Pan-Canadian Patient Summary

Interoperability Specifications

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PS-CA Specifications

Introduction

The Pan-Canadian Patient Summary Interoperability Specification is an implementable, testable specification, based on the IHE International Patient Summary specification. It defines building blocks to create and share condition-independent and specialty-agnostic patient summaries, irrespective of the condition of the patient or the treatment sought or specialty of the provider delivery care. PS-CA building blocks are configurable to address necessary Canadian jurisdictional variances. A patient summary is a health record extract, at a point in time, comprised of a standardized collection of clinical and contextual information (retrospective, concurrent, prospective), including the minimum necessary and sufficient data to inform a patient's treatment at the point of care.

The PS-CA implementable specification contains the information necessary for an implementer to consume and develop the components necessary for creating, consuming and sharing a Patient Summary.

Intended Audience

The intended audience of the Pan Canadian Patient Summary Interoperability Specifications v1 Trial implementation including but not limited to:

- Those interested in integrating healthcare information systems and workflows
- IT departments of healthcare institutions
- Technical staff of vendors participating in the IHE initiative
- Experts involved in standards development
- Software developers

Purpose

This Pan Canadian Patient Summary Interoperability Specification is a technical document that describes the problem that the Patient Summary-CA specification is tailored to solve and provides more information on the detailed set of requirements (including Actors, Transactions and References to specific profiles and standards) and implementation patterns that enable the secure exchange of the Patient Summary-CA specification for Release 1.

The purpose of this document is to address the Pan Canadian Patient Summary Interoperability Specification for the three pan Canadian Use Cases in scope for Release 1 and describe the set of requirements that complements the set of IHE Profiles, HL7 FHIR® Profiles required by this specification with Canadian specific constraints. This interoperability specification is applicable to existing and new information systems and is written in line with international best practices

Preface

In support of the provinces and territories, Canada Health Infoway is facilitating a national collaborative effort to advance interoperability. While there are many interoperability-related challenges, this specification addresses secure sharing of Patient Summaries (e.g., Patient Summary-CA project)

Canada is not alone in trying to solve for this challenge. The International Patient Summary (IPS) project started in Europe several years ago and has been adopted by ISO, IHE and HL7 International. In addition, there is an active working group led by the Office of the National Coordinator (ONC) in the United States called the Global Digital Health Partnership (GDHP) that is actively working with member countries to find solutions for scaling Patient Summary exchanges at an international scale. Canada is an active participant in this partnership and has made a commitment at the G7 meeting in June 2021 to collaboratively work with jurisdictions, vendors, and participating organizations on a pan-Canadian effort to develop an implementable set of specifications aligned to the IPS that reflect Canada's jurisdictional realities. The overarching principle adopted for the Patient Summary-CA (PS-CA) project is to maintain as close of an alignment to the IPS profiles as possible while creating the instruments to allow jurisdictions to properly represent their desired clinical workflows and allow vendor systems to undergo necessary change management associated with adoption activities will make it a worthwhile investment.

The pan-Canadian Patient Summary-CA specification implementation approach for alignment with the IPS will span a number of releases on a roadmap. Release 1 will focus on three use cases, that have been identified as priority for Canadian jurisdictions (e.g., Alberta (AB), British Columbia (BC), Ontario (ON), Saskatchewan (SK) and Newfoundland & Labrador (NL)) and their supporting business requirements, actors and transactions, terminology and FHIR® profiles. This release will include supports for sharing Patient Summaries for scheduled or unscheduled local care with information from a single source.

Future releases will incorporate additional use cases and their supporting requirements, reference architecture, terminology and FHIR profiles. For example, the implementation roadmap will include a use case for creating the Patient Summary with information from more than one source and additional scenarios for supporting scheduled or unscheduled cross-border care.

The following table represents the alignment of the PS-CA to the IPS-UV, data domains of interest by Canadian jurisdiction and the PS-CA Release 1 and 2 plans. Release 1 will include all of the data domains highlighted in the Release 1 column and Release 2+ will continue to build on the Release 1 data domains as well as add the additional data domains.

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								+
	Author		Author								+
	Attester		Attester								+
	Custodian		Custodian								+
Required	Medication Summary	Recommended	Medication Summary								+
	Allergies and Intolerances		Allergies and Intolerances								+
	Problem List		Problem List								+
Recommended	Immunizations		Immunizations								+
	History of Procedures		History of Procedures								+
	Medical Devices		Medical Devices								
	Diagnostic Results		Diagnostic Results								
Optional	Vital Signs	Optional	Vital Signs								+
	Past history of Illness		Past History of Illness								+
	Social History		Social History								+
	Advance Directives		Advance Directives								
	Pregnancy		Pregnancy								
	Functional Status		Functional Status								
	Plan of Care		Plan of Care								
		EXT	Extension(s)								
			Family History								

Legend

- Header domains are listed as blue
- Required domains are listed as red
- Recommended domains are listed as orange
- Optional domains are listed as green

Context

The pan-Canadian Patient Summary Interoperability Specification v1 Trial Implementation document is published to a public space within Canada Health Infoway's InfoScribe and is also available as a downloadable document. InfoScribe is a web-based tool developed for jurisdictions and vendors to create, publish, and collaborate on clinical requirements and specifications for interoperability solutions. Teams can document, share, and discuss contents, files, ideas, specs, mock-ups, diagrams, and projects. A link to the online published content and the downloadable documentation will be published with each release of the Patient Summary-CA project.

Release information for each release is contained in the corresponding PS-CA Release page.

New content will be added throughout the life of the PS-CA Roadmap to accommodate the requirements of Canada's implementers.

Introduction to IHE

Integrating the Healthcare Enterprise (IHE) is an international initiative to promote the use of standards to achieve interoperability among health information technology (HIT) systems and effective use of electronic health records (EHRs). IHE provides a forum for care providers, HIT experts and other stakeholders in several clinical and operational domains to reach consensus on standards-based solutions to critical interoperability issues.

The primary output of IHE is system implementation guides, called IHE profiles. IHE publishes each profile through a well-defined process of public review and Trial Implementation and gathers profiles that have reached Final Text status into an IHE Technical Framework. These profiles are referenced in the Appendices of this document.

Preference for Modern HL7 FHIR interfaces

New implementation of IHE profiles based on the Patient Summary-CA standard should avoid legacy interfaces. IHE profiles that are HL7 FHIR based are preferred when available; however, the Reference Architecture will account for legacy systems that do not abide by FHIR. Canada Health Infoway will encourage the adoption of modern exchange protocols but will also provide the runway and opportunity for the jurisdictions to improve their interoperability capabilities.

How to Read This Document

This document contains the following content, as well as informative appendices for your convenience.

- **Preface:** Contains an introduction to the Pan Canadian Patient Summary Interoperability Specification v1 Trial implementation. This section contains a summary of the context, document purpose and scope, as well as other content to help orient the first-time reader to the topic of the Interoperability Specification and how it relates to other specifications in the digital health ecosystem in Canada
- **PS-CA Use Case Overview:** Describes the Use Case, including design constraints and assumptions and the flows of information that will be specified in this Interoperability Specification. Section 2 also introduces scenarios that describe how the specified flows may be used in the Canadian context.
- **Core Interoperability Specification:** Establishes the Core Interoperability Requirements for the Pan Canadian Patient Summary Interoperability Specification v1 Trial Implementation
- **PS-CA Actor Conformance:** Establishes the Conformance Requirements for the Interoperability Specification.
- **Data Protection, Privacy & Security:** Provides key considerations around Data Protection, Privacy and Security for the Patient Summary-CA specification.
- **Information Models, Applications and Infrastructure:** Provides key implementation guidance around Information Models, Applications and Infrastructure for the Patient Summary-CA specification.
- **PS-CA Content Data Model & FHIR® Profiles:** Describes the PS-CA Content Data Model & FHIR® Profiles required for the Pan Canadian Patient Summary Interoperability Specification v1 Trial Implementation
- **Appendices:** Contains supplementary information related to the IHE profiles and other related information for the Pan Canadian Patient Summary Interoperability Specification v1 Trial implementation

Related Documents & References

The Pan Canadian Patient Summary Interoperability Specification v1 Trial Implementation is the sole entry point for the technology developers, the compliance assessment testing and certification, and the purchaser of IT systems in terms of technical requirements

From this Interoperability Specification, several supporting documents are referenced:

- **pan-Canadian Patient Summary – FHIR Implementation Guide**

  The pan-Canadian Patient Summary - FHIR Implementation Guide is an implementable, testable specification for the HL7 FHIR composition that defines the data payload of the PS-CA specification, based on the HL7 FHIR IPS implementation guide. It contains information for solution developers to implement the PS-CA content data model using the HL7® Fast Healthcare Interoperability Resources (FHIR®) standard. It describes the data elements & types, cardinality, constraints, and code system references - all of the details needed for two systems to be semantically interoperable with each other when a PS-CA compliant patient summary is exchanged.

  Target Audience: Solution Developers

- **pan-Canadian Patient Summary - Companion Guide to Use Cases & Definitions**

  The pan-Canadian Patient Summary - Companion Guide to Use Cases & Definitions, is a companion document to the pan-Canadian Patient Summary Interoperability Specification that presents the broader context for clinical, business, interoperability and solution development considerations that were discovered during the development of the PS-CA. It defines the healthcare problem that the PS-CA addresses and includes healthcare use cases and interoperability requirements in terms that will be traceable to the content in the pan-Canadian Patient Summary - Companion Guide to Reference Architecture, which defines the actors and their interactions with other actors and the pan-Canadian Patient Summary – FHIR Implementation Guide, which defines the contents and semantic interoperability of the PS-CA.

  This document will also support upcoming releases and roadmap elements of the PS-CA specification.

  Target Audience: CTOs, CMIOs, CIOs, PTs and vendors

- **pan-Canadian Patient Summary - Companion Guide to Reference Architecture**

  The pan-Canadian Patient Summary - Companion Guide to Reference Architecture contains background information on the abstracted PS-CA actors and transactions for the Pan-Canadian Patient Summary Interoperable Specifications for stakeholders who are not familiar with the IHE Methodology. It describes baseline information on the recommended IHE profiles and includes links to the IHE source documentation where stakeholders can get additional details on each PS-CA actor and transaction. This document also includes descriptions of alternatives and choices for implementation patterns and ecosystem architectures to support the Patient Summary-CA in current state, including sequence diagrams that demonstrate the relationship and dependencies between the PS-CA actors and transactions.

  Target Audience: CTOs, CMIOs, CIOs, PTs and vendor

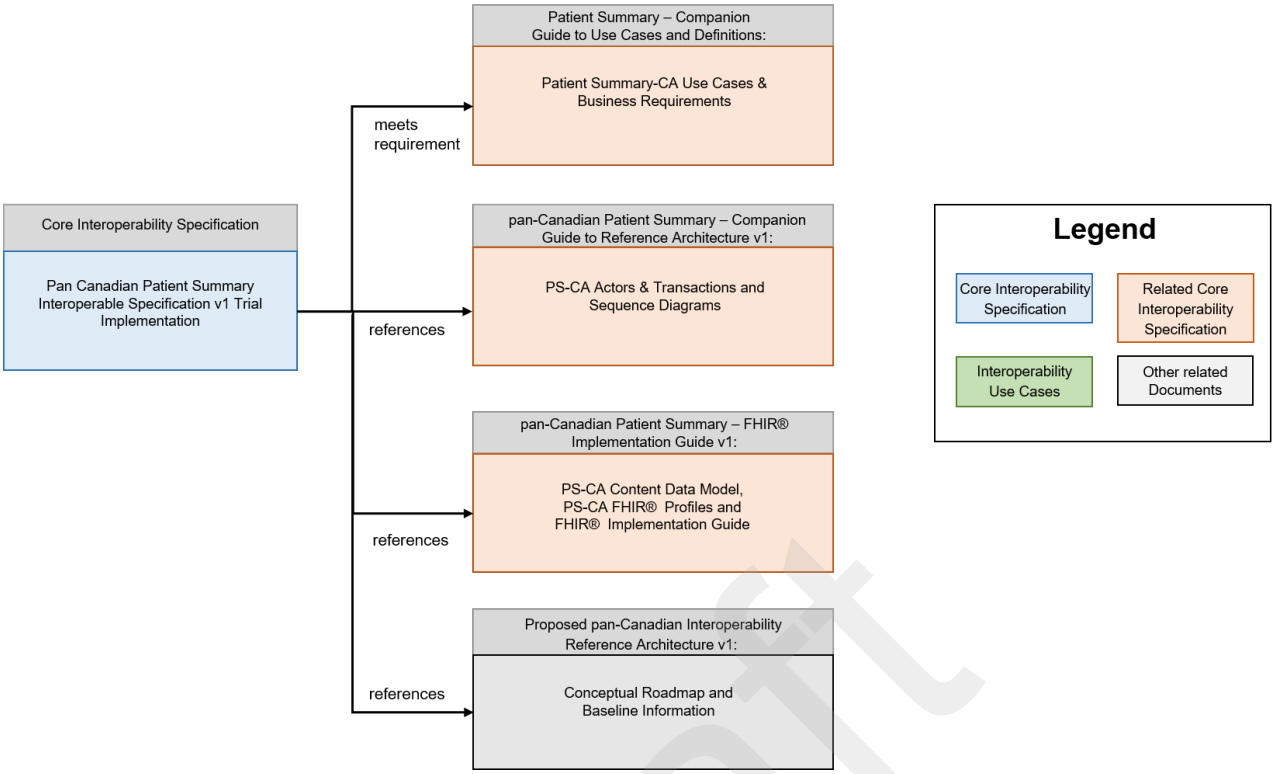
Additionally, the following document also contains relevant background information for the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation

- **Proposed pan-Canadian Interoperability Reference Architecture v1**:

The Proposed pan-Canadian Interoperable Reference Architecture is intended as a conversation starter on the broader interoperability landscape, not limited to patient summaries. Its purpose is to facilitate multi-stakeholder dialogue, collaboration and convergence towards common standards. It is a conceptual roadmap that provides a common vocabulary and a set of abstracted actors and transactions representing typical components in a digital health ecosystem (public and private sector solutions). It is composed of building blocks based on international standards.

Target Audience: CTOs, CMIOs, CIOs, Technical Leads, Decision makers, PTs, vendors

This document fits into an overall specification framework described below



Description

This Interoperability Specification describes the technical interface requirements for sharing Patient Summaries in the scheduled and unscheduled local context in Canada.

Documents Convention

The Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation will be numbered according to this format:

- **Name + Version + Stage**, where name refers to the name of the document, version refers to the versioning history of the document and stage refers to its stage in implementation such as “Trial Implementation” or “TI”.
- **Key documents will evolve during review cycles from version 0.x to v1.0**

In order to implement a system that fully supports the three Patient Summary-CA Use Cases and the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation, the system shall be able to demonstrate that it conforms to every mandatory actors and transactions for which it is claiming conformance in order to secure share Patient Summaries during scheduled and unscheduled local care for Release 1.

Requirements Language

The following conventions are used to specify requirement levels for the business requirements of the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation:

- **SHALL:** Requirement is Mandatory for Interoperability
- **MAY:** Requirement is Optional for Interoperability or Solution Functionality.
- **SHOULD:** Requirement is Recommended for Solution Functionality

Additional information on the PS-CA business requirements can be found in the Patient Summary – Companion Guide to Use Cases and Definitions.

Methodology

The Pan Canadian Patient Summary Interoperability Specification v1 Trial Implementation document has been co-developed with feedback and input from various jurisdictions and vendors collected during several months through Coordinating Table Meetings, Executive Table Meetings, stakeholder workshops and 1-on-1 meetings.

Stakeholders included clinicians, technical SMEs, standards SMEs from participating jurisdictions (e.g., AB, ON, BC, SK, and NL) and vendors, software developers and more from participating jurisdictions (e.g., AB, ON, BC, SK, and NL). The development the Patient Summary-CA specification relies on the business requirements set by the in-scope Use Cases of the PS-CA project. These high-level requirements are not restated in this specification. Stakeholders should review the Companion Guide for this information.

Introduction to a Use-Case Driven Approach

The following use-case driven approach was utilized in the development of the Pan Canadian Patient Summary interoperability Specifications v1 Trial Implementation:

- **Baseline:** Develop foundational Use Cases, Use Case Scenarios and Business Requirements for pan-Canadian Patient Summaries based on information provided by jurisdictions
- **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

Release Cycle

The pan-Canadian Patient Summary Specifications release cycle will include a multi-stage review and feedback process. For more information, please visit the pan-Canadian Interoperability PS-CA Release Information page.

PS-CA Use Case Overview

Design PS-CA Use Case Overview

This section describes the three pan Canadian Use Cases, including all design constraints and assumptions as well as the flows of information that will be specified in this pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation Document. This section also introduces the scenarios that describe how the specified workflows may be used in the Canadian eHealth context

In-Scope

Stakeholder engagement has identified 3 prioritized common use cases for the pan-Canadian Patient Summary Release 1. These use cases are aligned by the participating jurisdictions and are in scope of the Patient Summary-CA project:

PS-CA Use Cases In-Scope for Release 1	AB	BC	NL	ON	SK
1) Health Care Provider (HCP) Creates a Patient Summary-CA	x	x	x	x	x
2) Health Care Provider (HCP) 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	

Additionally, all the business requirements of the pan-Canadian Patient Summary Interoperability Specifications v1 Trial Implementation that are testable in Release 1 are in scope. More information on this can be found in the Patient Summary – Companion Guide to Use Cases and Definitions.

Out-of-Scope

The following Use Cases are not in scope for Release 1 of the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation and will be addressed in future releases.

PS-CA Use Cases Out-of-Scope for Release 1:

- Healthcare Provider (HCP) Sends a Patient Summary-CA to another Healthcare Provider (HCP) as part of a Clinical Workflow (e.g., eReferral)
- Patient Presents Patient Summary-CA to Healthcare Provider (HCP) in Another Jurisdiction
- Healthcare Provider (HCP) requests Patient Summary-CA on Demand

In addition, all the business requirements of the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation that are not testable in Release 1 are out-of-scope. More information on this can be found in the Patient Summary – Companion Guide to Use Cases and Definitions.

Use Case Actors and Services

The Use Case Actors and the Services that are used by this Core Interoperability Specification for Sharing Patient Summaries are described at a functional level in in the Patient Summary – Companion Guide to Use Cases and Definitions. Stakeholders who wish to understand the mapping of Use Case Actors to business requirements and recommended IHE Profiles are recommended to read in the Patient Summary – Companion Guide to Use Cases and Definitions and the pan-Canadian Patient Summary – Companion Guide to Reference Architecture v1. A summary is provided in the following tables:

Use Case Actors and Descriptions

Actor Name	Description / Definition
PS-CA Producer	A health records system (e.g., EMR, HIS, CIS, PHR, or EHR) that creates/ produces a Patient Summary-CA in response to a request from an authorized health care provider, the subject of care or another authorized health records system.
PS-CA Consumer	A health records system (e.g., EMR, HIS, CIS, PHR, or EHR) that enables access to or receipt of a Patient Summary-CA by an authorized health care provider or the subject of care/patient.
Document Repository (Local or Central)	A document repository is a shared storage space for clinical documents (Patient Summaries) that can be hosted locally (e.g., at the document producer) or at the IHE Central Infrastructure and can be accessed by authorized users
HIE Central Infrastructure	A Health Information Exchange (HIE) Central Infrastructure collects information from participating organizations and stores the information in a centralized place to provide access.
Patient Portal	A patient portal is a web-based access point that enables secure patient access to personal health information and other self-serve health IT services ***Note:** Patient Portal is also comparable to the PS-CA Consumer role; however, for Use Case 3, the patient summary is viewed by the subject of care itself.

Use Case Actor Mapping

Actor Name	UC-01	UC-02	UC-03
PS-CA Producer	x		x

Actor Name	UC-01	UC-02	UC-03
PS-CA Consumer		x	
Document Repository (Local or Central)	x	x	x
HIE Central Infrastructure	x	x	x
Patient Portal			x

Design Constraints & Assumptions

The following design constraints and assumptions for the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation

- All Use Case Actors/Users are logged into the system. The Use Case Actors/Users are authenticated and appropriately authorized for all data exchange transactions.
    - Our recommendation is that the Use Case Actors/Users obtain a valid access token from the Authorization Server that is used within each transaction and is based on the IUA IHE Profile.
- Patient Summary-CA is created from local data sources for Release 1
    - There may be exceptions to the source data of some of the data domains of the Patient Summary-CA across jurisdictions in Canada. For example, for some jurisdictions, the immunization data will be pulled from the provincial immunization repository.
- The implementation pattern in-scope for Release 1 will be based on the MHD IHE Profile. Additional details about this profile can be found in pan-Canadian Patient Summary – Companion Guide to Reference Architecture v1.

Additional information on design constraints and assumptions can be found in the Patient Summary – Companion Guide to Use Cases and Definitions.

Core Interoperability Specification Requirements

Actor Mapping to Interoperability Specification

The Use Case Actors and the Services they support are described at a functional level in the Patient Summary – Companion Guide to Use Cases and Definitions. Services may be Mandatory, Recommended or Optional. The Use Case Actor, Service(s) and optionality are conveyed in the first three columns of Tables 1 to 3 in the section below.

The second part of the table (columns 4-7) 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 in the context of these Use Cases.

For a selected Use Case Actor (a single row in the table), the system shall implement all the requirements (some optionality when allowed) listed in the second part of the table (columns 4-7). This includes the referenced healthcare profiles, the standards specified and terminology standards. For each Profile Actor (whether mandatory, recommended, or optional), the last column references the detailed specification the IHE profile for PS-CA requirements. These specifications may be found in Appendices to this specification document or in other referenced companion guides.

Legend

OPT = Optionality for the service supported by the use case actor and technical actors

M = Mandatory

R = Recommended

O = Optional

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

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
PS-CA Producer .	Authenticate User	R	Client (EMR)	R	Internet User Assertion (IUA)	Refer to Appendix A – IUA Profile Overview

PS-CA USE CASE 1: HCP Creates PS-CA			MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS			
	Identify Patient	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
		O	Patient Demographic Consumer	R	PDQm	Refer to Appendix A – PDQm Profile Overview
	Retrieve clinical data from local data sources	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Assemble and review Patient Summary	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Update Current Valuesets and ConceptMaps	O	Client (EMR)	R	SVCM	Refer to Appendix A – SVCM Profile Overview
	Omit or Mask Data based on Jurisdictional Policy	O	Client (EMR)	O	Jurisdictional Requirement	N/A
	Save PS-CA to Document Repository	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A

PS-CA USE CASE 1: HCP Creates PS-CA			MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS			
		M	**Document Source**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**
HIE Central Infrastructure	Identify Patient	O	Patient Identity Registry	R	PMIR	Refer to Appendix A – PMIR Profile Overview
Document Repository (Local to PS-CA Producer or Central)	Save PS-CA to Document Repository	**M**	**Document Recipient**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**

Table 2. **Interoperability Conformance Requirements for Use Case 2: HCP Views/ Consumes PS-CA**

PS-CA USE CASE 2: HCP Views/Consumes 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
PS-CA Consumer .	Authenticate User	R	Client (EMR)	R	Internet User Assertion (IUA)	Refer to Appendix A – IUA Profile Overview
	Identify Patient	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A

PS-CA USE CASE 2: HCP Views/Consumes PS-CA			MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS			
		O	Patient Demographic Consumer	R	PDQm	Refer to Appendix A – PDQm Profile Overview
	Retrieve PS-CA from Document Repository	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
		M	**Document Consumer**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**
	Download/Print PS-CA	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Update Current ValueSets and ConceptMaps	O	Client (EMR)	R	SVCM	Refer to Appendix A – SVCM Profile Overview
HIE Central Infrastructure	Identify Patient	O	Patient Identity Registry	R	PMIR	Refer to Appendix A – PMIR Profile Overview
Document Repository (Local to PS-CA Producer or Central)	Retrieve PS-CA from Document Repository	**M**	**Document Responder**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**

Table 3. Interoperability Conformance Requirements for Use Case 3: Patient Views/Consumes PS-CA

PS-CA USE CASE 3: Patient Views/ Consumes 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
Patient Portal .	Authenticate User	R	Client (EMR)	R	Internet User Assertion (IUA)	Refer to Appendix A – IUA Profile Overview
	Identify Patient	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
		O	Patient Demographic Consumer	R	PDQm	Refer to Appendix A – PDQm Profile Overview
	Retrieve PS-CA from Document Repository	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
		R	Document Consumer	R	MHD	Refer to Appendix A – MHD Profile Overview

PS-CA USE CASE 3: Patient Views/ Consumes PS-CA			MAPPING TO SECTIONS FROM THIS AND REFERENCED INTEROPERABILITY SPECIFICATIONS			
	Render to Specific Format (PDF)	R	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	Refer to pan-Canadian Patient Summary - Companion Guide to Reference Architecture
	Download/Print PS-CA	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	N/A
	Save to Portable Media	O	Client (EMR)	R	Use Existing Standards Employed by the Clinical System	Refer to Appendix A
		O	Portable Media Creator	R	XDM	Refer to Appendix A – XDM Profile Overview
HIE Central Infrastructure	Identify Patient	O	Patient Identity Registry	R	PMIR	Refer to Appendix A – 6.5. PMIR Profile Overview
PS-CA Producer	Retrieve PS-CA from Document Repository	**M**	**Document Responder**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**
Document Repository (Local or Central)	Retrieve PS-CA from Document Repository	**M**	**Document Responder**	**M**	**MHD**	**Refer to Appendix A – MHD Profile Overview**

PS-CA Actor Conformance

A system conforming to this Core Interoperability Specification shall claim conformance at the level of a Use Case Actor (first columns of Table 1, Table 2 and Table 3). A system may claim conformance to one or more Use Case Actors among:

- PS-CA Producer
- PS-CA Consumer
- Document Repository (Local or Central)
- HIE Central Infrastructure
- Patient Portal

PS-CA Producer and PS-CA Consumer use case actor will primarily be taken up by EMR clinical solution vendors. Document Repository and HIE Central Infrastructure use case actor roles can be taken up by either by EMR clinical solution vendors or jurisdiction depending on the implementation approach that the jurisdiction decides to adopt. Similarly, Patient Portal use case actor can be taken up either by a vendor or jurisdiction depending on the approach and policies defined that allows for patient / subject of care access to their patient summary.

OpenAPI Specification

It is recommended to use the OpenAPI UI to access the interactive API documentation that lets developers try out the API calls directly in the browser. The following content is being developed and a link will be added once it is available.

Constraints on PS-CA Use Case Actors

There are some design constraints on use case actors when developing functionality to support the services mapped to those Use Case Actors.

Note: The scope of this section is limited to the constraints that are applicable to IHE MHD profile actors and transactions. The two key services supported by IHE MHD Profile are:

- Save PS-CA to Document Repository
- Retrieve PS-CA from Document Repository

This section provides key design constraints for implementation of these two required services using IHE methodology and FHIR standards.

Save PS-CA to Document Repository

The PS-CA Producer and Document Repository Use Case Actors are required to implement the *Save PS-CA to Document Repository* service.

These actors will use the IHE Transaction **Provide Document Bundle [ITI-65]** of MHD profile that passes a *Provide Document Bundle Request* from a Document Source to a Document Recipient.

Provide Document Bundle Request Message

This message uses the HTTP POST method on the target Provide Document Bundle endpoint to convey the metadata and the document(s) as a FHIR transaction.

Trigger Events

This method is invoked when the Document Source needs to submit one or more documents to a Document Recipient.

Message Semantics

The Document Source shall initiate a FHIR "transaction" using a "create" action by sending an HTTP POST request method composed of a FHIR Bundle Resource. The media type of the HTTP body shall be either application/fhir+json or application/fhir+xml.

Expected Actions

The Document Recipient shall accept both media types application/fhir+json and application/fhir+xml. On receipt of the submission, the Document Recipient shall validate the resources and respond with one of the HTTP codes defined in the response Message Semantics.

Refer to Provide Document Bundle [ITI-65] transaction details page for additional information

Retrieve PS-CA from Document Repository

The PS-CA Consumer and Document Repository Use Case Actors are required to implement the *Retrieve PS-CA from Document Repository* service.

These actors will use the following IHE Transactions of MHD profile to find document references, document list and retrieval of identified Patient Summary document:

- **Find Document Lists [ITI-66]**
- **Find Document References [ITI-67]**
- **Retrieve Document [ITI-68]**

Find Document List Request Message [ITI-66]

This message uses the search method parameterized query to obtain List Resources from the Document Responder.

Trigger Events

When the Document Consumer needs to discover List Resources matching various metadata parameters it issues a Find Document Lists message..

Message Semantics

The Document Consumer executes an HTTP search against the Document Responder List endpoint. The search target follows the FHIR HTTP specification, addressing the List Resource http://hl7.org/fhir/R4/http.html:

[base]/List?<query>

This URL is configurable by the Document Responder and is subject to the following constraints:

- The <query> represents a series of encoded name-value pairs representing the filter for the query as well as control parameters to modify the behavior of the Document Responder such as response format, or pagination.
- The Document Consumer may use GET or POST based searches. The Document Responder shall support both GET and POST based searches http://hl7.org/fhir/R4/http.html#search .

Query Search Parameters

The Document Consumer may supply, and the Document Responder shall be capable of processing all query parameters listed below. All query parameter values shall be appropriately encoded per RFC3986 “percent” encoding rules. Note that percent encoding does restrict the character set to a subset of ASCII characters which is used for encoding all other characters used in the URL.

- The Document Consumer SHALL include search parameter patient or patient.identifier, code, and status. The other parameters described below are optional.
- The Document Responder shall implement the parameters described below. The Document Responder may choose to support additional query parameters beyond the subset listed below. Any additional query parameters supported shall be supported according to the core FHIR specification. Such additional parameters are considered out of scope for this transaction. Any additional parameters not supported should be ignored.

Query Search Parameters	Description
code	This parameter, of type token, specifies the code.coding value supplied in the List Resource. The value of the code element indicates the List of type SubmissionSet or Folder as indicated
date	This parameter, of type date, specifies the time when the List was created. See FHIR http://hl7.org/fhir/R4/search.html#date for use of the date search type.
designationType	This IHE extension on parameters defined as List-DesignationType, of type token, specifies the designation type of the List. The value of the designation type element expresses contentType of submissionSet or the codeList of a Folder. Usually expressed in LOINC or SNOMED. Note that servers that do not support this extended search parameter will ignore it, and thus return more results than expected.
identifier	This parameter, of type token, specifies an identifier for this List. The search results represent the results of a search on List.masterIdentifier and List.identifier. See ITI TF-2x: Appendix Z.2 for additional constraints on the use of the token search parameter type.
patient	This parameter is of type Reference(Patient). The Document Consumer may get this reference through the use of the PDQm or PIXm Profiles, or by some other method. When the patient parameter is used, the Patient reference would need to be accessible to both the Document Consumer and the Document Responder.
patient.identifier	This parameter, of type token, specifies an identifier associated with the patient to which the List Resource is assigned. This use of patient.identifier follows the FHIR Chaining Parameters search methodology.
source.given and source.family	These parameters, of type string, specify the name parts of the author person which is associated with the List. This use of source.given and source.family follows the FHIR Chaining Parameters search methodology.

<table>
<tr><th>Query Search Parameters</th><th>Description</th></tr>
<tr><td>sourceId</td><td>This IHE extension on parameters defined as List-SourceId, of type reference, specifies the source (author) value supplied in the List Resource.</td></tr>
<tr><td>status</td><td>This parameter, of type token, specifies the status of the List. If included in the query, the Document Consumer shall populate the code portion of the token with one of the codes in the below table for status of List. The system portion of the token shall not be populated.
<table>
<tr><th>Code</th><th>ebRIM Code</th></tr>
<tr><td>Current</td><td>urn:oasis:names:tc:ebxml-regrep:StatusType:Approved</td></tr>
<tr><td>Superseded</td><td>urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated</td></tr>
</table>
</td></tr>
</table>

Expected Actions

The Document Responder shall process the query to discover the List entries that match the search parameters given.

Refer to Find Document Lists [ITI-66] transaction details page for additional information.

Find Document References Request message [ITI-67]

This message uses the search method parameterized query to obtain DocumentReference Resources from the Document Responder.

Trigger Events

When the Document Consumer needs to discover DocumentReference Resources matching various metadata parameters, it issues a Find Document References message.

Message Semantics

The Document Consumer executes an HTTP search against the Document Responders DocumentReference URL. The search target follows the FHIR HTTP specification, addressing the DocumentReference Resource http://hl7.org/fhir/R4/http.html:

[base]/DocumentReference?<query>

This URL is configurable by the Document Responder and is subject to the following constraints:

- The <query> represents a series of encoded name-value pairs representing the filter for the query, as specified in Section Query Search Parameters, as well as control parameters to modify the behavior of the Document Responder such as response format, or pagination.
- The Document Consumer may use GET or POST based searches. The Document Responder shall support both GET and POST based searches http://hl7.org/fhir/R4/http.html#search.

Query Search Parameters

The Document Consumer may supply, and the Document Responder shall be capable of processing, all query parameters listed below. All query parameter values shall be appropriately encoded per RFC3986 “percent” encoding rules. Note that percent encoding does restrict the character set to a subset of ASCII characters which is used for encoding all other characters used in the URL.

- The Document Consumer SHALL include search parameter patient or patient.identifier, and status. The other parameters described below are optional.
- The Document Responder must implement the parameters described below. The Document Responder may choose to support additional query parameters beyond the subset listed below. Any additional query parameters supported shall be supported according to the core FHIR specification. Such additional parameters are considered out of scope for this transaction. Any additional parameters not supported should be ignored.

Query Search Parameters	Description
author.given and author.family	These parameters, of type string, specify the name parts of the author person, which is associated with the DocumentReference Resource, or in Document Sharing nomenclature, the author of the Document Entry. This use of author.given and author.family follows the FHIR Chaining Parameters search methodology.
category	This parameter, of type token, specifies the general classification of the DocumentReference Resource, or in Document Sharing nomenclature, the classCode of the Document Entry.
creation	This IHE defined parameter defined as DocumentReference-Creation, of type dateTime, specifies a search against the DocumentReference.content.attachment.creation. See FHIR http://hl7.org/fhir/R4/search.html#date for use of the date search type.
date	This parameter, of type date, specifies the time when the DocumentReference was created. See FHIR http://hl7.org/fhir/R4/search.html#date for use of the date search type.
event	This parameter, of type token, specifies the main clinical acts documented by the DocumentReference Resource, or in Document Sharing nomenclature, the eventCodeList of the Document Entry.
facility	This parameter, of type token, specifies the kind of facility found in DocumentReference.context.facilityType, or in Document Sharing nomenclature, the healthcareFacilityTypeCode of the Document Entry.
format	This parameter, of type token, specifies the format of the DocumentReference Resource, or in Document Sharing nomenclature, the formatCode of the Document Entry.

Query Search Parameters	Description
identifier	This parameter, of type token, specifies an identifier for this DocumentReference and/or the contained document. The search results represent the results of a search on DocumentReference.masterIdentifier and DocumentReference.identifier.
patient	This parameter is of type Reference(Patient). The Document Consumer may get this reference using the PDQm or PIXm Profile. When the patient parameter is used, the Patient reference would need to be accessible to both the Document Consumer and the Document Responder.
patient.identifier	This parameter, of type token, specifies an identifier associated with the patient to which the DocumentReference Resource is assigned. This use of patient.identifier follows the FHIR Chaining Parameters search methodology.
period	This parameter, of type date, represents the time of service that is being documented by the DocumentReference. The period search parameter specifies an interval which the time of service overlaps. In Document Sharing nomenclature, this query parameter represents from/to parameters for the serviceStartTime and serviceStopTime of the Document Entry. See FHIR http://hl7.org/fhir/R4/search.html#date for use of the date search type.
related	This parameter, of type reference, represents other identifiers associated with the DocumentReference Resource, or in Document Sharing nomenclature, the referenceIdList of the Document Entry.
security-label	This parameter, of type token, specifies the security labels of the document referenced by DocumentReference Resource, or in Document Sharing nomenclature, the confidentialityCode of the Document Entry.
setting	This parameter, of type token, specifies the specific practice setting of the DocumentReference Resource, or in Document Sharing nomenclature, the practiceSettingCode of the Document Entry.

<table>
<tr><th>Query Search Parameters</th><th>Description</th></tr>
<tr><td>status</td><td>This parameter, of type token, specifies the status of the DocumentReference Resource, or in Document Sharing nomenclature, the availabilityStatus of the Document Entry. The Document Consumer shall populate the identifier portion of the token using one of the short codes in below table. The system portion of the token shall not be populated.
<table>
<tr><th>FHIR Code</th><th>ebRIM Code</th></tr>
<tr><td>Current</td><td>urn:oasis:names:tc:ebxml-regrep:StatusType:Approved</td></tr>
<tr><td>Superseded</td><td>urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated</td></tr>
</table>
</td></tr>
<tr><td>type</td><td>This parameter, of type token, specifies the specific type of the DocumentReference resource or in Document Sharing nomenclature, the typeCode of the Document Entry. See ITI TF-2x: Appendix Z.2 for additional constraints on the use of the token search parameter type.</td></tr>
</table>

Expected Actions

The Document Responder shall process the query to discover the DocumentReference entries that match the search parameters given.

Refer to Find Document References [ITI-67] transaction details page for additional information including ***Find Document References Response message***

Retrieve Document Request Message [ITI-68]

This transaction is used by the Document Consumer to retrieve a document from the Document Responder.

Trigger Events

The Document Consumer wants to obtain a document.

Message Semantics

The Document Consumer sends a HTTP GET request to the server. The Document Consumer request may be to retrieve the document content referenced by a DocumentReference.content.attachment.url.

The Document Consumer may provide HTTP Accept header, according to the semantics of the HTTP protocols. This enables the Document Consumer to indicate preferred mime-types such that the Document Responder could provide the document requested in an encoding other than the encoding indicated in the DocumentReference. For example, indicating application/fhir+json could result in the response from the Document Responder being a json FHIR Bundle of type document with all the content encoded as FHIR resources.

The only MIME type assured to be returned is the MIME type indicated in the DocumentReference.content.attachment.contentType.

The HTTP If-Unmodified-Since header shall not be included in the GET request.

Expected Actions

The Document Responder shall provide the document in the requested MIME type or reply with an HTTP status code indicating the error condition. The Document Responder is not required to transform the document.

Refer to Retrieve Document [ITI-68] transaction details page for additional information including ***Retrieve Document Response message***.

Data Protection, Privacy & Security

This table provides key considerations for various concepts for Data Protection, Privacy and Security for the Patient Summary-CA specifications. Additional details can be found in the Patient Summary – Companion Guide to Use Cases and Definitions.

*Note: The list presented is not exhaustive. These are important considerations for vendors and jurisdictions.

Key Considerations

Privacy	Security
• Compliance to Canadian Data Privacy Laws & Regulations (e.g. PIPEDA, PHIPA, Provincial Privacy Laws) • Patient Identity • Provider Identity • Patient Consent • Data Confidentiality • Accountability • Portability • Attestation • Limiting Sharing • Limiting Access • Accurate Information • Data Retention	• Data Authorization & Authentication • Data Encryption • Segregate Duties • Role-Based Access Control • Secure Audit Logs • Anonymization

Information Models, Application, and Infrastructure

This table provides key implementation guidance around Information Models, Applications and Infrastructure for the Patient Summary-CA specification.

Information Models: Information models are widely used to express structure and process resulting in data interchange formats and behaviours.

Application: Functional specifications are laid down at the Information level. These form the basis for the technical specifications, which are described at the Application level. At this level, agreements have to be made within both the PS-CA Producer and PS-CA Consumer regarding the
integration of various applications between which information is exchanged

Infrastructure: Infrastructure refers to the communication between systems in the different healthcare organizations. Agreements are defined between Patient Summary-CA Solutions and jurisdictions on the design of the infrastructures, databases, networks, exchange protocols, tokens and other technologies.

Categories	Concept	Implementation Guidance Description
Information Models	**Common Minimum Dataset**	A Patient Summary-CA minimum dataset will be created by Infoway and aligned by jurisdictional priorities for the Patient Summary-CA specification in Release 1. This minimum dataset was validated through stakeholder consultation with clinicians across Canadian jurisdictions. More information about this can be found in the Preface section.

Categories	Concept	Implementation Guidance Description
Information Models	**Valuesets**	Data residing in clinical system will need to be mapped to appropriate FHIR profiles and Valuesets from the Content Data Model of the Patient Summary-CA specification in Release 1. More information on the Valuesets implementation patterns please refer to the IHE Profile SVCM in the Appendices. Valuesets define the possible choices of coded concepts for a data element within a Patient Summary-CA. The concept domains often serve the function of a predicate to be tested. In any clinical setting, implemented systems usually host many Valuesets. A Valueset 'just' specifies, a (value set definition) or enumerates a (value set expansion), a list of coded concepts. Possible associated terms, relationships and any other attribute or property associated to that concept belong to the code system. Because Valuesets are often localized, making semantic interoperability between systems very difficult without extensive cross-mappings, Infoway will create pan-Canadian value sets that are applicable for the Patient Summary-CA. Furthermore, these mappings are difficult to maintain in practice. The number of concepts chosen for value sets in the Patient Summary-CA have been minimized, to give examples that might be expressed in any terminology resource so as to avoid implementation dependence. Infoway does not restrict the values that can actually be used in practice and is not intended to be an exhaustive set.
Application	**Patient Summary References (e.g. Patient Identity)**	The Patient Summary-CA Solution (e.g EMR, EHR) will leverage their existing product standards and policies for identifying the patient/subject of care. However, if there is a central service available for patient identity, then the Patient Summary-CA Solution can leverage those services for uniquely identifying the patient/subject of care. More information on the patient identity implementation patterns, please refer to the IHE Profile PDQm and PMIR in the Appendices.
Application	**Render to Specific Format (e.g., PDF, CDA)**	It is recommended that the Patient Summary-CA Solution leverages the CA:FMT profile to perform transformation between different formats. More information on the patient identity implementation patterns, please refer to the IHE Profile CA:FMT in the Appendices.

Categories	Concept	Implementation Guidance Description
Application	**Data Interchange Format**	Implementation of the Patient Summary-CA interoperability use cases will prefer JSON over XML as a data interchange format. However, the Patient Summary-CA standard will still support XML as an alternative option.
Application	**Data Conversion / Structured Data**	The Patient Summary-CA document should be generated in a structured format. For scenarios where the format is unstructured (e.g., PDFs), jurisdictions should use conversion and translation services that can standardize and transform the way unstructured data is converted to structured data to favour FHIR-based documents. For Release 1, the Patient Summary-CA Standard will assume FHIR V4 JSON representation.
Application	**On-Demand**	The long-term vision for the Patient Summary-CA standard is to include an on-demand option where a PS-CA consumer submits a request and based on that request, a Patient Summary-CA is assembled on-demand and returned to the consumer.
Infrastructure	**Jurisdictional Infrastructures**	Integration of the recommended actors and transactions of the Patient Summary-CA standard into existing jurisdictional healthcare infrastructures may differ; therefore, it is highly recommended that local implementation guidance is reviewed prior to the implementation of the Patient Summary-CA standard. Example: For user authentication, Alberta uses certificate-based security footprint while Ontario uses token-based security.
Infrastructure	**Document Management**	Implementation of the Patient Summary-CA standard must refer to jurisdictional specific requirements and policies for document management, including archiving, replacement, etc.

PS-CA Content Data Model & FHIR® Profiles

The Release 1 FHIR® Artefacts (Profiles, ValueSets, Extensions, etc.) of the Pan Canadian Patient Summary Interoperability Specifications v1 Trial Implementation are presented in the PS-CA Simplifier FHIR Implementation Guide.

As this PS-CA specification is currently a working specification that is being updated as feedback is acquired from various engagement activities, the profiles use a versioning system to help implementers understand their development status prior to the formal release of v1.0.0 PS-CA specification for trial use.

Version 1.0 will be published as Simplifier package that acts as a snapshot in time of the profiling & conformance expectations of V1.0.0 of the PS-CA Specification. This will allow for evolution of profiles to prepare for Version 2.0, without undermining the stability of Version 1.0 profiles. Instructions on how to access and use the V1.0.0 package will be provided.

Implementers are encouraged to begin by reviewing the PS-CA Library of Profiles page which describes the Patient Summary Composition Structure & Profiles (e.g., sections that make up the data model content for the PS-CA).

The list of summary sections within the Patient Summary-CA Composition & their respective profiles can be found below.

Note: Some elements in the Header section reference profiles that do not have appropriate equivalents in the current IPS specification, implementers are encouraged to utilize the minimal profiling expectations outlined National Canadian Baseline profiles in these cases.

PS-CA Section	**FHIR® Profiles**
Subject	Patient (PS-CA)
Author	Practitioner (CA Baseline), PractitionerRole (CA Baseline), Organization (CA Baseline), Patient (PS-CA)
Attester	Practitioner (CA Baseline), PractitionerRole (CA Baseline), Organization (CA Baseline), Patient (PS-CA)
Custodian	Organization (CA Baseline)
Allergies and Intolerance	AllergyIntolerance (PS-CA)

PS-CA Section	FHIR® Profiles
Problem List	Condition (PS-CA)
Immunizations	Immunization (PS-CA)
History of Procedures	Procedure (PS-CA)
Medication Summary	Medication (PS-CA), MedicationRequest (PS-CA), MedicationStatement (PS-CA)
Vital Signs	Vital Sign (Global)
Past History of Illness	Condition (PS-CA)
Social History	SHx Observation: Alcohol Use (PS-CA), SHx Observation: Tobacco Use (PS-CA)

Additional information on the PS-CA FHIR® Profiles can be found in the pan-Canadian Patient Summary – FHIR Implementation Guide v1.0

Appendix A: IHE Profile Baseline Information

Appendix A describes baseline information on the recommended IHE profiles and includes links to the IHE source documentation where stakeholders can get additional details on each PS-CA actor and transaction.

MHD Profile Overview

Introduction

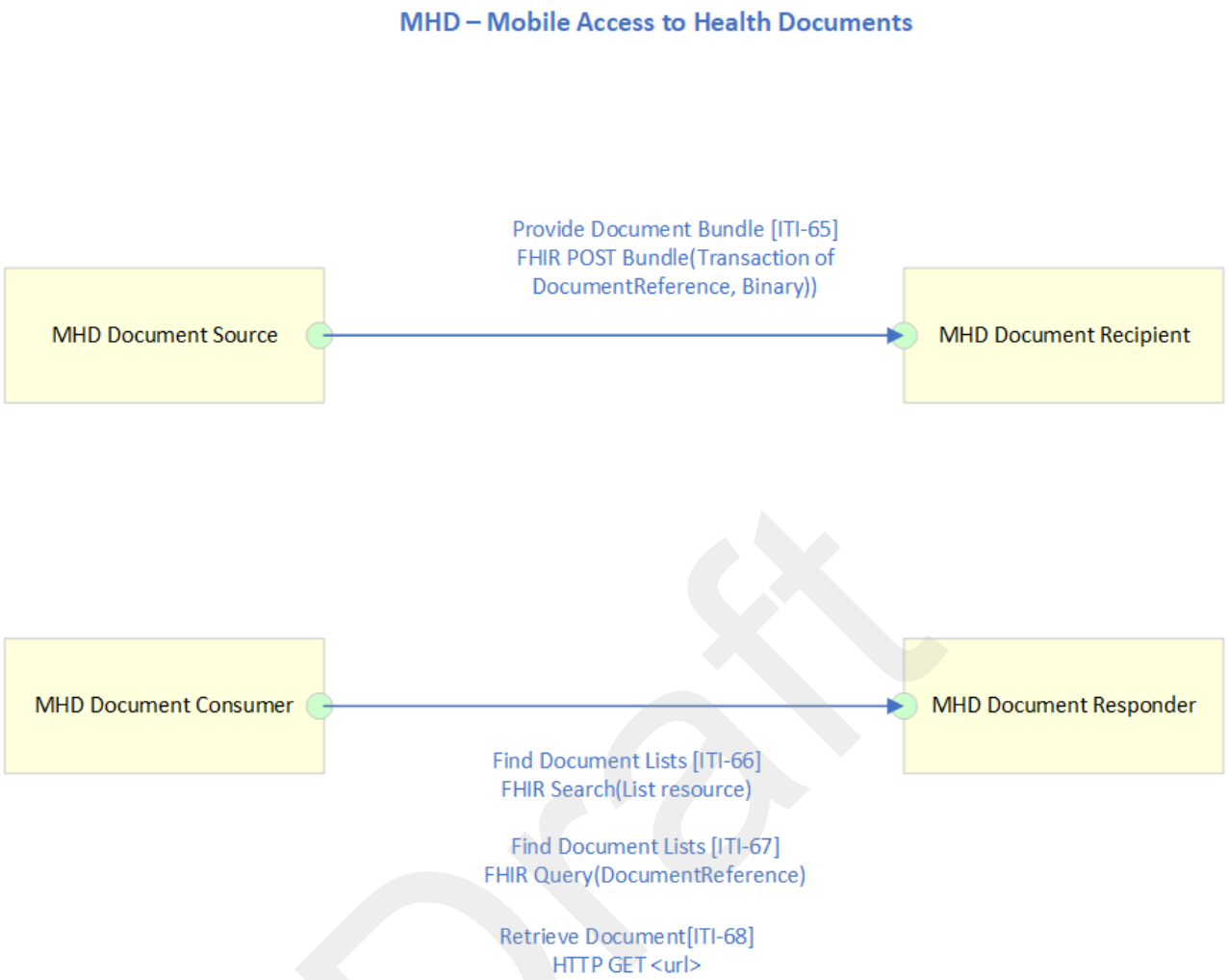
The Mobile Access to Health Documents (MHD) Profile defines one standardized interface to health document sharing. This profile is applicable to systems where needs are simple, such as pulling the latest summary for display.

Benefits of MHD

The following are examples of environments which may choose the MHD Profile:

- Medical devices such as those targeted by the Patient Care Devices (PCD) domain or Continua organization, submitting data in the form of documents.
- Kiosks used by patients in hospital registration departments, where it is anticipated that a hospital staff member will review, edit, and approve the document before it is allowed into the hospital system.
- PHR publishing into a staging area for subsequent import into an EHR or HIE.
- Patient or provider application that is configured to securely connect to a PHR in order to submit a medical history document. (For example BlueButton+)
- Electronic measurement device participating in an XDW workflow and pulling medical history documents from an HIE.
- A General Practitioner physician's office with minimal IT capabilities using a mobile application to connect to an HIE or EHR.

Actor & Transaction Diagram of MHD



IUA Profile Overview

Introduction

The Internet User Authorization (IUA) is an interoperability profile that provides an authorization profile for the HTTP RESTful transactions. Being authorized means that the user, patient, or provider has legitimate access to this HTTP RESTful service. The authorization includes identifying the user and the application that is making the request to the HTTP RESTful server, so that server can make further access control decisions.

Benefits of IUA

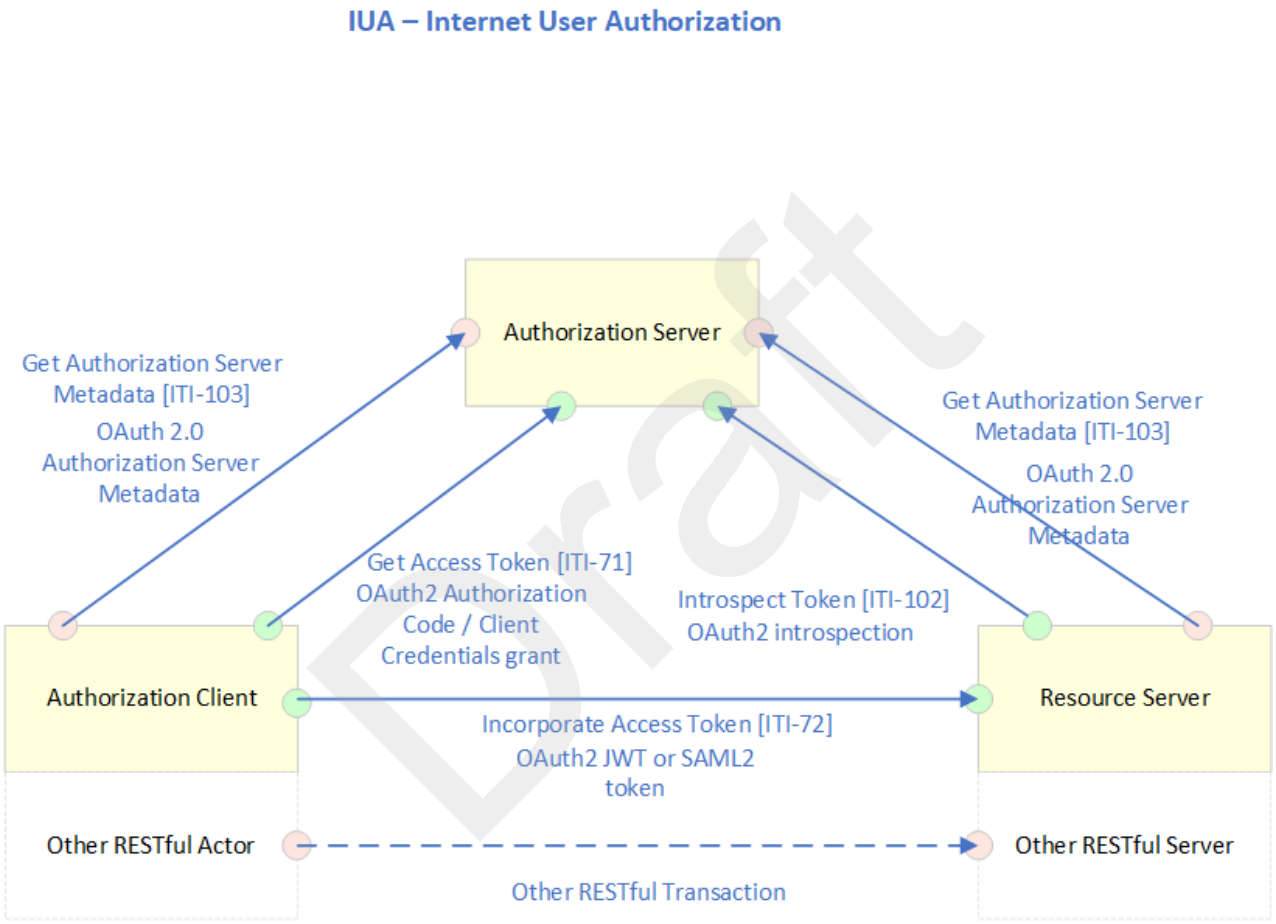
IUA conveys User Identity, Attributes, and Authorizations to a RESTful service to enable security and confidentiality policy enforcement. The primary use cases are for obtaining authorization for access to a resource using HTTP RESTful HTTP transactions. There are other use cases for delegation, provisioning, etc. which are out of scope for this profile.

The authorization service is separated from the HTTP RESTful access so that it can be provided by a different organization or part of the organization than the resource service. This is driven by the requirements of patients, providers, and other users to simplify and maintain autonomy and control over authorization services. A user may

interact with dozens of providers. It is difficult for the user to coordinate different authorization mechanisms with each of these dozens of providers.

This pattern is a common Internet usage and there are already vendors of authorization services that are being used to solve this problem. These include Facebook, Google, and a variety of other service providers in different commercial and governmental sectors. Some countries may use their citizen identity card to access their governmental services. These overlap with providers of authentication services. These services allow a patient to establish an authentication and authorization relationship with minimal provisioning by the healthcare provider. The user can specify “use vendor X” to their healthcare provider.

Actor & Transaction Diagram of IUA



PDQm Profile Overview

Introduction

The Patient Demographics Query for Mobile (PDQm) Profile provides a transaction for mobile and lightweight browser-based applications to query a patient demographics supplier for a list of patients based on user-defined search criteria and retrieve a patient’s demographic information.

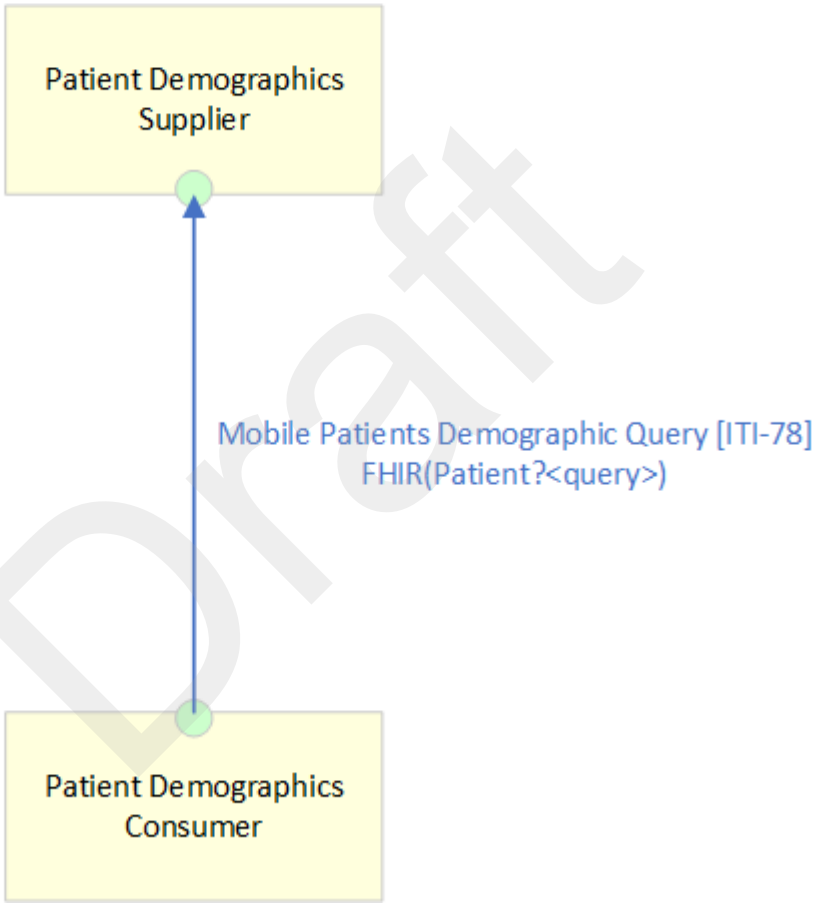
Benefits of PDQm

Using these patterns, the PDQm Profile exposes the functionality of a patient demographics supplier to mobile applications and lightweight browser applications. The following list provides a few examples of how PDQm might be leveraged by implementers:

- A health portal securely exposing demographics data to browser-based plugins
- Medical devices which need to access patient demographic information
- Mobile devices used by physicians (example bedside eCharts) which need to establish patient context by scanning a bracelet
- Web based EHR/EMR applications which wish to provide dynamic updates of patient demographic information such as a non-postback search, additional demographic detail, etc.
- Any low resource application which exposes patient demographic search functionality
- Any application using the MHD Profile to access documents may use PDQm to find an appropriate patient identifier

Actor & Transaction Diagram of PDQm

PDQm – Patient Demographics Query for Mobile



PMIR Profile Overview

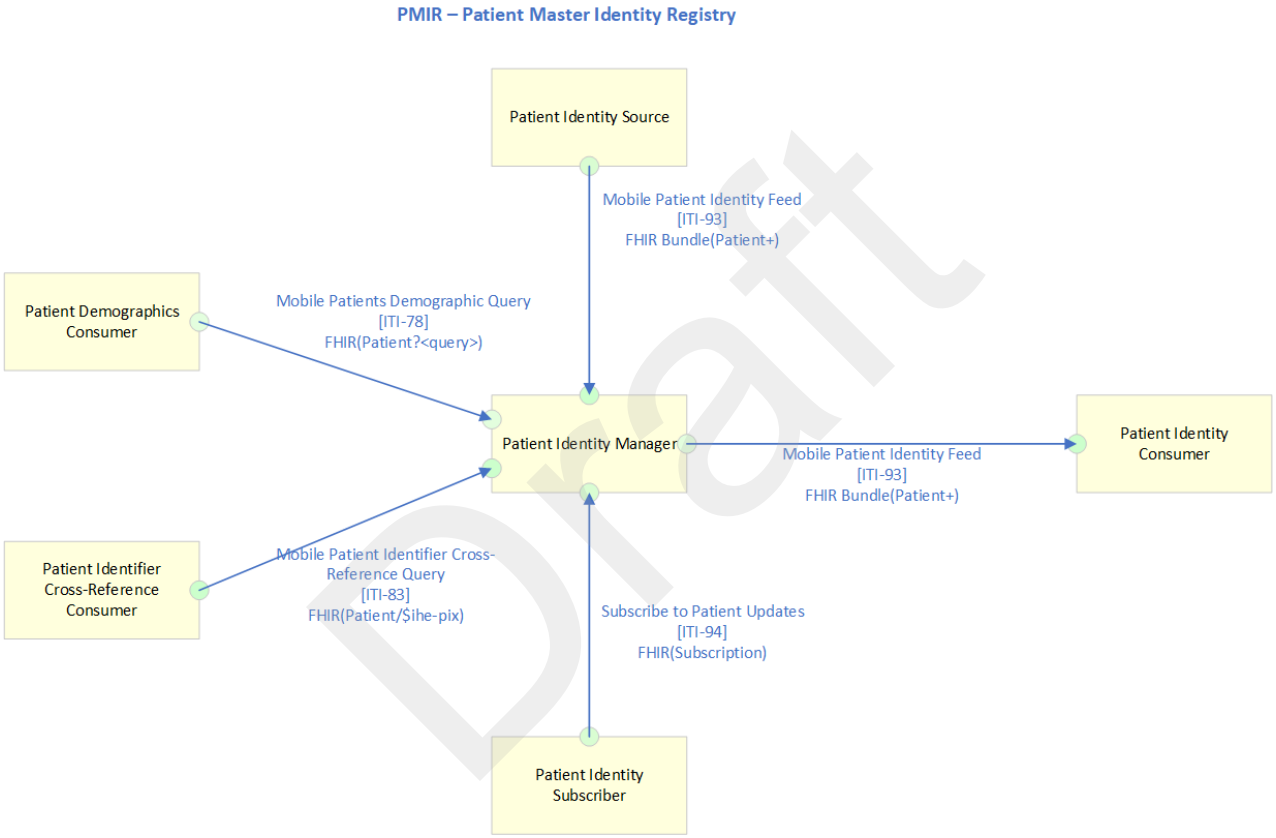
Introduction

The Patient Master Identity Registry (PMIR) Profile supports creating, updating, and deprecating patient identity information about a subject of care, as well as subscribing to changes, using HL7 FHIR resources and RESTful transactions. This profile includes the Patient Identifier Cross-reference for Mobile (PIXm) and Patient Demographics Query for Mobile (PDQm) profiles. The “patient master identity” is the dominant patient identity managed centrally among many participating organizations (a.k.a., “Golden Patient Identity”).

Benefits of PMIR

Beyond the basic create, retrieve, update, and delete transaction set, this profile addresses important patient safety issues related to cases where there are two or more patient master identities that have been established for the same person, thus it is not clear which identity is the "true" one. There is also a risk that health data (possibly conflicting) may be associated with each identity – and these disparate data, together, may need to be reconciled before a fully and accurate "health picture" can be developed for this person. These situations represent patient safety risks. This profile addresses how these multiple patient master identities can be merged into a single patient master identity, and how this merge flows down to data custodians so that they take appropriate actions. It is outside the scope of this profile to define how references to the deprecated patient master identity from other data should be handled.

Actor & Transaction Diagram of PMIR



XDM Profile Overview

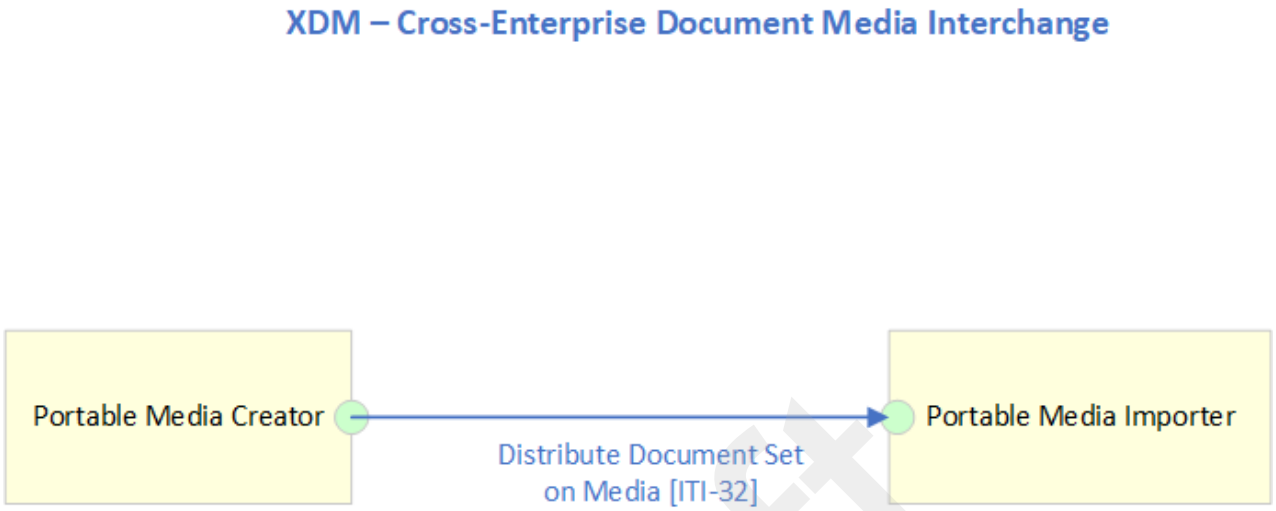
Introduction

The Cross-Enterprise Document Media Interchange (XDM) profile provides document interchange using a common file and directory structure over several standard media types. This permits the patient to use physical media to carry medical documents. This also permits the use of person-to-person email to convey medical documents. XDM supports the transfer of data about multiple patients within one data exchange.

Benefits of XDM

XDM Facilitates person-to-person exchange of the healthcare information by supporting transport via physical media - USB and CD-R and supporting transport as an attachment to an email.

Actor & Transaction Diagram of XDM



SVCM Profile Overview

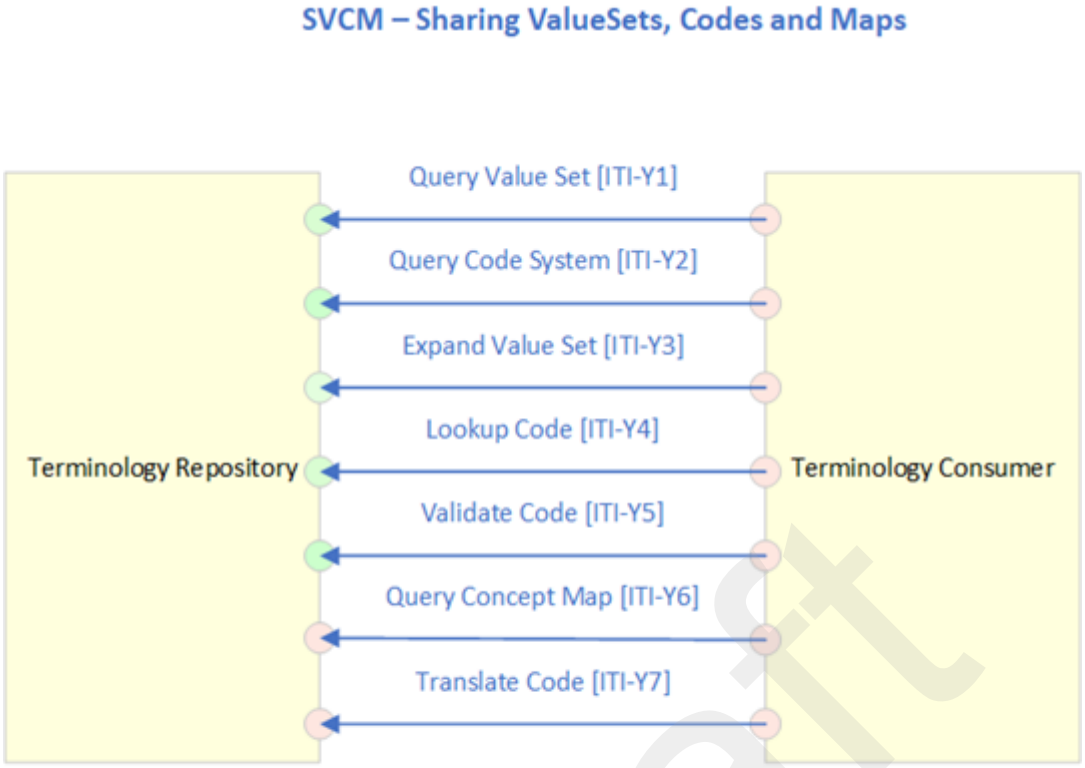
Introduction

The Sharing ValueSets, Codes and Maps (SVCM) Profile defines a lightweight interface through which healthcare systems may retrieve centrally managed uniform nomenclature and mappings between code systems based on the HL7 Fast Healthcare Interoperability Resources (FHIR) specification.

Benefits of SVCM

Terminologies managed in value sets are most useful when they are widely shared and standardized across geography and disciplines to add clarity and specificity.

Actor & Transaction Diagram of SVCM


SVCM – Sharing ValueSets, Codes and Maps
Query Value Set [ITI-Y1]
Query Code System [ITI-Y2]
Expand Value Set [ITI-Y3]
Lookup Code [ITI-Y4]
Terminology Repository
Terminology Consumer
Validate Code [ITI-Y5]
Query Concept Map [ITI-Y6]
Translate Code [ITI-Y7]
All FHIR Vocabulary Operations

Appendix B: Glossary of Terms and Acronyms

The following terms appear throughout the PS-CA Specifications:

Term / Acronym	Meaning
Business/Legal Interoperability Requirements	Requirements that enable independent organizations to execute a collaborative process or service.
Business Requirements: Testable	Business requirements that are directly traceable to an IHE profile in the PS-CA specifications.
Business Requirements: Non-Testable	Business requirements that are not directly traceable to an IHE profile in the PS-CA specifications (e.g., provided for consideration and to support and provide guidance to implementers of the PS-CA)
Clinical Data eXchange (CDX)	CDX is a clinical distribution service developed by Interior Health. Northern Health (NH) and Interior Health (IH) have collaborated to facilitate the sharing of Health Authority clinical information to participating provider EMR systems using this service. (Sources: https://infocentral.infoway-inforoute.ca/en/resources/docs/coordofcare/1406-clinical-document-exchange-bc-cdx-technical-overview-coc-sep27-16 https://www.intrahealth.com/sites/default/files/docs/Clinical-Data-eXchange-communication-from-Intrahealth-and-CDX-Team.pdf)
Cross Border, Scheduled Care	Scheduled care of a resident of Canada that is delivered in/by another country.
Cross Border, Unscheduled Care	Unscheduled care of a resident of Canada that is delivered in/by another country.
Document Repository (Local or Central)	A document repository is a shared storage space for clinical documents (Patient Summaries) that can be hosted locally (e.g. at the document producer) or at the IHE Central Infrastructure and can be accessed by authorized users.

Term / Acronym	Meaning
Electronic Health Record (EHR)	The EHR represents the Clinical Solution that contains a secure and private collection of a patient's health information in a digital format, which is shareable across different health care settings / clinical solutions that are integrated. The EHR facilitates better sharing and interpretation of health information among the health care professionals involved in the care of the patient. For example: • CareConnect is British Columbia's secure, view-only Electronic Health Record (EHR) solution. It offers healthcare providers access to an integrated, provincial view of patient-centric information available 24/7 to support the delivery of patient care. • HEALTHe NL is the Newfoundland & Labrador provincial EHR. HEALTHe NL will provide more accurate and reliable data to support improved health care delivery, decision-making and policy and create improved accountability, stability and efficiency in the provincial health care system. • Netcare is Alberta's name for all the projects related to the provincial Electronic Health Record (EHR) - a secure and confidential electronic system of Alberta patients' health information: a single, comprehensive, and integrated patient record. • Other clinical systems: In some health authorities, other clinical systems may act as an EHR, holding the patient summary information.
Extensible PS-CA Dataset	Extensible PS-CA Dataset: PS-CA content that can be extended for use in a PS-CA use case scenario that complements the primary PS-CA use cases. *Note: Extensible PS-CA Dataset refers to the addition of data domains such as Family History.
HCP	Health Care Provider
Health Information Access Layer (HIAL)	An interface specification for the EHR infostructure that defines service components, service roles, information model and messaging standards required for the exchange of EHR data and execution of interoperability profiles between EHR services. (Source:https://www.infoway-inforoute.ca/en/component/edocman/resources/technical-documents/391-ehrs-blueprint-v2-full ; Page.340)
Health Records System	A health records system may include an electronic medical records system, a hospital information system, a clinical information system, an electronic health records system or a personal health records system. The term is broadly used to describe system actors that may produce and/or consume a PS-CA. Jurisdictional implementation patterns will determine which systems are used to create, access, consume and manage patient summaries.
HIS	Health Information System

Term / Acronym	Meaning
Health Level 7 (HL7)	Founded in 1987, HL7 is a not-for-profit standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services. (Source: http://www.hl7.org/about/index.cfm?ref=nav)
HL7 Fast Healthcare Interoperability Resources (FHIR)	Expected to be a next generation standards framework created by HL7. FHIR combines the best features of HL7's Version 2, Version 3 and product lines while leveraging the latest web standards and applying a tight focus on implementability (Source: http://www.hl7.org/implement/standards/fhir/)
HIE Central Infrastructure	A Health Information Exchange (HIE) Central Infrastructure connects participating health care organizations, providing shared services, portals and common data storage
Integrating the Healthcare Enterprise (IHE)	IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of established standards such as DICOM and HL7 to address specific clinical needs in support of optimal patient care. Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively. (Source: https://www.ihe.net/)
IHE Actor	IHE Actors are responsible for producing, managing and/or acting on information in the context of an IHE Profile (e.g., Primary Care Provider, EMR, EHR, etc.,) (Source: https://wiki.ihe.net/index.php/Actors)
IHE Domain	IHE Domains are responsible for the development and maintenance of the IHE Technical Frameworks that document the Integration Profiles. Each Domain manages Integration Profiles in a particular part of healthcare (e.g., Virtual Care) (Source: https://wiki.ihe.net/index.php/Domains)
IHE Profiles	IHE Profiles describe specific solutions to interoperability problems. Profiles specify how "Actors" use standards to address a specific healthcare use case (e.g., Medication, Allergy Intolerance, etc.,) (Source: https://wiki.ihe.net/index.php/Profiles)
IHE Transactions	IHE Transactions are interactions between actors that communicate the required information through standards-based messages. (e.g., patient look-up query, send patient summary information, etc.,) (Source: https://wiki.ihe.net/index.php/PCC_TF-1/About)
Information/ Semantic Interoperability Requirements	Requirements for syntax and semantics such that data exchanged between health record systems can be interpreted and the meaning of the data ascertained.

Term / Acronym	Meaning
International Patient Summary (IPS)	The IPS is a a minimal, non-exhaustive set of data elements defined by ISO/EN 17269 and realized by HL7 in both CDA and FHIR. The IPS is a snapshot clinical document that can be used for planned or unplanned care of a person locally or across borders. It emphasizes the data required and the necessary conformance of the use cases for an international patient summary. (Source: https://wiki.ihe.net/index.php/International_Patient_Summary_(IPS))
Local, Scheduled Care	Scheduled care of a resident of Canada that is delivered in/by the Canadian health care system. This includes care provided in federal, provincial and territorial jurisdictions, as well as cross-jurisdictional care.
Local, Unscheduled Care	Unscheduled care of a resident of Canada that is delivered in/by the Canadian health care system. This includes care provided in federal, provincial and territorial jurisdictions, as well as cross-jurisdictional care.
	Alberta Netcare is the name for all the projects related to the provincial Electronic Health Record (EHR) - a secure and confidential electronic system of Alberta patients' health information: a single, comprehensive, and integrated patient record. The EHR stores information about: • laboratory tests, • dispenses of pharmaceuticals (drugs), • hospital discharge reports, and • diagnostic imaging
Patient Portal	A patient portal is a web-based access point that enables secure patient access to personal health information and other self-serve health IT services
Patient Proxy	An individual or entity that has the authority to act on behalf of a subject of care/ patient. Proxies can include parents of dependent children, parents of dependent adults, powers of attorney etc.
Patient Summary-CA (PS-CA)	An electronic patient summary for use at the point of care comprised of, at minimum, the required elements of the Patient Summary-CA data set and specifications. The PS-CA is a health record extract, at a snapshot in time, comprised of a standardized collection of clinical and contextual information (retrospective, concurrent, prospective), including the minimum necessary and sufficient data to inform a patient's treatment at the point of care. The PS-CA is condition-independent and speciality-agnostic, irrespective of the condition of the patient or the treatment sought or specialty of the provider delivering care.

Term / Acronym	Meaning
Patient Summary-CA Solution	Any combination of health information technology assets and processes that enables a Patient Summary-CA to be created, communicated, managed and dispositioned between a PS-CA Producer and a PA-CS Consumer. Patient Summary-CA Solutions can be comprised of various Producer and Consumer systems including: EMR, HIS, CIS, PHR, EHR or any combination of these systems.
PS-CA Specifications	**Pan-Canadian Patient Summary Interoperability Specifications:** The Pan-Canadian Patient Summary Interoperability Specification is an implementable, testable specification, based on the IHE International Patient Summary specification. For more information on the PS-CA Specifications, please go here.
PS-CA Author	A health care provider who authors and/or curates a PS-CA.
PS-CA Consumer	A health records system (e.g. EMR, HIS, CIS, PHR, or EHR) that enables access to or receipt of a Patient Summary-CA by an authorized health care provider or the subject of care/patient.
PS-CA Producer	A health records system (e.g. EMR, HIS, CIS, PHR, or EHR) that creates/produces a Patient Summary-CA in response to a request from an authorized health care provider, the subject of care or another authorized health records system.
Technical Interoperability Requirements	Requirements for one health record system to send data to another health record system and for the receiving system to acknowledge receipt of the data payload.
Terminology	Collection of uniquely identifiable concepts with associated representations, designations, associations and meanings.