



Canada Health Infoway

# Pan-Canadian Projectathon Patient Summaries

Technical VIP Tour

March 2023

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Senior Director Solution Management and Advisory Services



Canada Health Infoway

# Agenda

Setting the context

What is Gazelle and where does it fit in?

Technical demonstration

Q&A

# Solving Interoperability Challenges - Core Concepts

To solve **interoperability challenges**, IHE International has developed a process that **brings together clinicians, jurisdictions, vendors and, developers** of healthcare information technology (HIT) in an annually recurring four-step process.



1 Clinical, technical and jurisdictional experts define critical use cases and business requirements for solving a problem (e.g., Sharing Patient Summaries).



2 Technical experts create detailed specifications for Patient Summaries to address these use cases, selecting and optimizing established standards.



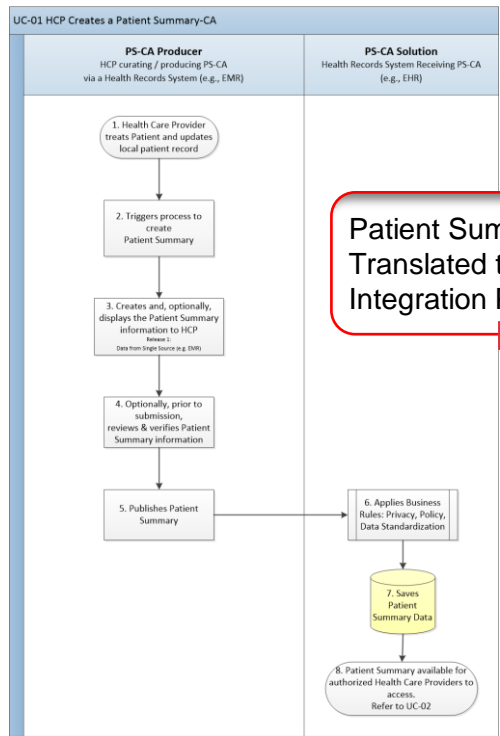
3 Industry implements these standard specifications called Integration Profiles in various HIT systems and solutions.




4 Allows vendors to demonstrate interoperability and conformance to the specification for the Patient Summary by testing their systems at carefully planned events called Connectathons and Projectathons.



# Use Cases & Requirements Translated to Solve a Problem





  
**Patient Summary Use Case Translated to Integration Profiles**



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
PS-CA Producer	Authenticate User	O	Client (e.g., EMR)	O	<a href="#">Internet User Authorization (IUA)</a>
	Identify Patient	O	Client (e.g., EMR)	O	Use Existing Standards Employed by the Clinical System
		O	Patient Demographic Consumer	O	<a href="#">PDQm</a>
	Retrieve clinical data from local data sources (Patient Identifier)	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
	Assemble and review Patient Summary	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
	Update Current Valuesets and ConceptMaps	O	Client (e.g., EMR)	O	<a href="#">SVCm</a>
	Omit or Mask Data based on Jurisdictional Policy	O	Client (e.g., EMR)	O	Jurisdictional Requirement
	Save PS-CA to Document Repository	R	Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
R		Data Source	R	<a href="#">CA:FeX</a>	
Document Repository (Central)*	Save PS-CA to Document Repository	R	Data Recipient	R	<a href="#">CA:FeX</a>
Central Infrastructure	Identify Patient	O	Patient Identity Registry	O	<a href="#">PMIR</a>



# Creating Specifications with Established Standards

MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS		
TECHNICAL ACTOR	OPT	PROFILE / STANDARD
Client (e.g., EMR)	O	<a href="#">Internet User Authorization (IUA)</a> 
Client (e.g., EMR)	O	Use Existing Standards Employed by the Clinical System
Patient Demographic Consumer	O	<a href="#">PDQm</a>
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Client (e.g., EMR)	O	<a href="#">SYCM</a>
Client (e.g., EMR)	O	Jurisdictional Requirement
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Data Source	R	<a href="#">CA:FeX</a>
Data Recipient	R	<a href="#">CA:FeX</a> 
Patient Identity Registry	O	<a href="#">PMIR</a>

Existing, internationally-developed solution for **User Authorization (IUA)**

Existing, international profile, developed to solve for **consistent patient demographics** query (PDQm)

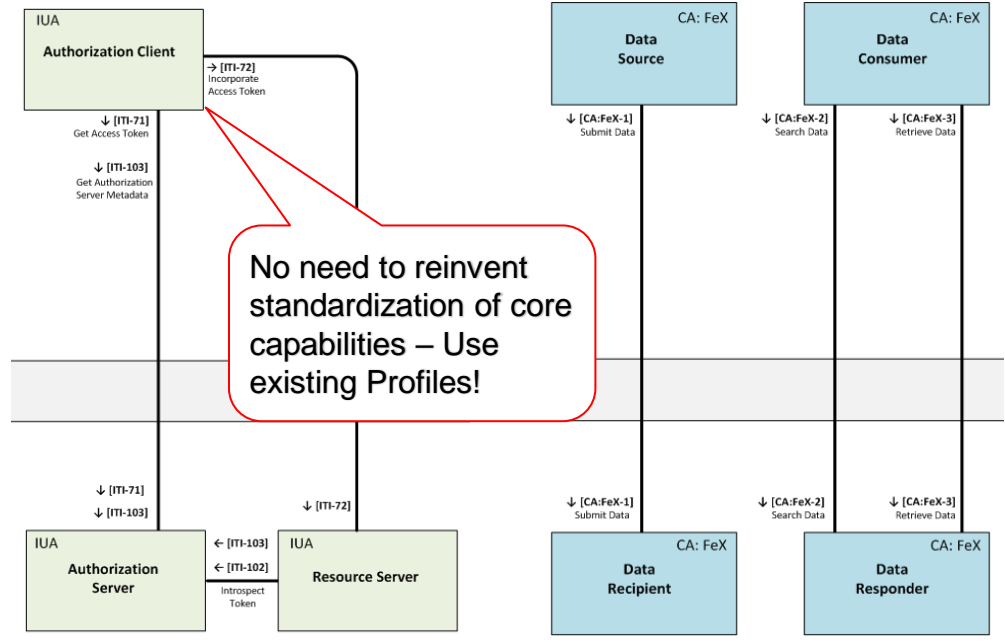
CA:FeX: Canadian developed integration profile to solve for a **standardized way to exchange FHIR documents** (e.g., Patient Summary)

Optimizing the development process with modular technology!  
These Profiles can implement very different protocols and technologies



# Integration Profiles – Modular Technology

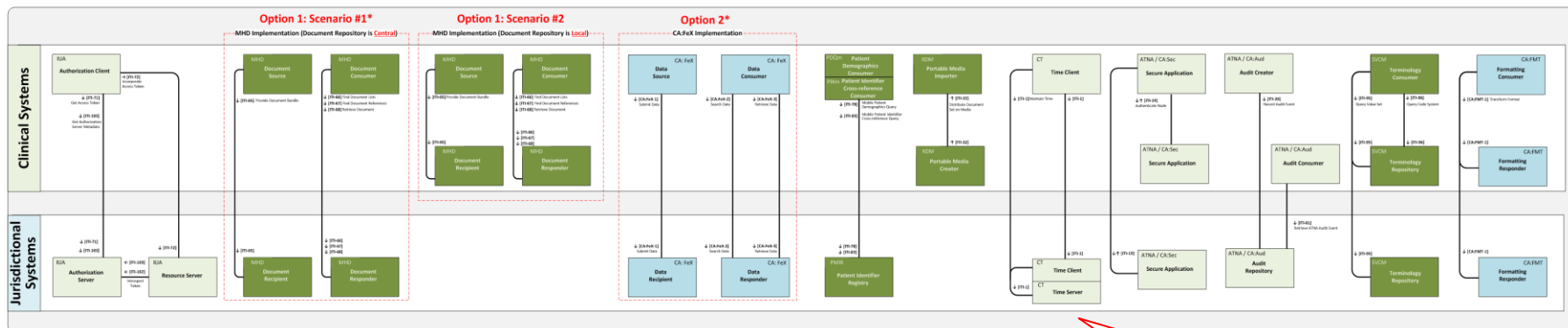
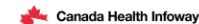
MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS		
TECHNICAL ACTOR	OPT	PROFILE / STANDARD
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Client (e.g., EMR)	O	Use Existing Standards Employed by the Clinical System
Patient Demographic Consumer	O	<a href="#">PDQm</a>
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Client (e.g., EMR)	O	<a href="#">SVCm</a>
Client (e.g., EMR)	O	Jurisdictional Requirement
Client (e.g., EMR)	R	Use Existing Standards Employed by the Clinical System
Data Source	R	<a href="#">CA:FeX</a>
Data Recipient	R	<a href="#">CA:FeX</a>
Patient Identity Registry	O	<a href="#">PMIR</a>





# Integration Profiles – Reference Architecture

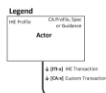
## Reference Architecture Overview



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

- Canadian Specifications and Guidance**
- CA-Fx Canadian PHIR Exchange
  - CA-FMT Canadian Formatting Service
  - CA-Sec Canadian Network Security (based on ATNA)
  - CA-Aud Canadian Audit Trail (based on ATNA)

\*Preferred Option



### Legend: actors



An approach allowing for a standardized set of eco-system capabilities, capable of supporting scalable growth without imposing deployment architectures



# Integration Profiles – Testable Capabilities

## IHE Profiles

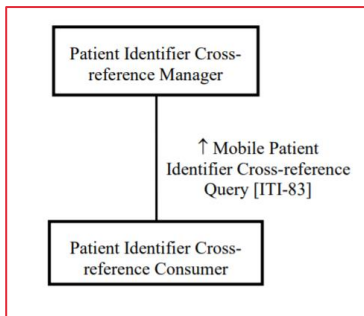
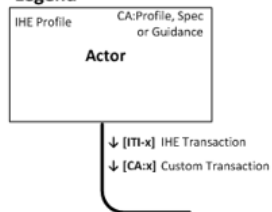
IUA	Internet User Authorization
ATNA	Audit Trail and Node Authentication
CT	Consistent Time
MHD	Mobile access to Health Documents
PMIR	Patient Master Identity Registry
PDQm	Patient Demographics Query for Mobile
PIXm	Patient Identifier Cross-Reference for Mobile
XDM	Cross-enterprise Document Media Interchange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

## Canadian Specifications and Guidance

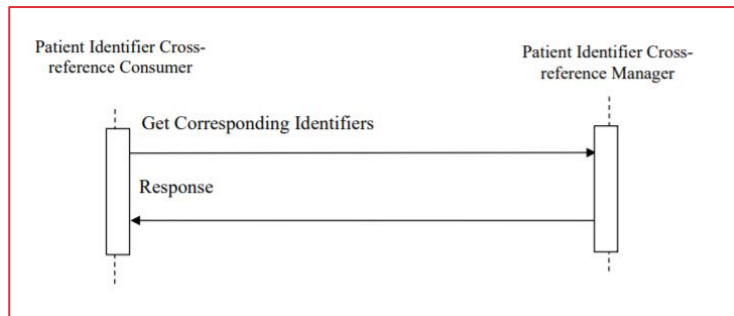
CA:FeX	Canadian FHIR Exchange
CA:FMT	Canadian Formatting Service
CA:Sec	Canadian Network Security (based on ATNA)
CA:Aud	Canadian Audit Trail (based on ATNA)

\*Preferred Option

## Legend



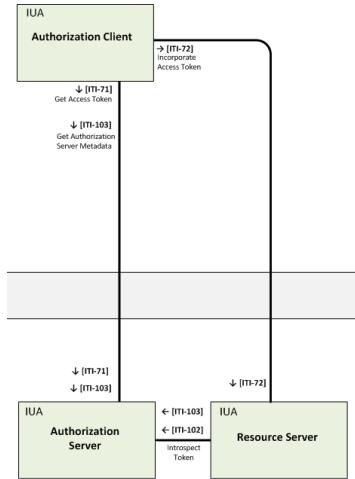
Profiles define the Actors and their supported Transactions





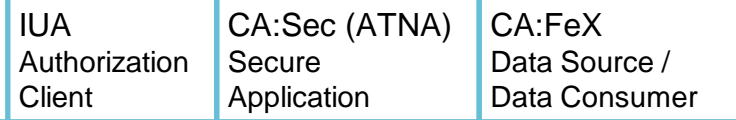


# Integration Profiles in Vendor Systems

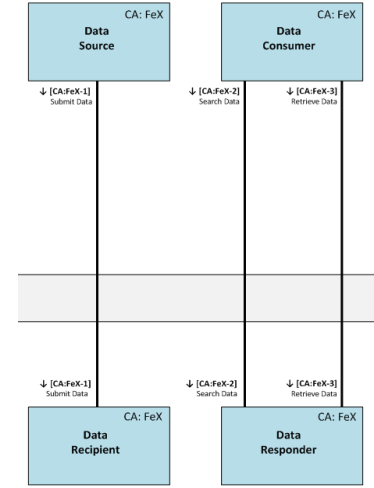


Clinical System (e.g., EMR, HIS, etc.)

Vendor systems can compete on everything they choose to, except for the interoperability profiles they claim to support

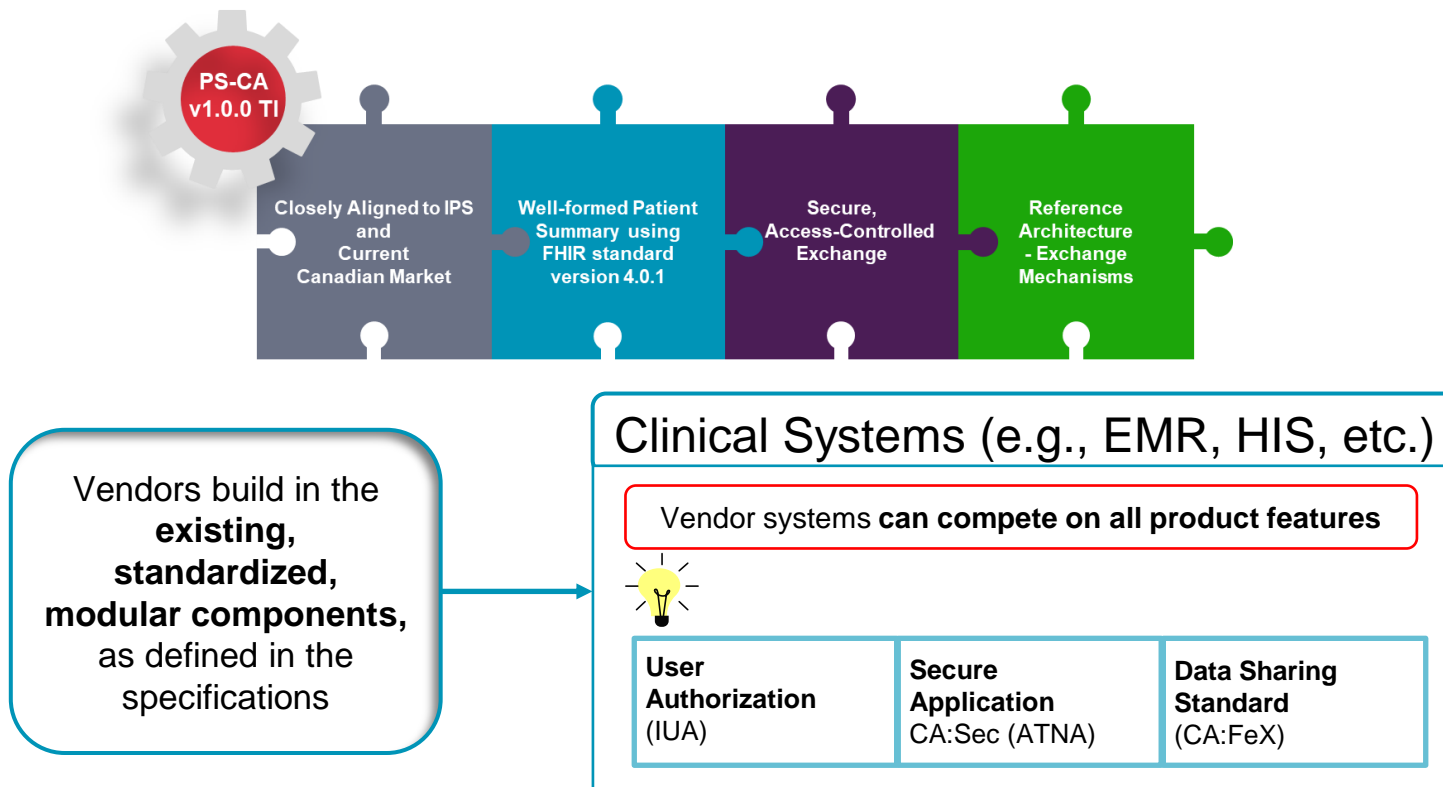


This vendor system claims they can operate as a secure node, authorize their users and submit and receive Patient Summaries (three Profiles, four Actors)





# Implementing the Standards into Clinical Systems





What is Gazelle Testing Framework and where does it fit in?





# Gazelle Testing Framework



A compendium of international and national profiles and transactions

Gazelle

TF Tests List Create an account Sign-in CAS Sign-in

### Tests List

Search Criteria

Domain: (1) ITI - IT-Infrastructure  
 Integration profile: (1) PPIXm - Patient Identifier Cross-reference for M...  
 Transaction: (1) ITI-43 - Mobile Patient Identity Cross-Identif...  
 Test Type: connection  
 Test Peer Type: Show all  
 Test Last modifier: Show all  
 Author: Show all  
 By keyword or name:

Actor: (1) PAT\_ID\_X\_REF\_MGR - Patient Identity Cross-...  
 Int Prof. option: Show all  
 Test Status: ready  
 Test Version: Show all  
 is Validated: Show all

Save search criteria

You can add up to 4 filters presets for this page.

Name of preset:

Save

Check the box if you want to make it your default page

None

Keyword	Version	Status	Type	Peer type	is Validated ?	Test author	Last modifier	Last changed	Action
CHPIXM_Mobile_Id_Feed&PPIXm_Query	EPR Bem 2021	ready	connection	Peer To Peer	false	vhofman	vhofman	9/17/21 8:02:55 AM	<a href="#">Q</a> <a href="#">i</a>

Results per page: 20

[Export as Excel file](#)

Gazelle is a suite of tools developed by IHE International and other collaborators to bring Integration Profiles to life.

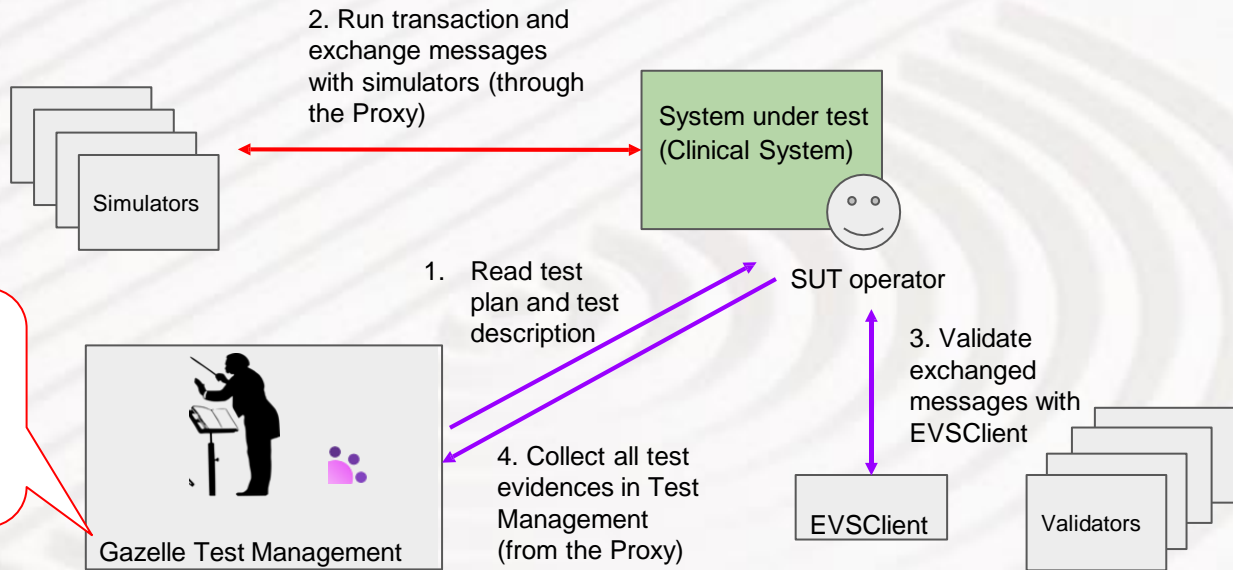
It provides users an opportunity to validate the role they will be playing in the ecosystem and ensure they are able to satisfy the interoperability requirements.

Gazelle offers several self-serve, self-test and conformance assessment opportunities for jurisdictions and vendors to test alignment to Integration Profiles



# Gazelle Components

Preloaded with international and national integration profiles vendors can claim adherence to



IHE Profiles		Canadian Specifications and Guidance		Legend
IUA	Internet User Authorization	CA-FeX	Canadian FHIR Exchange	IHE Profile
ATNA	Audit Trail and Node Authentication	CA-FMT	Canadian Formatting Service	CA Profile, Spec or Guidance
CT	Consistent Time	CA:Sec	Canadian Network Security (based on ATNA)	Actor
MHD	Mobile access to Health Documents	CA:Aud	Canadian Audit Trail (based on ATNA)	[IHE] IHE Transaction
PMIR	Patient Master Identity Registry			[ISA] Custom Transaction
PDQm	Patient Demographics Query for Mobile			
PIXm	Patient Identifier Cross-Reference for Mobile			
XDM	Cross-enterprise Document Media Interchange			
SVCM	Sharing Valuesets, Codes and Maps			

\*Preferred Option

# CA:FeX, MHD, IUA Simulators

## Patient Summary API (CA:FeX) 0.2 OAS3

RESTful APIs used to save and retrieve Patient Summary documents.

Based on [CA:FeX profile](#)

Note:



- Where applicable, FHIR search interactions are required to support both GET and POST methods. In the POST variant, parameters may appear in both the URL and the body. See [FHIR search](#) for more details.
- This page is intended to be used as dynamic documentation for the PS-CA CA:FeX APIs. Please do not include any PII/PHI in the documents exchanged via this page.
- The data served by this page is ephemeral and should not be considered as persistent in the long term.
- When executing transactions combined with authorization (utilizing [IUA profile](#)), a valid access token is required that is provided by the authorization server. The token must include the respective scopes for each CA:FeX transaction (CAFEX-1, CAFEX-2 and CAFEX-3). Use the Authorize button to provide the access token.

Servers



▾

Authorize 



### Capability Statement FHIR Capability Statement for this service



**GET** /`metadata` Retrieves the FHIR Capability Statement for this service  

### Data Recipient APIs for saving Patient Summary documents


**POST** /`Bundle` Saves a new Patient Summary to the document repository [CA:FeX-1]  

### Data Responder APIs for retrieving Patient Summary documents

**GET** /`Bundle` Retrieves a list of document Bundles matching the search criteria [CA:FeX-2A]  

**POST** /`Bundle/_search` Retrieves a list of document Bundles matching the search criteria [CA:FeX-2A]  

# Validators and Renderers



Canada Health Infoway  
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FHIR Validator

Or upload a resource in a file:

Advanced Options

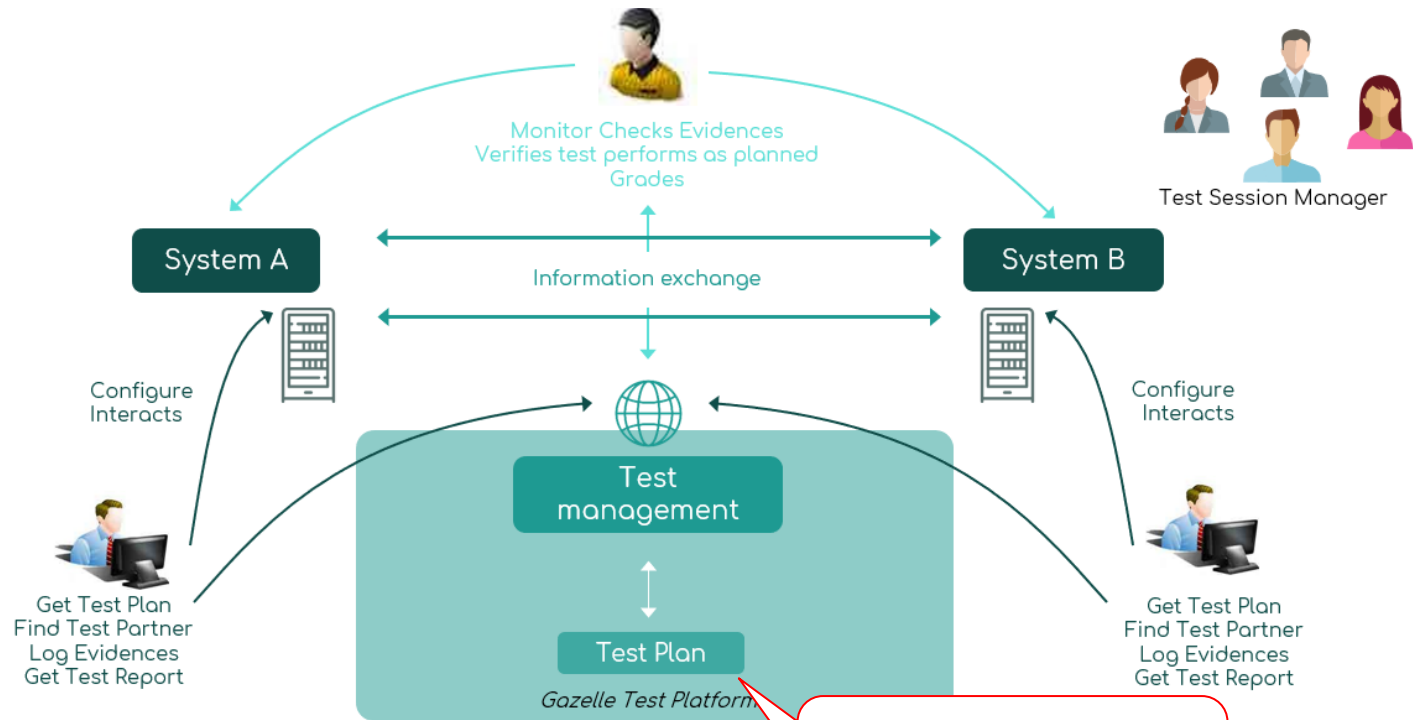
By default, the FHIR Validator validates your resources using the profile URLs found in the "meta.profile" field of your resource (or the Base FHIR profiles if no profile URLs are present). However, you may choose to use existing profiles from other Implementation Guides or use your own profile to validate your resources.

Pick an Implementation Guide to validate against:

- ca.infoway.io.pzca (version 1.0.0)
- ca.on.oh.patient-summary (version 0.10.0-alpha-11)



# Conceptual Model of a Testing Event



Test plan can be used for development support or certification purposes



# 9 Vendors Participating in the 2023 Projectathon!



# Gazelle Demo

- Core concepts:
  - Vendors (**Organization**)
  - Clinical Systems (**System**)
  - Integration Profiles (**Profile**)
  - Actors (**Actor**)
  - Transactions (**Transaction**)

# Test case execution

TI-53

Aborted

Test CA:FeX-2A: Search Data

- Test Instance Meta Data
- Description
- Test Participants
- Test Instance Steps
- Files
- Chat Room

Report an issue about this test

## Test Instance Meta Data TI-53

Test Name: Search Against FHIR Assembled Documents Repository

Test Keyword: CA:FeX-2A: Search Data

Test instance permanent link: 53

Test current status: Aborted

Started: 3/21/22 5:12:39 PM

Last changed: 3/21/22 9:12:03 PM

Testing Session : PAN-Canadian-Projectathon 2022

## Test Description

### Pre-requisites

Please make sure you execute the capability statement test case [https://pancanadianio.ca/gazelle/test\\_seam?id=149](https://pancanadianio.ca/gazelle/test_seam?id=149). The CapabilityStatement Resource helps others at the projectathon (test partners, monitors) understand the implementation of the FHIR-based actors. If your test system implements FHIR Server capabilities, it is expected to respond to a FHIR Capability Statement request and make your CapabilityStatement available to test partners and monitors.

### Special Instructions

#### Choosing test partners:

In this test, the CA:FeX Data Consumer and Data Responder support the transaction CA:FeX-2A.

#### When choosing partners for this test:

As a general rule, the CA:FeX Data Consumer and CA:FeX Data Responder must be from different companies. However, in special cases, it is OK for the CA:FeX Data Responder and the CA:FeX Data Consumer to be from the same company. Gazelle normally prohibits this, so you will need to seek help from a Connectathon Technical Manager if you want to use this setup for your testing.

### Description

Search Data [CA:FeX-2A]

This message involves a query request by a Data Consumer to find FHIR documents using parameterized queries.

## Test Participants

### Participating Systems

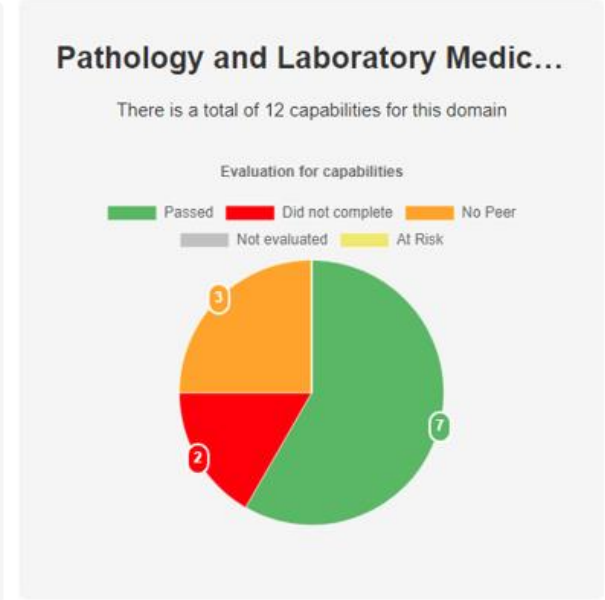
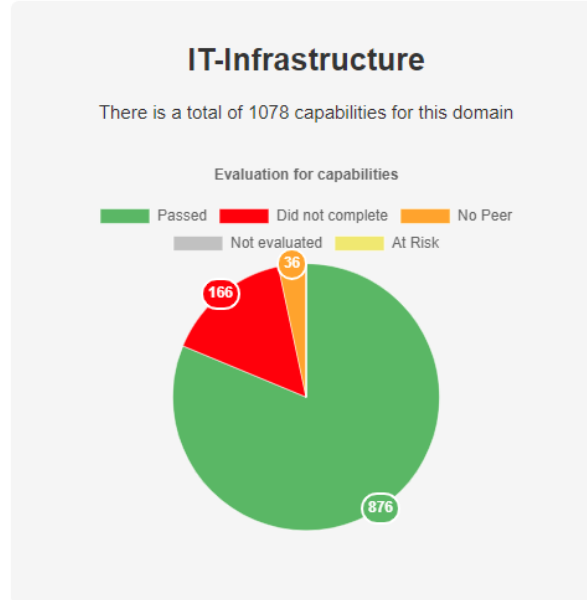
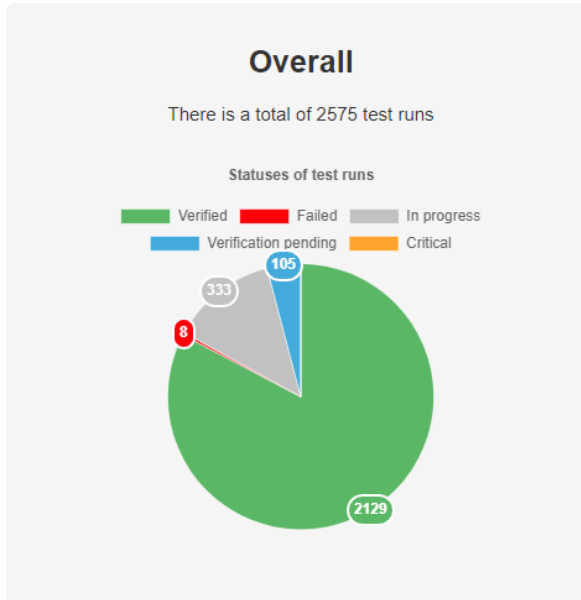
System keyword	Organization Name	System manager	Role in test	Integration profile	Actor	Table
GATEWAY_Cerner_2022	Oracle	jdiaz	CA:FeX - Data Consumer	CA:FeX	CA:FeX - Consumer	
OTHER_INFOWAY	INFOWAY	TOhu	CA:FeX - Data Responder	CA:FeX	CA:FeX - Responder	

## Test Instance Steps

Step	Trans.	Trans. - Message Type	Opt.	Sending Actor	Receiving Actor	Status	Validation Status
		- Instructions	R	GATEWAY_Cerner_2022 - CA:FeX - Consumer	GATEWAY_Cerner_2022 - CA:FeX - Consumer	✓	
		Desc: Please see notes in the Special Instructions above					
10		Logs: No comment, file or URL				✗	✓ ▶▶
		<a href="#">Upload a file (click or drop)</a>					
		<a href="#">Proxy messages</a>					
		- Instructions	R	GATEWAY_Cerner_2022 - CA:FeX - Consumer	GATEWAY_Cerner_2022 - CA:FeX - Consumer	✓	
		Desc: If the Gazelle Proxy is available, we encourage you to use it for this test. Capturing the queries and responses between the partners will make it easier for the partners to troubleshoot problems and for monitors to evaluate the results of the test steps.					
20		Logs: No comment, file or URL				✗	✓ ▶▶
		<a href="#">Upload a file (click or drop)</a>					
		<a href="#">Proxy messages</a>					
		CA:FeX-2A - HTTP GET or HTTP POST	R	GATEWAY_Cerner_2022 - CA:FeX - Consumer	OTHER_INFOWAY - CA:FeX - Responder	✓	
		Desc: Send a query request to search against FHIR assembled documents repository using parameterized queries. The request is received by a Data Recipient which returns a Bundle containing the matching search parameters.					
30		Logs: No comment, file or URL				✗	✓ ▶▶
		<a href="#">Upload a file (click or drop)</a>					
		<a href="#">Proxy messages</a>					
		- Instructions	O	GATEWAY_Cerner_2022 - CA:FeX - Consumer	GATEWAY_Cerner_2022 - CA:FeX - Consumer	✓	
		Desc: Please see notes in the Evaluation section above					
40		Logs: No comment, file or URL				✗	✓ ▶▶
		<a href="#">Upload a file (click or drop)</a>					
		<a href="#">Proxy messages</a>					
Step	Trans.		Opt.	Sending Actor	Receiving Actor	Status	Validation Status

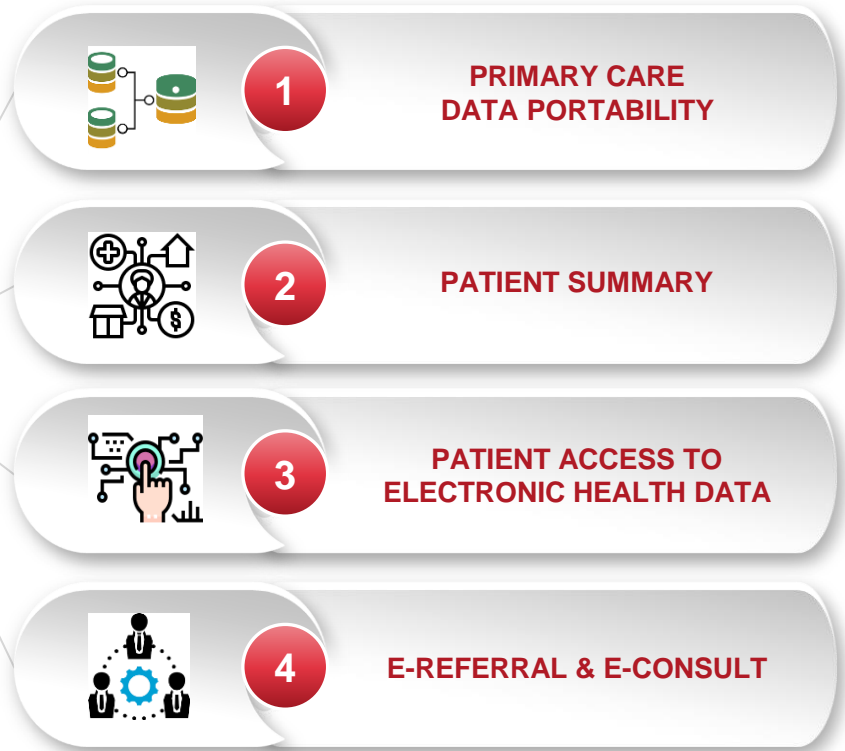
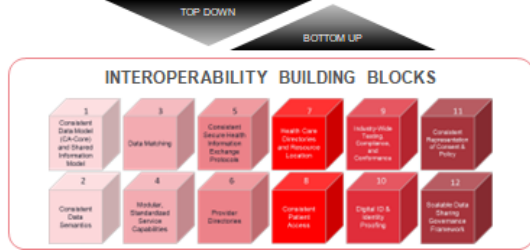
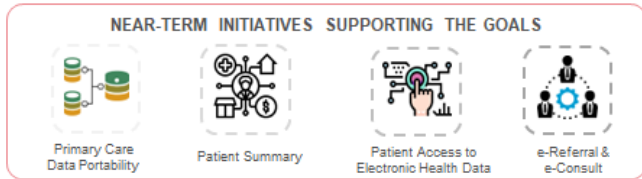
Test current status : Aborted

# Overview of the outcome of the session for managers



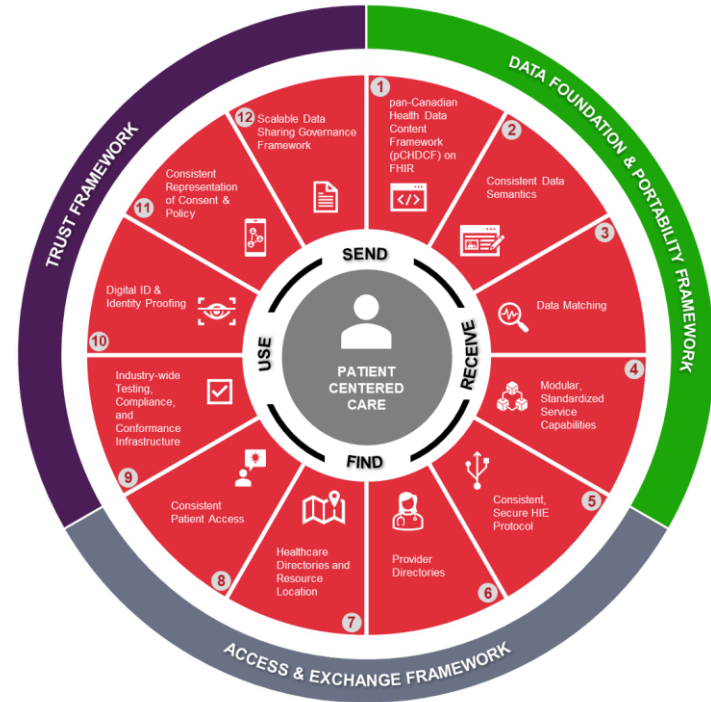
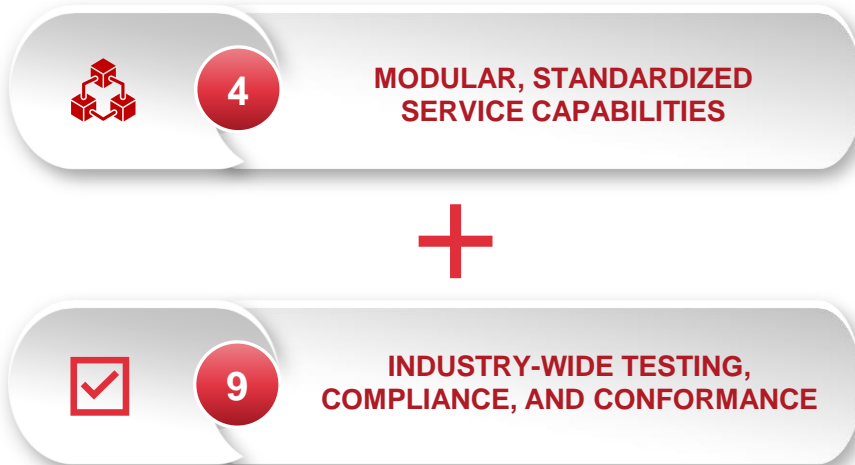
This information is fed into a report for each vendor to reflect their results.

# pan-Canadian Interoperability Strategy & Shared Roadmap



# Achieving a World-Class Interoperable System

## Interoperability Roadmap Building Blocks



# Call to Action



**Please Join Us!**

**Collaborate, Participate and Adopt  
Modular-Standardized Service Capabilities,**  
leading to readiness for certification programs  
conducted through  
**Industry-wide Testing, Compliance, and  
Conformance.**

# Questions & Answers



To learn more, join us on March 23 for  
the Projectathon Symposia Day!

Four sessions:

- 1) International Interoperability Experience:  
Switzerland
- 2) Primer to the pan-Canadian Interoperability  
Strategy & Shared Roadmap
- 3) Canadian FHIR Exchange (CA:FeX) 2.0
- 4) Clinician Session: Achieving pan-Canadian  
alignment on data elements

*For meeting invites, email:  
[interoperability@infoway-inforoute.ca](mailto:interoperability@infoway-inforoute.ca)*





**Canada Health Infoway**

# Thank you!

For questions please contact:

[Interoperability@infoway-inforoute.ca](mailto:Interoperability@infoway-inforoute.ca)

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linkedin.com/company/canada-health-infoway/

**LET'S CONNECT ON TWITTER**  
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