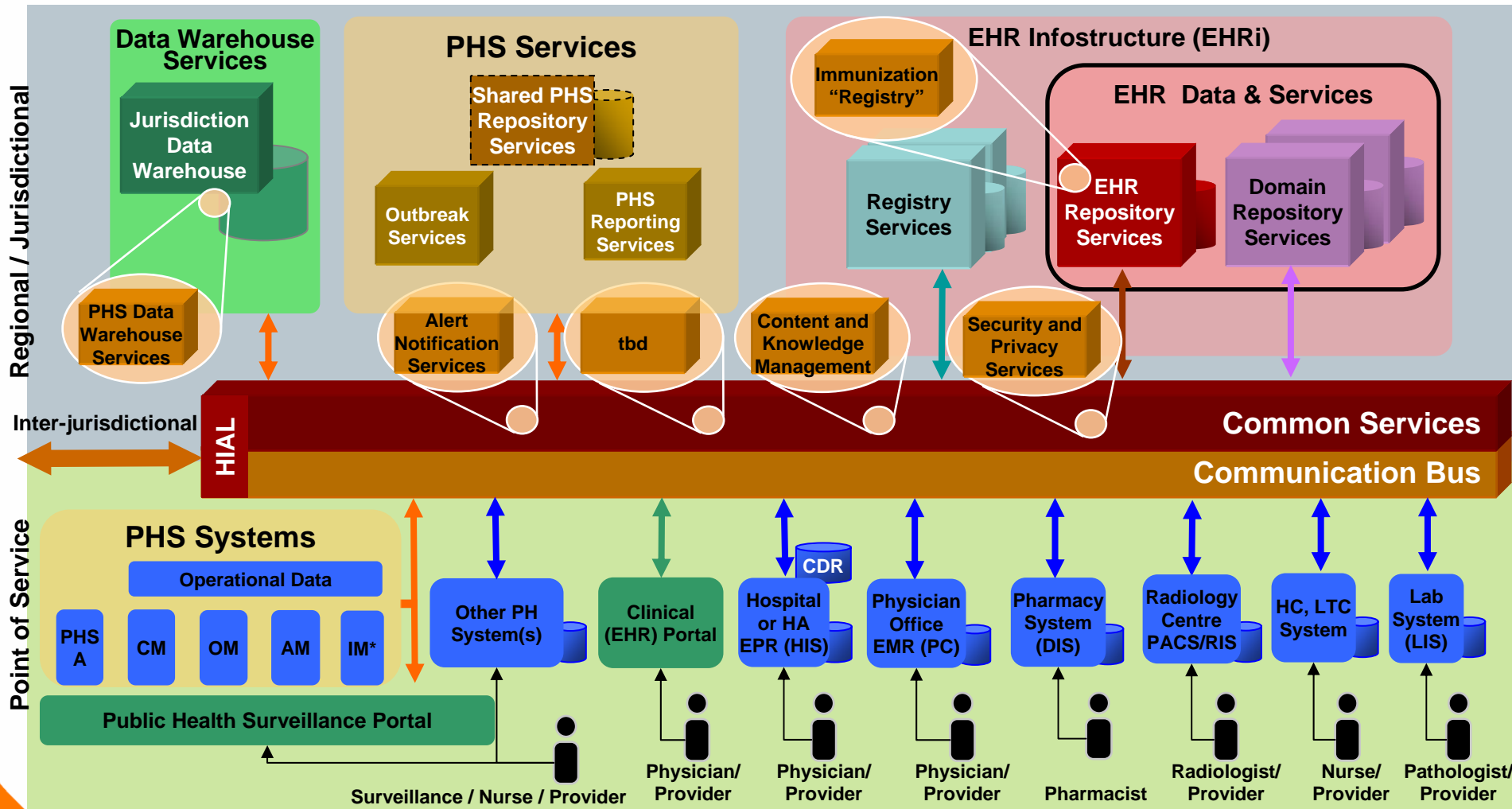
Surveillance System Components
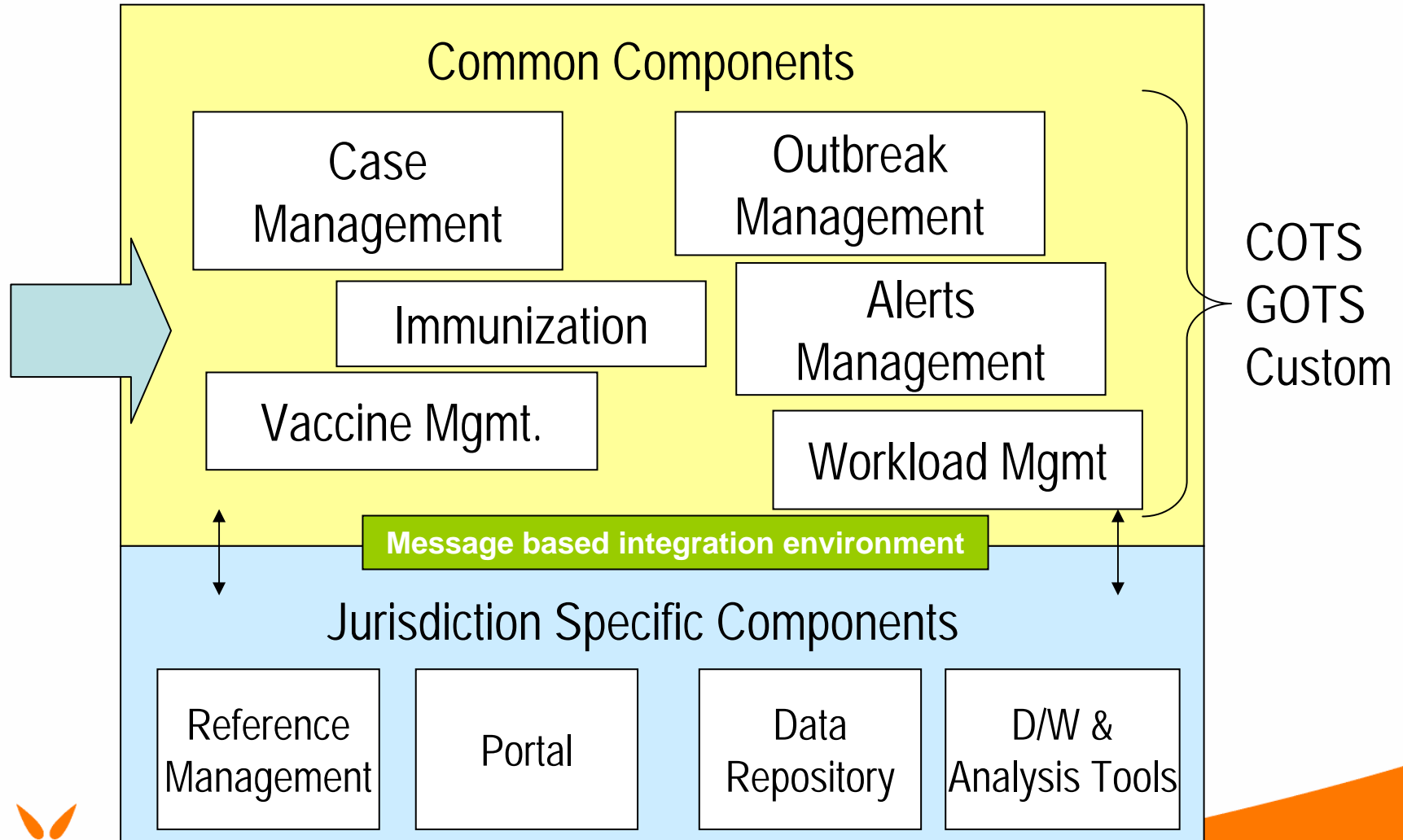
Pan-Canadian Common Components

- Based on commercially architected, tested and documented software modules

- Associated with integration, maintenance and implementation services from a high-capacity vendor/integrator

- Enriched with the addition of valuable components leveraged from iPHIS (concepts, user interface terminology, elements of user interface, etc.)

- Selected by a committee on which multiple jurisdictions are represented.

- Procurable by all jurisdictions through a contract between a single vendor and a single lead jurisdiction (BC)

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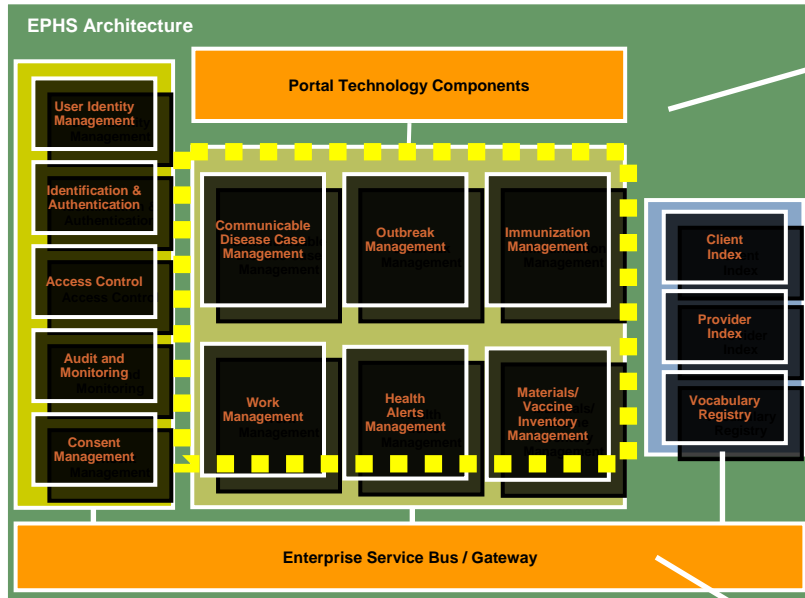Health Santé
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Procurement Scope
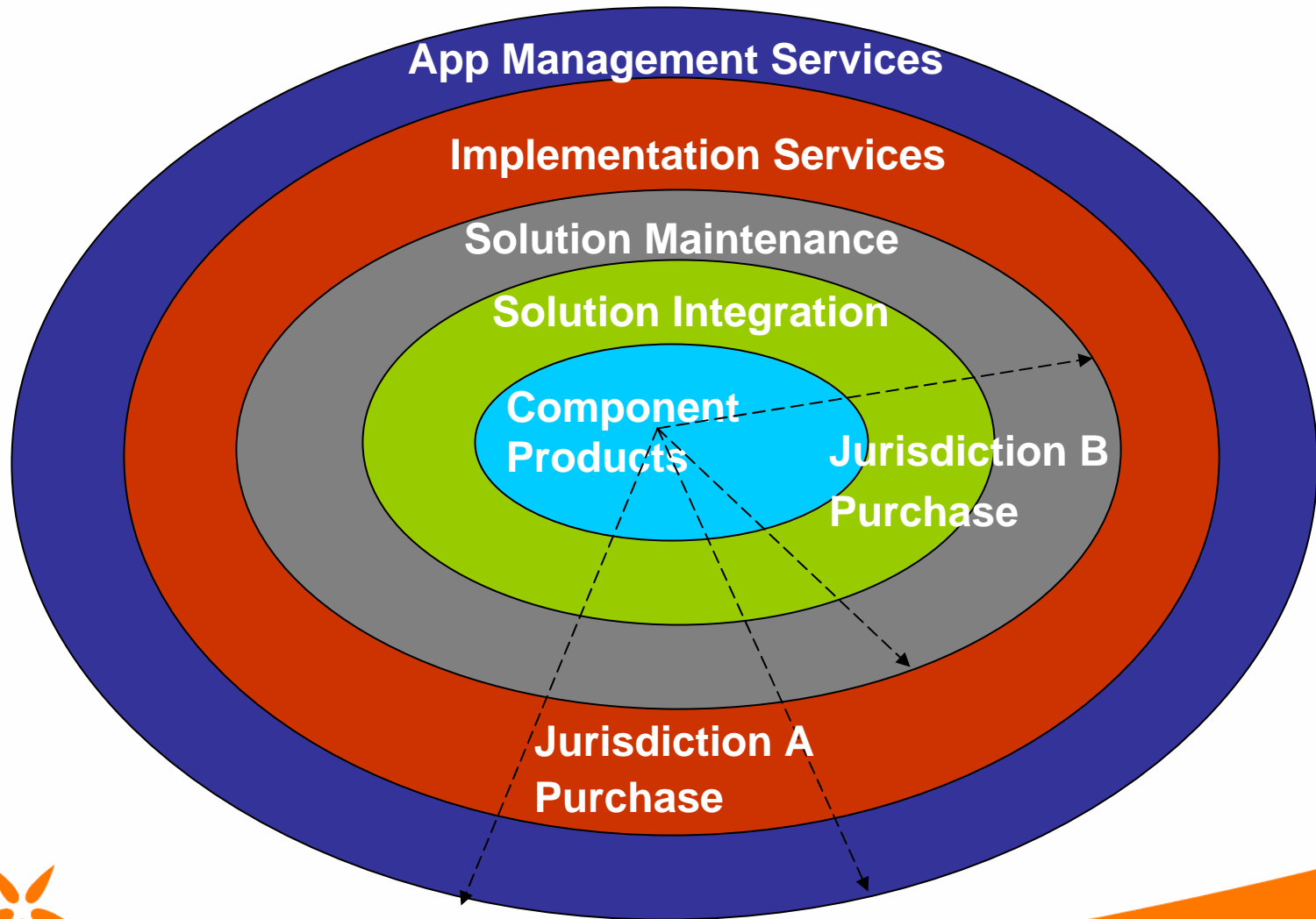
Integrating Health Surveillance – Conceptual Architecture View

* Immunization Management includes multiple functions

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Team *EPHS* Solution

EPHS Architecture

Portal Technology Components

User Identity Management

Identification & Authentication

Access Control

Audit and Monitoring

Consent Management

Communicable Disease Case Management

Outbreak Management

Immunization Management

Work Management

Health Alerts Management

Materials/ Vaccine Inventory Management

Client Index

Provider Index

Vocabulary Registry

Enterprise Service Bus / Gateway

COTS & GOTS software form the base for delivering the application functionality

STC COTS

+

Sotern COTS (Work Management)

+

CNPHI GOTS (Public Health Alerts)

Team EPHS performs Integration & Enhancements (IBM, STC, SAIC)
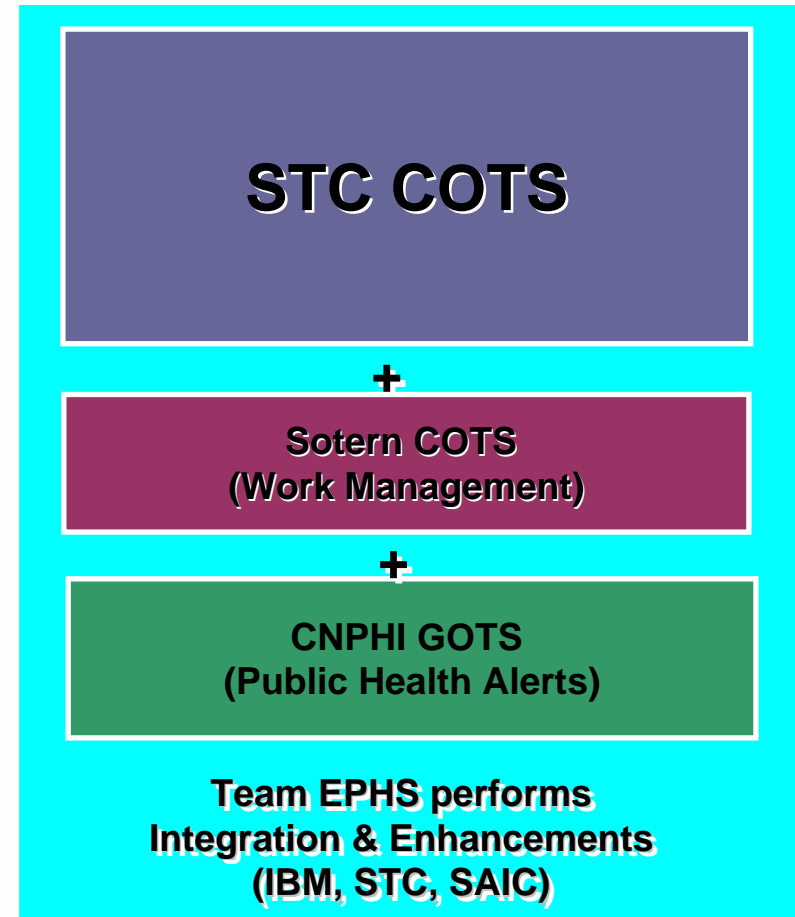
✓ *Substantial Canadian contribution to enhancements*

EPHS – Electronic Public Health System

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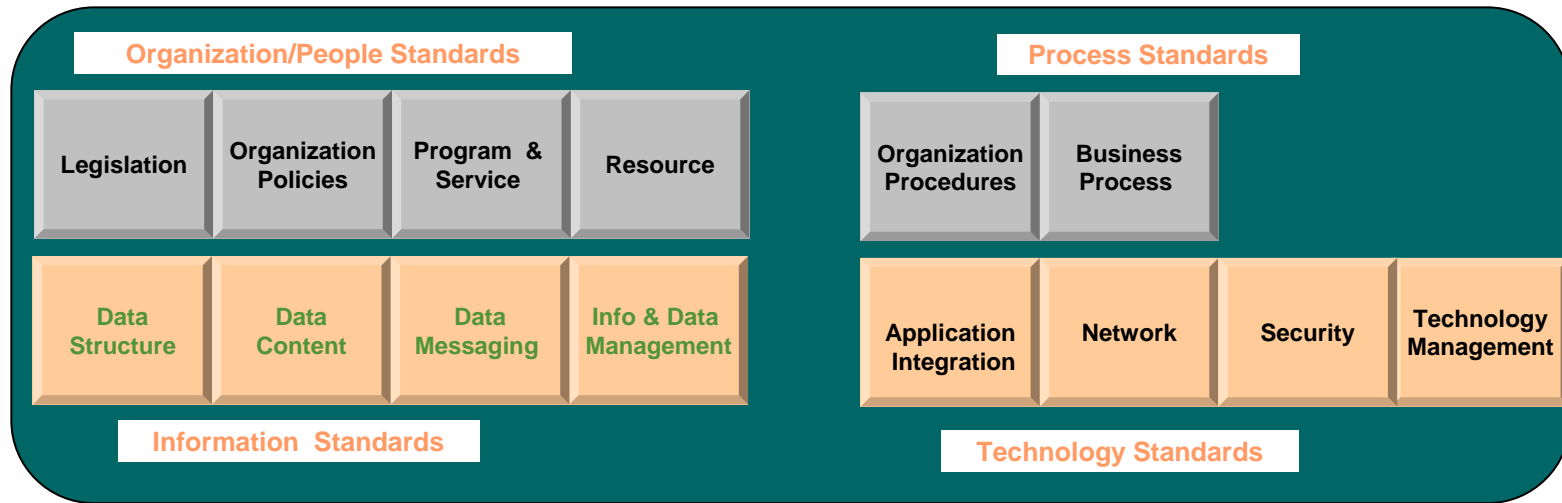
EPHS Application IP and Licensing Approach

- COTS components that form the base of *Electronic Public Health System* Application will be licensed to Jurisdictions at **discounted license fees**

- Jurisdictions will have the IP rights to use within their Jurisdiction with **no limitations on the number of users or servers**

- Enhancements to the base COTS will be developed and funded as part of the RI Project and provided to Jurisdictions who license the base COTS with **no additional license fee**

- GOTS modules will be provided to the Jurisdictions with **no license fee**

- All COTS and custom application software will be made **available in escrow to the Project Coordinator**

  ✓ *Jurisdictions are protected from paying unnecessary license fees and onerous user fees*

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Standards Collaboration Process - Scope

Organization/People Standards

Legislation	Organization Policies	Program & Service	Resource

Data Structure	Data Content	Data Messaging	Info & Data Management

Information Standards

Process Standards

Organization Procedures	Business Process

Application Integration	Network	Security	Technology Management

Technology Standards

Scope of Infoway pan-Canadian EHR Standards

Information Standards — Scope of Standards Collaboration Process

The first focus of the standards collaboration process is on information standards, which are those standards that allow for information and data to be shared among organizations and information systems

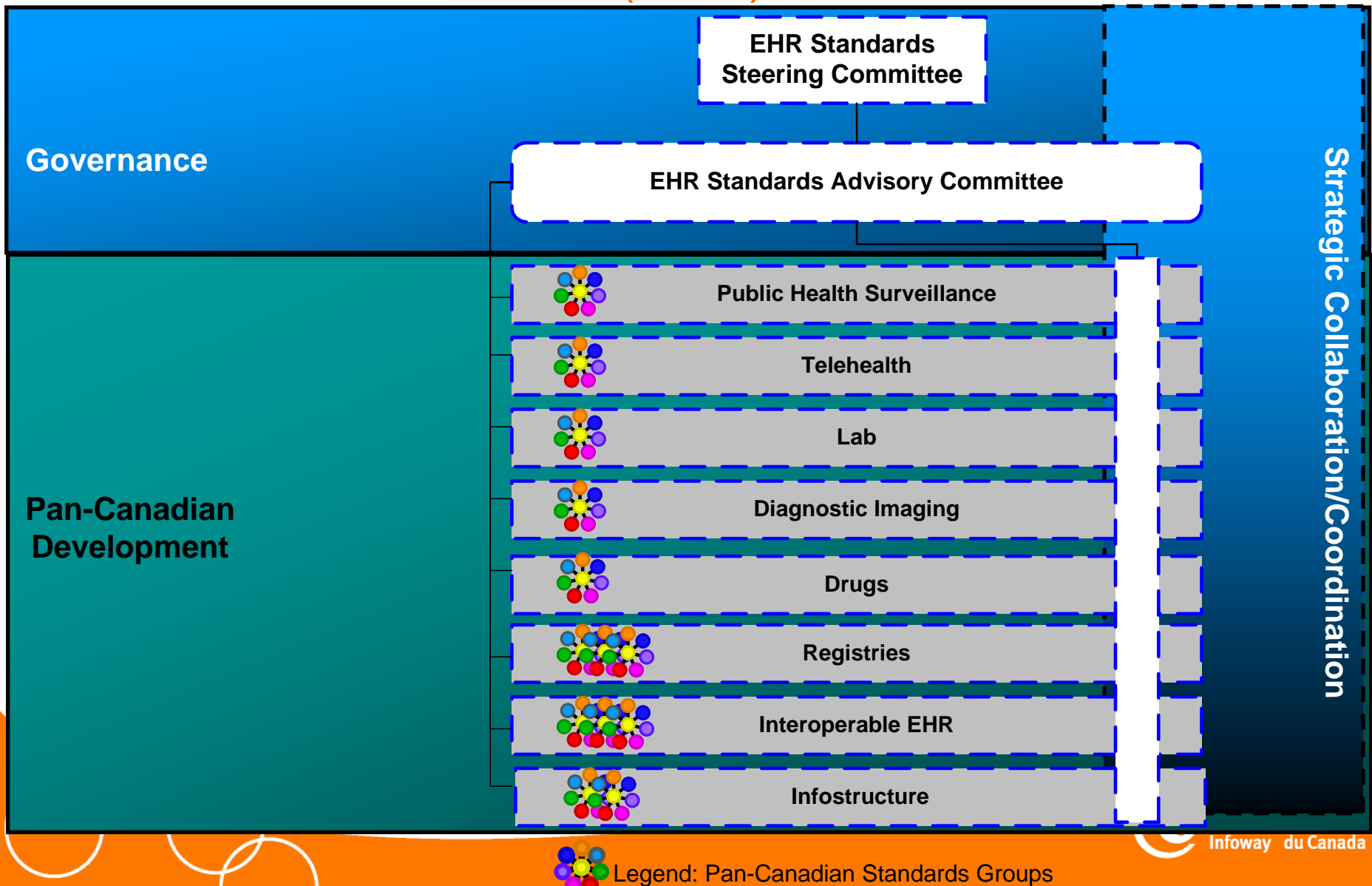Canada Health Infoway Inforoute Santé du Canada

Principles for pan-Canadian EHR Standards

1. Standards initiatives must be driven by the business of healthcare with a clearly defined business need

2. Existing standards work must be leveraged wherever possible and practical with an approach that includes adoption, or adaptation of existing standards, before development

3. The Health Level 7 version 3 messaging standard is required for all new message development related to the EHR

4. Infoway investments are predicated on a commitment to implement pan-Canadian EHR standards

5. Standards will be established, tested, refined and evaluated within the context of early adopter implementations

6. Infoway will support early adopter investment projects that have as their goal the establishment of pan-Canadian standards

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Principles for pan-Canadian Standards (cont'd)

7. Establishing standards is an evolutionary process and will not be perfect the first time, we may need to implement standards that are not fully balloted

8. Infoway is committed to supporting Canada's leadership role in influencing EHR international standards.

9. Infoway will work with other countries undertaking similar EHR initiatives to leverage their work and bring synergies to the projects as they move toward internationally balloted standards

10. Infoway will partner with CIHI, HL7 Canada, IHE Canada and other standards organizations, in the establishment of pan-Canadian EHR standards

11. Establishment of pan-Canadian EHR standards is coordinated via an open, transparent and inclusive Stakeholder Collaboration Process as defined by our stakeholders

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Overview of the Pan-Canadian EHR Standards Collaboration Process (SCP)

Governance

EHR Standards Steering Committee

EHR Standards Advisory Committee

Pan-Canadian Development

Public Health Surveillance

Telehealth

Lab

Diagnostic Imaging

Drugs

Registries

Interoperable EHR

Infostructure

Strategic Collaboration/Coordination

Legend: Pan-Canadian Standards Groups
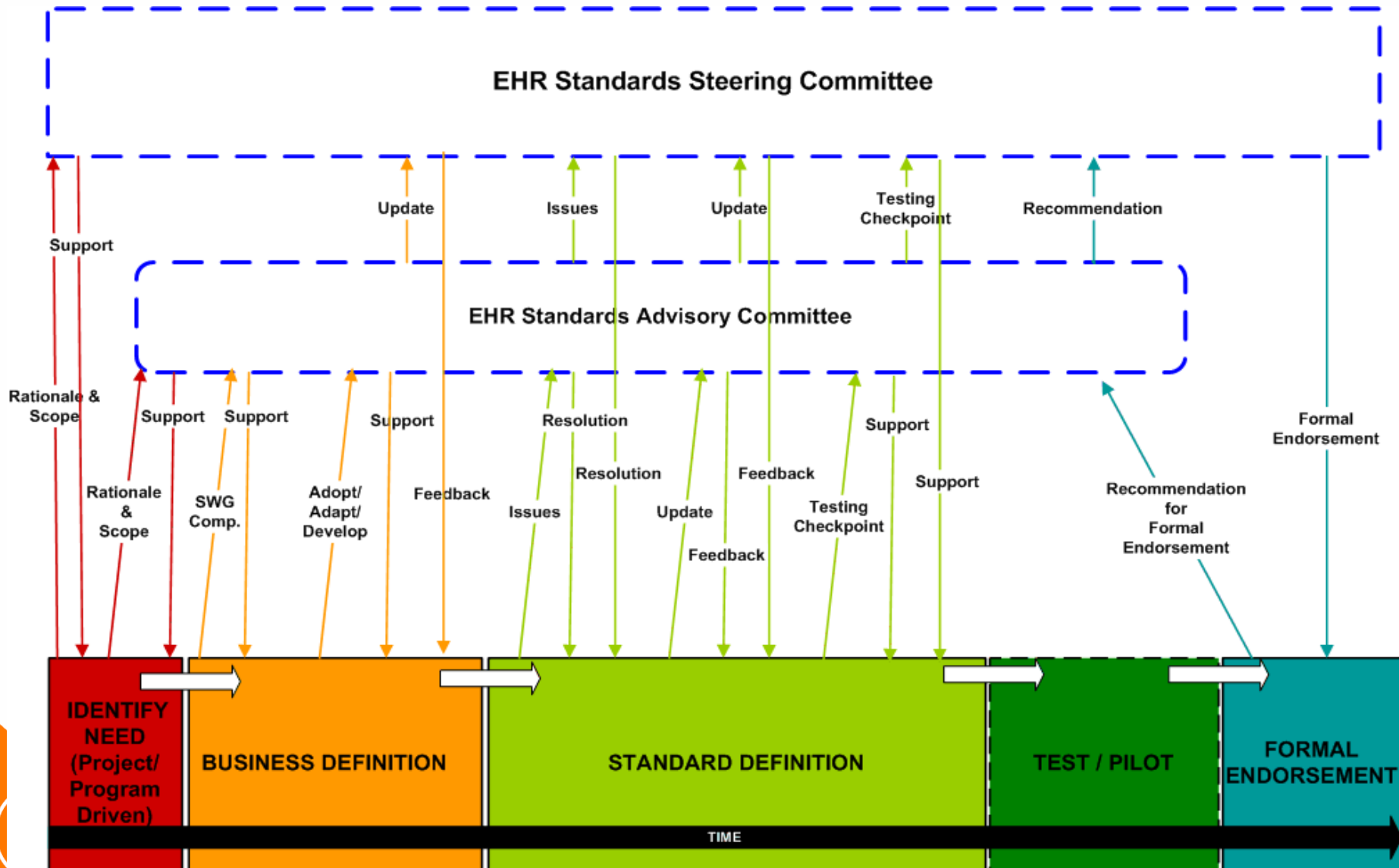
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Role of the SCP

- The **EHR Standards Steering Committee** leads and approves pan-Canadian EHR information standards for investment programs

- The **EHR Standards Advisory Committee** recommends information standards for approval by the EHR Standards Steering Committee and coordinates the activities of pan-Canadian Standards Groups

- A number of **pan-Canadian Standards Groups** guide the standards requirements of individual Infoway programs

- An **expert group** of resources provides cross-program technical and subject matter expertise in standards

GOVERNANCE

EHR Standards Steering Committee

EHR Standards Advisory Committee

PAN-CANADIAN DEVELOPMENT

- Public Health Surveillance
- Telehealth
- Lab
- Diagnostic Imaging
- Drugs
- Registries
- Interoperable EHR
- Infostructure

Expert Group

STRATEGIC COLLABORATION/CO-ORDINATION

= Pan Canadian standards groups

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High Level Process - Standards Initiatives

Clinical Terminologies - for Semantic Interoperability

A standardized way to describe and share clinical information

DPG, CMG
CMG 137 Respiratory Infections & Inflammations

ICD-10-CA, CCI
U04 Severe acute respiratory syndrome [SARS]

LOINC, SNOMED
Severe Acute Respiratory Syndrome (SARS) -associated Coronavirus disease
L-30014
ID 243608008,

Group
1Ks of groups

Classification
10Ks of codes

EHR

Reference Terminology
100Ks of terms

resource management and funding purposes

epidemiological analysis and management purposes

recording and retrieving clinical information

Transactions to be Addressed

Transaction Set Name	Design Pattern	Functional Component					
		CM	OM	AM	IM	MV	WM
Alert Message	FR			AM			
Case Care Plan Notification	UN	CM					
Case Detail Query	QR	CM	OM	AM			
Case Investigation Request	FR	CM		AM			
Case Management Notification	UN	CM					
Case Notification	UN	CM	OM	AM			
Case Share Request	FR	CM					
Case Transfer Request	FR	CM					
Disease Definition Update Notification	UN	CM	OM		IM		
EHR Detail Query	QR	CM					
EHR Immunization Query	QR	CM			IM		
Group Management Update	FR	CM	OM		IM		
Immunization Adverse Reaction Notification	UN	CM			IM		
Immunization Campaign Request	FR		OM		IM		
Immunization Consent Notification	UN	CM			IM		
Immunization Detail Query	QR	CM	OM	AM	IM		
Immunization Event Notification	UN	CM	OM		IM	MV	

Transactions to be Addressed (cont'd)

Transaction Set Name	Design Pattern	Functional Component					
		CM	OM	AM	IM	MV	WM
Immunization Request	FR	CM	OM		IM		
Immunization Schedule Update	FR				IM	MV	
Immunization Vaccine Failure Notification	UN			AM	IM	MV	
Immunization Vaccine Recall Notification	UN			AM	IM	MV	
Laboratory Detail Query	QR	CM					
Laboratory Order Request	RF	CM					
Laboratory Result Report Notification	UN	CM					
Location Registry Update	FR	CM	OM				WM
Outbreak Closure Notification	UN		OM	AM			
Outbreak Confirmed Notification	UN		OM	AM			
Outbreak Detail Query	QR		OM	AM			
Outbreak Suspect Notification	UN	CM	OM	AM			
Person Candidate Query	QR	CM	OM		IM		
Person Detail Query	QR	CM	OM		IM		
Person Detail Query	QR	CM	OM		IM		
Person Identifier Query	QR	CM	OM		IM		
Person Update	FR	CM	OM		IM		

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Transactions to be Addressed (cont'd)

Transaction Set Name	Design Pattern	Functional Component					
		CM	OM	AM	IM	MV	WM
Pharmacy Detail Query	QR	CM					
Pharmacy Order	FR	CM					
Population Candidate Query	QR		OM		IM		
Provider Candidate Query	QR	CM	OM	AM	IM		WM
Provider Detail Query	QR	CM	OM	AM	IM		WM
Provider Update	FR	CM	OM	AM	IM		WM
Resource Request	FR	CM	OM		IM		WM
Terminology Registry Notification	UN	CM	OM		IM		WM
Terminology Registry Update	FR	CM	OM		IM		WM
Vaccine Allocation Request	FR	CM	OM		IM	MV	
Vaccine Availability Query	QR	CM	OM		IM	MV	
Vaccine Demand Forecast Request	FR	CM	OM		IM	MV	
Vaccine Inventory Update	FR	CM	OM		IM	MV	
Vaccine Reservation Request	FR	CM	OM		IM	MV	
Vaccine/Materials Inventory Return	FR					MV	
Vaccine/Materials Inventory Transfer	FR					MV	
Vaccine/Materials Order Update	FR					MV	
Workload Detail Query	QR	CM	OM		IM		WM

Standards Life-Cycle & Maintenance Functions

1- **Need Identification & Business Definition**

2- **Options Analysis & Selection Decision**

3- **Development & Stable for Use Decision**

4- **Test/Pilot & Approval**

5- **Training/Education**

6- **Implementation**

7- **Conformance**

8- **Maintenance & Support**

Standards Selection Decision Point (e.g. A/A/D)

Stable for Use decision point (optional)

Final Approval decision point

Standards Collaborative | Program Projects

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Critical Success Factors

- Pan-Canadian solution

- Hybrid solution (best of breed components)

- Interoperability with iEHR solutions, standards, architectures

- Involvement of Public Health stakeholders

- Leveraging existing standards

- Embedding standards into solution modules

- Sustaining program momentum

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Benefits and Implications for PHAC

- More consistent & timely input information for Pan-Canadian surveillance;

- Reduced investment in iPHIS development, enhancement, and maintenance;

- Opportunities for simplification of external data collection and analysis systems;

- Plan for gradual "handover" of program activities and outputs from Infoway to PHAC and/or PHN;

- Key role in new solution sustainment & governance;

- Potential use within PHAC (eg. Outbreak, Vaccine Management) and other Federal departments.

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Discussion