EMR EHR Connectivity 2.0

Context Management – Requirements

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1. INTRODUCTION

1.1 Overview

This document defines requirements and provides guidance for an EMR Offering to integrate context management functionality to interact with Context-Aware EHR service or viewlet available on the provincial ONE Access Provider Gateway that leverages context management (e.g., EHR service, web-based clinical viewers, viewlets). The intended audiences of this document are business and technical implementers.

1.2 Scope

1.2.1 In Scope

- EMR requirements for unidirectional context sharing from an EMR Offering to an EHR product or service, or viewlet available on the Provincial Gateway
- Patient context, to identify a unique patient.

1.2.2 Out of Scope

- Bi-directional context sharing
- Other context topics, such as provider context, may be supported in the future.
- Patient context sharing implementation from previous initiatives

1.3 Constraints

- Although there are similarities, this document is not intended to be backwards compatible to support the CMS 1.0 implementation of patient context sharing.

1.4 Dependencies

- The endpoint for the CMS provided by a Context-Aware EHR service to the EMR Offering to set context is part of the OAuth2 interaction. To facilitate this interaction, the EMR Offering needs to align with the Provincial ONE Access Provider Gateway requirements of the EMR EHR Connectivity Specification.

1.5 Related Documents, References and Sources

ID	NAME	VERSION	DATE
1	Ontario Context Management HL7® FHIR® Implementation Guide (Ontario Health, 2019) https://simplifier.net/guide/ontariocontextmanagement/newitem	Draft v0.1.0	2019-12-02

3. EMR REQUIREMENTS

This section consists of the EMR functional requirements for leveraging Context Management.

Support:

M = Mandatory. EMR offerings certified for this specification MUST support this requirement
O = Optional. EMR vendors MAY choose to support this requirement in their certified EMR offering

Status:

N = New requirement for this EMR Specification version
P = Previous requirement
U = Updated requirement from the previous EMR Specification version
R = Retired requirement from the previous EMR Specification version

OMD #:

A unique identifier that identifies each requirement within OntarioMD's EMR Requirements Repository

CONFORMANCE LANGUAGE

The following definitions of the conformance verbs are used in this document:

- **SHALL/MUST** – Required/Mandatory
- **SHOULD** – Best Practice/Recommendation
- **MAY** – Acceptable/Permitted

The tables that follow contain column headings named: 1) "Requirement," which generally contains a high-level requirement statement; and 2) "Guidelines," which contains additional instructions or detail about the high-level requirement. The text in both columns is considered requirement statements.

3.1 Identifying a Context-Aware EHR Service

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM01.01	The EMR Offering MUST use the returned OAuth2 token to identify if the EHR service is Context-Aware.	Where an EHR service is Context-Aware, the EMR Offering MUST provide context data.	M	N
CM01.02	The EMR Offering MUST use the CMS endpoint value returned in the OAuth2 token as the target endpoint to set context data.	The EMR Offering MUST retrieve and use the Context Management System (CMS) Uniform Resource Identifier (URI) from the returned OAuth2 token as the target location to set the patient context. The EMR Offering MUST NOT hard-code endpoint values within the EMR Offering. **Note**: When the EMR Offering authenticates to an EHR service, the endpoint values will be provided as part of the token returned. Refer to the "tconfig" parameter in the "PCOI e2e Architecture" document. (Where an EHR service is not Context-Aware, this information will not be provided.)	M	N

3.2 Context Sharing Parameters

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM02.01	The EMR Offering MUST include the **ContextSessionID** from the OAuth2 ID Token when setting the context.	The EMR Offering MUST extract the ContextSessionID value from the OAuth2 ID Token and include it when setting the context. The EMR Offering MUST NOT set context if the ContextSessionID is not included.	M	N
CM02.02	The EMR Offering MUST include the **Continuous GUID and CSID** from the OAuth2 ID Token when setting the context.	The EMR Offering MUST extract the Continuous GUID and CSID values from the OAuth2 ID Token and include it when setting the context.	M	N

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM02.03	The EMR Offering MUST submit all required context data when setting the context for an EHR service or viewlet.	The EMR Offering MUST be able to support the following context data if required by an EHR service or viewlet when setting the context. <u>Context Data Elements Supported</u> a) Organization b) Provider c) Patient d) Custom Fields Every Context-Aware EHR service will define its own specific set of context data, in addition to the standard set identified above. Refer to the ONE ID OAuth2/OpenID Specification document for specific information relating to OAuth2 fields.	M	N
CM02.04	Context data MUST only be submitted to a Context-Aware EHR Service.	The EMR Offering MUST NOT set the context for any EHR service that is not Context-Aware. Additionally, the EMR Offering MUST NOT set the context for any Context-Aware EHR service where mandatory context data is either missing or unavailable.	M	N

3.3 Context Synchronization

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM03.01	The EMR Offering MUST wait for a response after setting the context.	After setting the context, the EMR Offering MUST wait for an acknowledgement to be returned, up to the amount of time defined by the Context Response Wait Time for an acknowledgement that context was set. Where no acknowledgement was sent back, the EMR Offering MUST automatically re-attempt to set context again. The EMR Offering MUST try a finite number of attempts. Where the finite number of attempts have failed, the EMR Offering MUST notify the EMR user of the failure, and then continue in the absence of any acknowledge returned. **Informational**: If the EMR Offering does not wait for an acknowledgement, it will be unclear whether the context available to the EHR service is current or stale, leading to possibly using context for the wrong data (e.g., patient).	M	N
CM03.02	The Context Response Wait Time MUST be assigned an initial value within the EMR Offering.	The Context Response Wait Time MUST have an initial value pre-set to sixty (60) seconds.	M	N
CM03.03	The Context Response Wait Time MUST be configurable within the EMR Offering interface.	The Context Response Wait Time may change in the future and MUST be a configurable value within the EMR Offering. The value SHOULD represent a unit of time in seconds. The Context Response Wait Time MUST be restricted and allowed to be changed only by authorized staff (e.g., super EMR user, or EMR vendor support staff).	M	N
CM03.04	Context data MUST only be generated immediately before it is submitted.	Context data MUST only be generated from within the EMR Offering at the latest possible moment that it is needed to be submitted.	M	N

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		It is not acceptable to pre-emptively generate context data in the EMR Offering when it cannot be determined if context will be used.		

3.4 Launching a Context-Aware EHR Service

Launching an EHR Service in context can cause adverse or unintended behaviour when multiple sessions or windows are open or remain open where multiple different contexts (e.g., multiple patient contexts) can cause confusion, resulting in a possible patient safety concern. EMR Offering requirements in this section help to reduce or mitigate some of these situations to provide context for a single session in a single window.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM04.01	Launching of a Context-Aware EHR Service MUST only be allowed when one specific patient is identified.	The ability for an EMR user to set the context and launch a Context-Aware EHR Service MUST be restricted to a patient chart, or window which references only one specific patient. It is not acceptable to launch a Context-Aware EHR Service from any module/screen within an EMR Offering that references more than one specific patient, or where one specific patient cannot be clearly identified.	M	N
CM04.02	The EMR Offering MUST notify the EMR user in situations where subsequent Context-Aware EHR service browser windows may be simultaneously opened.	Having multiple windows open can result in inadvertently referencing unintended patient information. In such scenarios or potential scenarios, the EMR user MUST be informed of this potential risk. It is suggested to implement controls to prevent having multiple browser windows open. Where such controls exist that prevent such potential risks, or for scenarios where there is no risk of having multiple EHR Service windows open, then it is not required to inform the EMR user.	M	N
CM04.03	The EMR user MUST have the option to disable and re-enable functionality that notifies an EMR user when multiple browsers may be opened.	Only where an EMR Offering maintains functionality to inform the EMR user when multiple EHR browsers may be opened, there MUST be a configuration to allow an EMR user to disable or re-enable such messages. The initial state MUST be set to enabled and changes to this configuration by the EMR user MUST be logged by the EMR Offering.	M	N

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		If controls exist within the EMR Offering that prevents having multiple browser windows open, then it is not required to implement such configuration and logging.		
CM04.04	The EMR Offering MUST mitigate privacy risks of EHR Service browser window(s) remaining open after an EMR user has logged out.	Once an EMR user initiates logging off of the EMR Offering, it MUST force open browser windows to close if possible, or otherwise notify the EMR user to close them. It is recommended that EMR Offering functionality employ controls to ensure all browser windows belonging to the Context-Aware EHR service close when an EMR user logs out of the EMR Offering. In the absence of such controls, the EMR Offering MUST display a message upon logout to inform the EMR user of potential privacy risks whenever an EHR Service window may remain open. This message MUST only be displayed for EMR users who have access to one or more EHR Services. **Note**: Leaving browser windows open may expose PHI to unauthorized individuals.	M	N

3.5 Auditing and Logging

EMR systems log various information and interactions and may contain PHI. As a result, consideration should be taken to log only what is necessary to avoid unintentionally saving or providing access to logged PHI and should be regarded with the same sensitivities as data containing PHI.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM05.01	The EMR Offering MUST log all interactions while attempting to set the context.	At a minimum, logs MUST include: a) The name of the Context-Aware EHR Service b) The action or command attempted c) The date and time the interaction occurred d) The initiating EMR user e) The ContextSessionID f) The status (e.g., success or failure) g) Any warning or error messages received from a Context-Aware EHR Service h) Any warning or error messages provided by the EMR Offering Logs MUST include both successful and failed interactions.	M	N

3.6 Error Management

In general, any error, warning or information message provided to an EMR user SHOULD be understandable by the EMR. This MAY be via a clearly provided message, or via codified errors as long as reference material is provided to interpret those codes.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
CM06.01	The EMR Offering MUST inform the EMR user if the patientContext Topic is missing mandatory data.	In the event that an EMR user attempts to launch a Context-Aware EHR Service for a patient record that has missing data required for the patientContext Topic, the EMR Offering MUST inform the EMR user of: a) the missing required data b) the failure to launch the Context-Aware EHR Service. The EMR Offering MUST NOT submit the patientContext where required data is missing.	M	N
CM06.02	The EMR Offering MUST inform the EMR user if a patientContext Topic submission fails.	In the event that the patientContext Topic has been validated and submitted, but no success response is received (i.e., a failure response is received back to the EMR Offering or a non-response) within the defined Context Response Wait Time period, the EMR Offering MUST inform the EMR user of the failure. There SHOULD be mechanisms within the EMR Offering to re-try such failures, where possible. Actions MAY include (but are not restricted to): a) automatic retries for a finite number of attempts for a non-response. b) providing a mechanism for the EMR user to manually initiate a retry for a non-response.	M	N

4. APPENDIX A: GLOSSARY OF KEY TERMS AND DEFINITIONS

4.1 Acronyms and Abbreviations

This table identifies definitions for terms used within or that are relevant to this document.

ACRONYM	DEFINITION
CMS	Context Management System
EHR	Electronic Health Record
FHIR	Fast Healthcare Interoperability Resources
HCN	Health card number
OAuth2	Open Authentication 2.0
PCOI	Patient Consent Override Interface
SAML	Security Assertion Markup Language
URI	Uniform Resource Identifier
URL	Uniform Resource Locator

4.2 Definitions

The following are the terms and definitions used to describe the concepts used in this document.

TERM	DEFINITION
Context-Aware EHR Service	An EHR service that leverages Context Management. **Note**: Not all EHR services leverage Context Management.
Context Response Wait Time	The amount of time (in seconds) that an EMR Offering MUST wait for a response back from any Context-Aware EHR Service. This time starts when the patientContext Topic is sent by the EMR Offering. This value is global, pertaining to all supported Context-Aware EHR Services.
EHR Service	A service hosted on the ONE Access Provider Gateway. An EHR Service may or may not leverage Context Management. Each and every EHR Service will have its own unique target endpoint within the EMR Offering.
Viewlet	A webpage or website that fulfills a specific function or task. Some viewlets can be Context-Aware and leverage context management (e.g., PCOI).