Canada Health Infoway

Patient Summary and Interoperability Testing

An overview

Event: University of Victoria, mini-Conference
Date: May 19, 2022

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Objectives

- Overview of the PS-CA
- Provide insights into our approach to Interoperability
- Raise stakeholder awareness
- Answer questions

PS-CA and IPS

An implementable, testable specification, based on the International Patient Summary (IPS), as defined by IHE International Patient Summary Specification, HL7 IPS Implementation Guide, CEN-EN 17269 and ISO/DIS 27269.

The PS-CA FHIR profile set is as closely aligned to the HL7 IPS-UV specification as possible, while still supporting localized needs and reducing barriers to early adoption

PS-CA defines building blocks (both: content data model and interoperability) to create and share condition-independent and specialty-agnostic patient summaries

pan-Canadian PS Specifications - Project Scope (R1)

An overview

Project Background

Patient Summary-CA – **A national collaborative effort of developing a pan-Canadian implementable specification**

Project Approach

Baseline: Develop foundational Use Cases and Business Requirements for pan-Canadian Patient Summaries based on **collaborative workshopping** with jurisdictions, industry, clinical expert and other relevant organizations

Collaborate: Collaborate with jurisdictions, clinical SMEs, technical SMES, vendors, participating organizations to develop and refine detailed artefacts

Review: Review and provide feedback into artefacts through engagement workshops and input gathering

Publish: Publish artefacts for broader stakeholder consultation

Recommend: Recommend draft artefacts for approval

Iterate: Continue to refine as per testing and priorities

Jurisdictional Alignment

Stakeholder Engagement has identified a set of common use cases for the pan-Canadian Patient Summary, **Release 1** prioritizes these 3.

Use Cases in Scope for Release 1	AB	BC	NL	ON	SK
1. Health Care Provider (HCP) Creates and submits a Patient Summary-CA	x	x	x	x	x
2. Health Care Provider (HCP) Retrieves, Views and Uses a Patient Summary-CA	x	x	x	x	x
3. Patient Accesses and Views their Patient Summary-CA	x	x	x	x	

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Solving for specific interoperability priorities, such as Patient Summaries, while also addressing the broader interoperability landscape

2 Conformance testable specifications focused on specific infrastructure or clinical needs, and associated data sets

- IHE IT Infrastructure (ITI) Framework
- Care Coordination including the IHE International Patient Summary (IPS)
- Medication/Pharmacy
- Radiology
- Cardiology
- Lab/Pathology
- Devices
- Others

1 BASE STANDARDS

HL7 v2, v3, CDA | HL7 FHIR | LOINC | SNOMED | DICOM | ICD9/10

The pan-Canadian Patient Summary specification (PS-CA) is a level 2 specification

1 **Adoption of Base Standards is not enough**
- Projects and vendors across the country use base standards but there is lack of harmonization across implementations

2 **Interoperability requires harmonization of testable specifications** across public and private sector implementers
- **There is a growing body of testable specifications in use by multiple countries and healthcare sectors**
- The diagnostic imaging sector is most mature in embracing testable specifications

An integrated and harmonized collection of specifications, policies and infrastructure is required to enable wider interoperability

In a few weeks Infoway will introduce a Proposed pan-Canadian Interoperable Reference Architecture to stimulate a conversation on a key dimension of the wider Interoperability landscape

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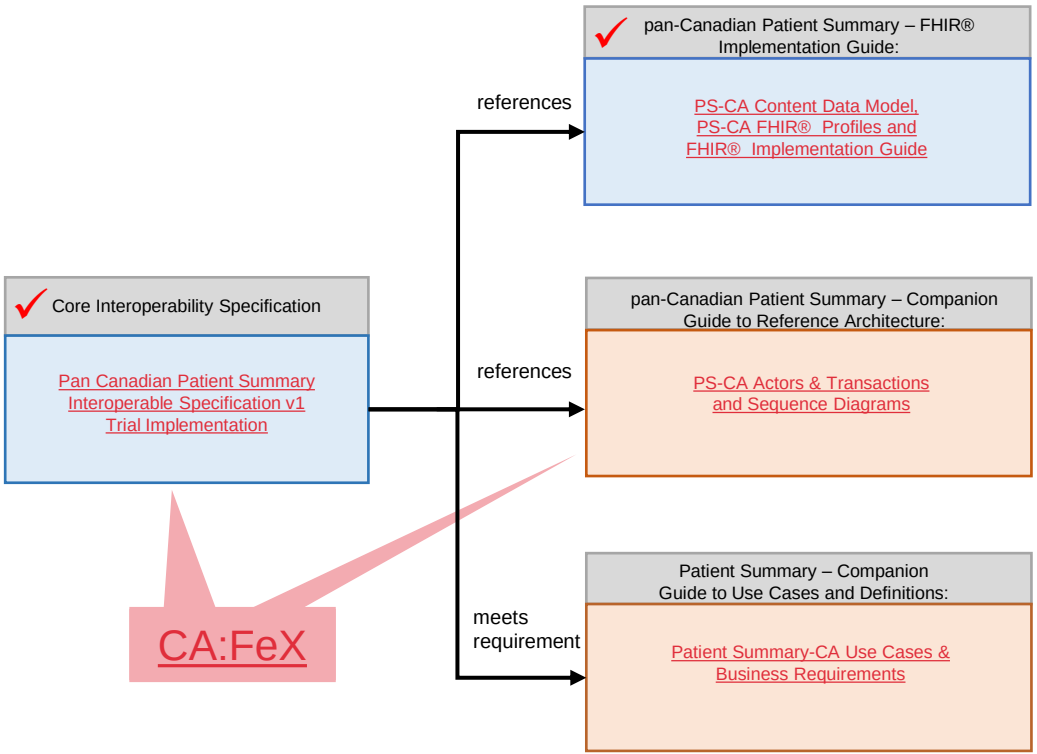
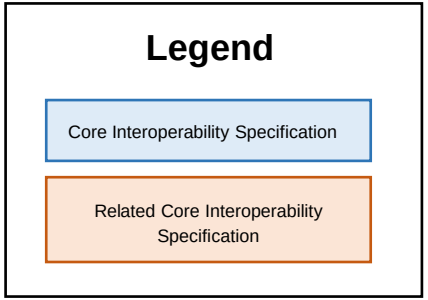
Patient Summary PS-CA Specification Package

The pan-Canadian Patient Summary specification (PS-CA) is a level 2 specification



Link to specification package



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Content Data Model

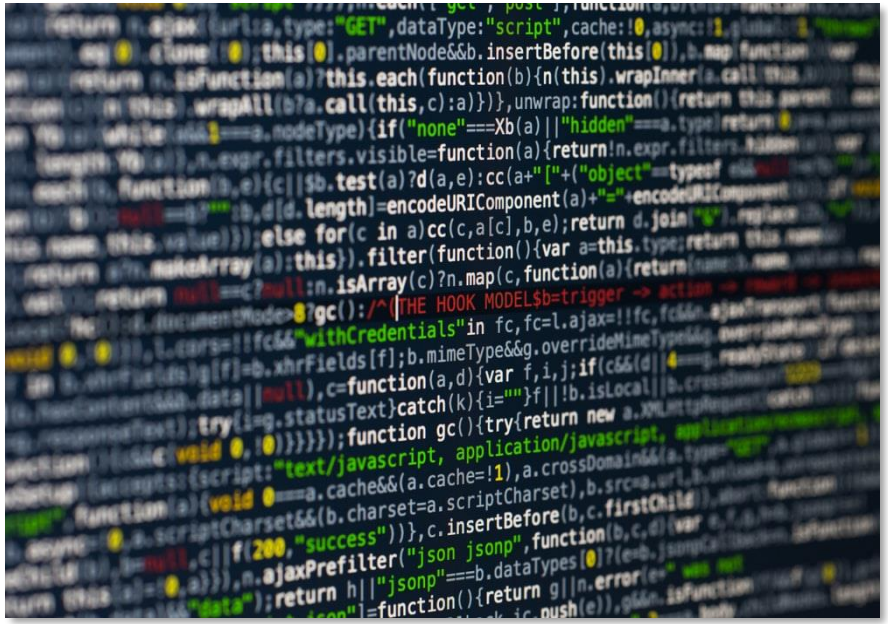
An overview

Purpose

- Defines the Patient Summary-CA content data model and provides the required Implementation Guidance
- This section of the specification defines each data element, cardinality, data type, constraints, and code system references - all of the details needed for two systems to be semantically interoperable with each other

Intended Audience

- Solution Developers



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Cross-jurisdictional PS-CA Building Blocks Prioritization

Patient Summary-CA: Data Domains of Interest by Canadian Jurisdiction and Release

	IPS-UV		PS- CA	AB	BC	MB	NL	ON	SK	Release 1	Release 2+
Header	Subject	Header	Subject								+
Header	Author	Header	Author								+
Header	Attester	Header	Attester								+
Header	Custodian	Header	Custodian								+
Required	Medication Summary	Recommended	Medication Summary								+
Required	Allergies and Intolerances	Recommended	Allergies and Intolerances								+
Required	Problem List	Recommended	Problem List								+
Recommended	Immunizations	Recommended	Immunizations								+
Recommended	History of Procedures	Recommended	History of Procedures								+
Recommended	Medical Devices	Recommended	Medical Devices								
Recommended	Diagnostic Results	Recommended	Diagnostic Results								
Optional	Vital Signs	Optional	Vital Signs								+
Optional	Past history of Illness	Optional	Past History of Illness								+
Optional	Social History	Optional	Social History								+
Optional	Advance Directives	Optional	Advance Directives								
Optional	Pregnancy	Optional	Pregnancy								
Optional	Functional Status	Optional	Functional Status								
Optional	Plan of Care	Optional	Plan of Care								
		EXT	Extension(s)								
		EXT	Family History								

Notes:
- Coordinating table discussion for October 7th: Approval to move Medical Devices and Diagnostic Results to Release 2.
- Release 1: Includes the highlighted data domains.
- Release 2: Includes the data domains from Release 1, including Release 2 roadmap items, and the highlighted data domains that were not included in Release 1.

Infoway has orchestrated a collaborative process to
- reach consensus on priorities
- consolidate requirements
- conduct detailed data analysis to understand jurisdictional needs and the required flexibility for the design of PS-CA building blocks

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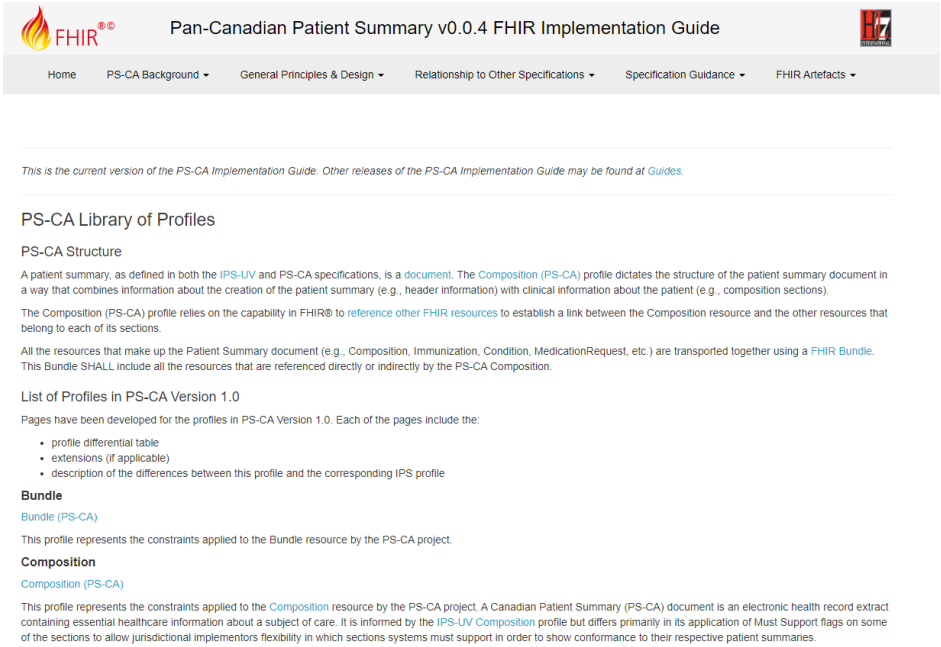
The pan-Canadian Patient Summary FHIR Implementation Guide & HL7 FHIR® Profiles

- **The pan-Canadian Patient Summary - FHIR Implementation Guide** is an implementable, testable specification for the FHIR composition that defines the data payload of the PS-CA specification and is based on the HL7 FHIR IPS implementation guide
- **The PS-CA FHIR Profiles** are implementable, testable data content models that reflect configurable building blocks for creating a well formed pan-Canadian Patient Summary as a FHIR document

Link to PS-CA FHIR bundle



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Patient Summary-CA Specifications

What is it?

- The Pan-Canadian Patient Summary Interoperability Specification is an implementable, testable specification, based on the IHE International Patient Summary specification and HL7 IPS IG

- Defines building blocks (both: data model and interoperability) to create and share condition-independent and specialty-agnostic patient summaries

Intended Audience

- IT departments of healthcare institutions
- Technical staff of participating vendors
- Experts involved in standards development
- Software developers

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The PS-CA Interoperable Specification

Sample from the Specification document

Table 1. Interoperability Conformance Requirements for Use Case 1: HCP Creates PS-CA

Option 1: Document Repository/Registry Pattern

PS-CA USE CASE 1: HCP Creates PS-CA			MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS			
USE CASE ACTOR	SERVICE SUPPORTED	OPT	TECHNICAL ACTOR	OPT	PROFILE/ STANDARD	REFERENCED SPECIFICATION AND STANDARDS (Refer to the sections listed below in Appendix A)
PS-CA Producer	Authenticate User	O	Client (e.g., EMR)	O	Internet User Assertion (IUA)	Appendix A: IUA Profile Overview
	Identify Patient	O	Client (e.g., EMR)	O	Use Existing Standards Employed by the Clinical System	N/A
		O	Patient Demographic Consumer	O	PDQm	Appendix A: PDQm Profile Overview
	Retrieve clinical data from local data sources (Patient Identifier)	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Assemble and review Patient Summary	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Update Current Valuesets and ConceptMaps	O	Client (e.g., EMR)	O	SVCM	Appendix A: SVCM Profile Overview
	Omit or Mask Data based on Jurisdictional Policy	O	Client (e.g., EMR)	O	Jurisdictional Requirement	N/A
	Save PS-CA to Document Repository	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
		R	Document Source	R	MHD	Appendix A: MHD Profile Overview
Document Repository (Local to PS-CA Producer or Central)	Save PS-CA to Document Repository	R	Document Recipient	R	MHD	Appendix A: MHD Profile Overview

The Use Case Actors and the Services they support are described in the following table. Services may be **Required or Optional.**

This table provides the mapping for the Use Case Actor to the detailed specifications (such as IHE Profiles, Profile Actors, Optionality) that systems shall implement to exchange healthcare information (e.g. Patient Summaries).

Link to Interoperable Specification

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Companion Guide: Reference Architecture

An overview PS-CA Actors and Transactions

Purpose

- Helps define the interoperability landscape and relevant services
- Provides guidance on how to apply specific patterns and integration profiles to addressing interoperability needs

Intended Audience

- IT departments of healthcare institutions
- Technical staff of participating vendors
- Experts involved in standards development
- Individuals and teams responsible for software implementations
- CTOs, CMIOs, CIOs, PTs and Vendors

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Reference Architecture that Supports PS-CA

ILLUSTRATIVE

An overview of the recommended PS-CA Actors and Transactions

This high-level view contains a superset of profiles that offer alternatives to exchanging the Patient Summary-CA depending on jurisdictional service type and availability. **Mandatory and optional capability support** is described in the sequence diagrams associated with each use case analysis.

Patient Summary-CA Release 1

Integration Profiles (Required / Optional)

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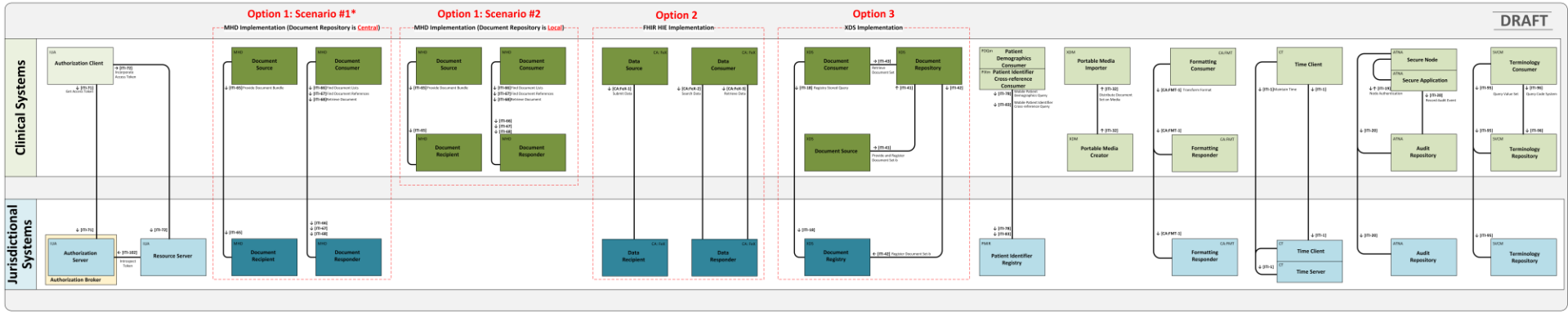


IHE Profiles

IUA	Internet User Authorization
MHD	Mobile access to Health Documents
XDS	Cross Enterprise Document Sharing
PMIR	Patient Master Identity Registry
PDQm	Patient Demographics Query for Mobile
PIXm	Patient Identifier Cross-Reference for Mobile
XDM	Cross-enterprise Document Media Interchange
ATNA	Audit Trail and Node Authentication
CT	Consistent Time
SVCM	Sharing Valuesets, Codes and Maps

Canadian National Integration Profile(s)

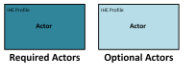
CA:FeX	FHIR Exchange
CA:FMT	Formatting Support Service

*Preferred Option

Legend

Clinical System Actors

Jurisdictional System Actors



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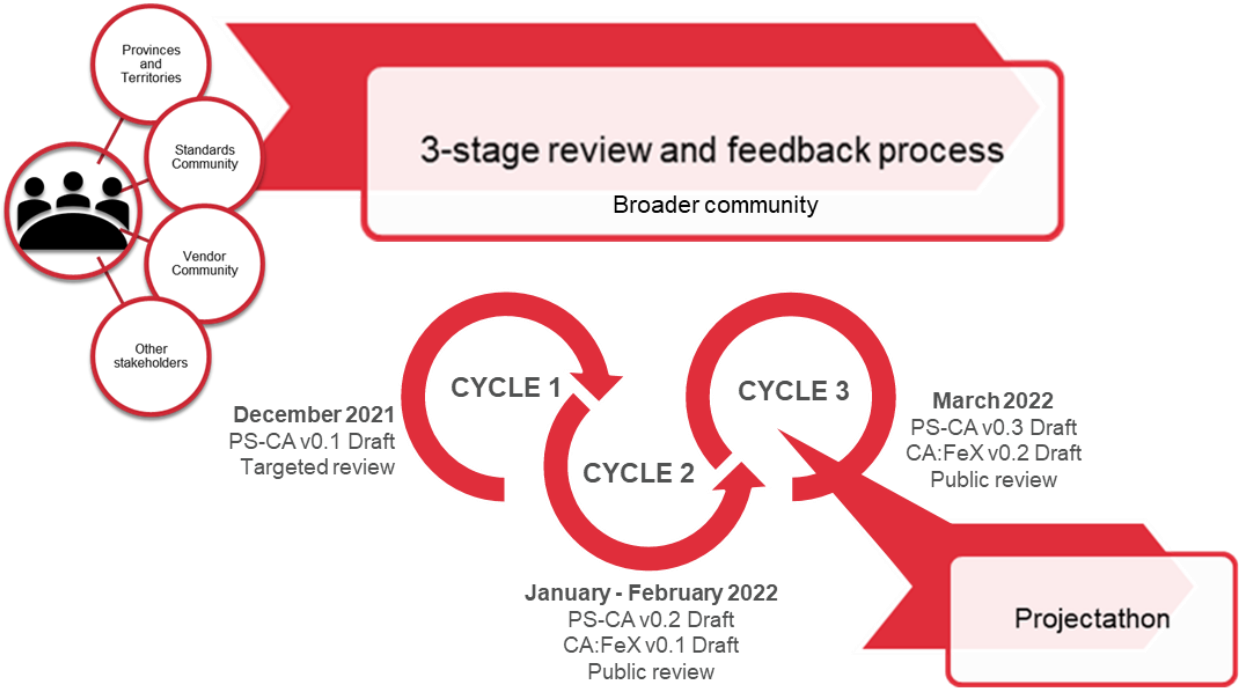
Review Cycles



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IHE and Gazelle

IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information.

Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively.

IHE INTERNATIONAL | Making Healthcare Interoperable

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What is Gazelle?

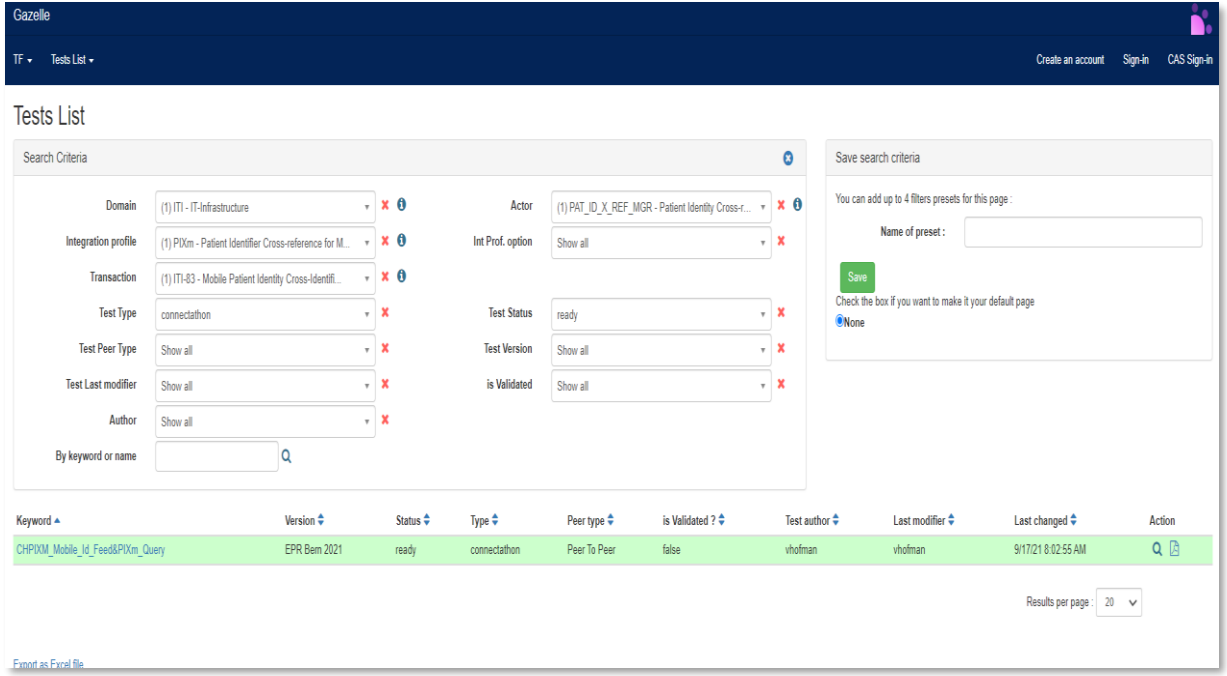
Gazelle

- a **test management** tools oriented toward interoperability & conformance testing
- a suite of IHE actors **simulators**
- a suite of IHE **validators**
- a suite of tools for testing support (e.g. tools for data generation)

A set of tools for testing the interoperability and the conformance of eHealth Information Systems

- For IHE connectathon
- For Vendors implementing eHealth Standards
- For Users deploying and using eHealth Information Systems
- For conformity assessment testing

IHE GAZELLE
eHealth test framework
for interoperability



Gazelle is a suite of tools developed by IHE. It provides an opportunity to validate the roles applications are playing in the ecosystem and ensure they are able to satisfy the interoperability requirements against their claims.

Gazelle offers several self-serve, self-test opportunities for vendors to learn and test their system's conformance to the included profiles

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Users of Gazelle from around the world

- Arsenal.IT (Italy Venice Region)
- Abrumet-Brussels eHealth (Belgium)
- Insiel SPA (Italy)
- InteropSanté - France
- GE
- Agfa
- Medical PHIT (NL)
- Technikum Wien (Austria)
- IHE USA
- IHE-Europe
- IHE China
- IHE Japan
- Canada Health Infoway
- Agence eSanté-Luxembourg
- InterAMC France
- eHealth Finland
- eHealthSuisse & Federal MoH
- eHealthPlatform Belgium
- EU DG Santé-European Cross Border
- Sequoia-USA
- EFS-French Blood Transfusion-France
- Saudi Arabia eHealth: SHC-KSA
- Ireland eHealth (HSE)
- French ehealth (ASIP)

PS-CA components

Profiles to test	Testable during pre-PAT tests	Testable during PAT	Comments
MHD	Infoway Simulator	EVSClient	Testable in no peer and/or peer to peer test
XDS	XDStarClient XDSToolkit	EVSClient	Testable in no peer and/or peer to peer test
IUA	NO	NA	Testable in peer to peer test only
PMIR	NO	EVSClient	Testable in peer to peer test only
PDQm	Patient Manager	EVSClient	Testable in no peer and/or peer to peer test
PIXm	Patient Manager	EVSClient	Testable in no peer and/or peer to peer test
XDM	NA	NA	Testable in peer to peer test only
ATNA	Gazelle Security Suite	EVSClient Gazelle Security Suite	Testable in no peer and/or peer to peer test
CT	NA	NA	No peer
CA : FeX	Infoway Simulator	Proxy EVSClient	Testable in no peer and/or peer to peer test

Projectathon preparations

Projectathon details posted on InfoScribe: Prototyping+and+Validation

Gazelle Testing Platform live: https://pancanadianio.ca/

Development of PS-CA FHIR Renderer and OpenAPI

Testing Plan developed and executed

Clinical Scenarios were developed

Education Plan for the vendors created and distributed

Projectathon Days 1 & 2 Debrief

Part 1: March 21 & 22: Peer to Peer Testing

In this phase of testing, participating vendors can work with partners to execute the test steps for the desired profiles

Purpose: To test the PS-CA and CA:FeX Specifications and to validate the use of Gazelle and the IHE Methodology

Participating Systems from:

Allscripts, Cerner, Epic, Juniper CDS, smile CDR, Canada Health Infoway

Key Highlights:

- Completed the first pan-Canadian Projectathon to test Patient Summary Interoperability Specifications (PS-CA & CA:FeX).
- The Projectathon allowed for the generation of PS-CA FHIR-based documents and confirmed the validity of recommended exchange patterns.
- Participating vendors performed 67 tests in total, which is considered exceptional in the IHE community for a first Projectathon!
- 35 vendor representatives participated in the testing event!
- Captured many lessons learned which will be documented in our final Projectathon Report to be distributed in April.

Total Profiles Tested	Total No-Peer Tests Executed	Total Peer-to-Peer Tested Executed
6	26	41

Projectathon Focus – Day 1&2

Profiles that are subject to testing based on vendor registration include CA:FeX, MHD, XDS, IUA, ATNA, CT, and PIX.

	Allscripts	Cerner	JuniperCDS	SmileCDR	Epic	Infoway*
Allscripts		IUA		CA:FeX		
Cerner	IUA CA:FeX		IUA CA:FeX	CA:FeX	XDS	CA:FeX MHD
JuniperCDS		CA:FeX MHD		CA:FeX		CA:FeX MHD
SmileCDR	IUA	IUA	IUA			
Epic		XDS				
Infoway*		CA:FeX MHD	CA:FeX MHD			

Participating Systems from:

Allscripts, Cerner, Epic, Juniper CDS, smile CDR, Canada Health Infoway

Part 1: March 21 & 22: Peer to Peer Testing

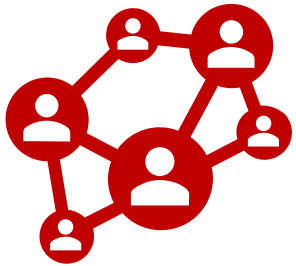
In this phase of testing, participating vendors can work with partners to execute the test steps for the desired profiles

*Infoway will provide CA:FeX and MHD simulators in case vendors cannot find a partner, or want to do multiple tests

Projectathon Day 3 Debrief

Part 2: March 23 - Demonstrations and Business Focus

In this phase of testing, more complex testing scenarios and facilitated discussions focusing on clinical and business needs and opportunities will be covered



Session 1	FHIR Content Data Model
Session 2	Supporting Profiles for the PS-CA Exchange (e.g., IUA)
Session 3	Approaches to Document Management
Session 4	Clinical Workflow

Significant participation & collaboration in the day 3 sessions, from:

- 19 vendor participants from Allscripts, Cerner, Epic, JuniperCDS, SmileCDR and Orion
- 18 jurisdictional participants from British Columbia, Alberta, Saskatchewan, Ontario, and Newfoundland
- 3 representatives from pan-Canadian Health Care Organizations (i.e., CIHI)
- 3 representatives from IHE Canada, IHE International and IHE Europe
- 1 representative from Ontario MD

Early Learnings

- Specifications should be stable for at least 6 months before being represented in the Gazelle platform
- Vendors require 6 months – 1 year lead time to implement a specification
- Projectathon Preparations
  - Vendors requested more time to prepare for the Projectathon
  - Pre-Projectathon webinars should be focused on live support vs. presentations
  - Offer support in the local time zone
  - Testing event should be longer than 2 days
  - Increased clarity in expectations regarding profile grouping testing

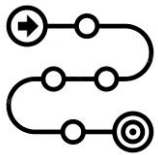
Positive Feedback

- Vendors identified that they learned a lot from the Projectathon and thought it was a valuable session with great opportunities to connect with other vendors as well, and to hear the clinician and jurisdiction thinking around workflow
- Jurisdiction participants were highly complimentary of the Projectathon sessions they attended and made note of the significant vendor participation
- IHE International Board member identified IHE Canada have been attempting to bring the IHE Methodology and Projectathon/Connectathons to Canada for a number of years, and that this is an outstanding achievement for Canada

Next Steps

Specification Development: Publish and evolve the specification

- Final governance approvals/publishing for PS-CA Trial Implementation v1.0 and CA:FeX TI v1.0 specifications
- Support vendors and implementors in adopting the pan-Canadian specifications
- Advance the specifications based on jurisdictional priorities and implementation experience



Roadmap: Establish the overarching long-term vision, architecture and supports to enable interoperability in Canada

- Outline and plan for the scope of the Roadmap
- Socialize the plan
- Begin stakeholder consultation to develop the Interoperability Roadmap

Interoperability Program: Refine and build out the program structure based on lessons learned

- Review and expand the governance structure to include broader stakeholder community and scope
- Refine the program's specification methodology, processes and tools
- Outline the IHE methodology including the Gazelle tool

Change Management: Establish a change management plan that begins to address key barriers to adoption

- Prepare vendors and PTs for subsequent Projectathon events
- Develop an overall change management strategy and plan to support adoption
- Publish the Interoperability Privacy Toolkit and define next steps to support jurisdictions in privacy guidelines

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Q & A

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Thank you!

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