Secure Healthcare Data Exchange - FAST Security IG Supports Scalable and Secure Healthcare Systems

May 2024
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Agenda & Speakers

Welcome

*FAST Security Implementation Guide (IG) Overview*

Industry Policy and Use

*FAST Implementer Panel*

How You Can Engage/Call to Action

Q&A

- Luis Maas, Chief Technology Officer, EMR Direct
- Brett Stringham, Distinguished Engineer - Platform Security, Optum
- Joseph Shook, Senior Software Architect, Surescripts LLC
- Jason Vogt, Development Manager, APIs and Structured Documents, MEDITECH
- Tom Loomis, Enterprise Architecture, Interoperability, Evernorth
- Dan Cinnamon, Principal Solutions Architect, Okta, Inc.
- David Pyke, FAST Technical Director, Standards Architect, Audacious Inquiry, a PointClickCare Company

Facilitated by:
- Alix Goss, Senior Consultant, Point-of-Care Partners

Slides and recording to be posted: [https://confluence.hl7.org/display/FAST/FAST+Calendar](https://confluence.hl7.org/display/FAST/FAST+Calendar)
FAST Security IG
Overview – Security for Scalable Registration, Authentication, and Authorization

BARRIER
Today, we have limitations on our ability to ensure, in a scalable way, that the requestor of information using a FHIR based information exchange is appropriately authenticated and has the authorization to see the data requested. Current registration processes are manual and too time-consuming to support expected growth.

SOLUTION
Leverage existing credentials and authorizations and best practice standards to establish common security processes that facilitate automated exchange and reuse existing infrastructure where possible.

IN SCOPE
Trusted Dynamic Client Registration using Unified Data Access Profiles (UDAP)

JWT-Based Client Authentication & Authorization

OUT OF SCOPE
Directory for Endpoint Discovery, Trust Policy Governance, Requirements for a specific architecture, Patient/provider or provider/patient
**Security for Scalable Registration, Authentication, and Authorization**

**JWT-Based Client Authentication:**
Uses asymmetric cryptography to authenticate client apps

**Server Metadata:**
Endpoint validation for added confidence

**Trusted Dynamic Client Registration:** Identify and dynamically register trusted client applications, streamlining app management

**JWT-Based Authorization Assertions:**
Extensible JWT-based client authorization grants & other claims incidental to a token request

**Certifications & Endorsements:**
Trusted informational assertion

**Tiered OAuth:**
Reusable identities via scalable, dynamic, cross organizational use

**Connectathon Track Page:**
2024 - 05 FAST Infrastructure (Security & Identity)

**Project Scope Statement:**
Scalable Registration, Authentication, and Authorization for FHIR Ecosystem Participants

**Implementation Guide:**
Security for Scalable Registration, Authentication, and Authorization
• For larger ecosystems with numerous requestors and responders a distributed system of authoritative information can be leveraged through the use of digital certificates
• This enables a scalable dynamic solution to client (i.e., requestor) registration
• The solution extends OAuth 2.0 workflows and Dynamic Client Registration to add assurance for and about all parties involved in the API ecosystem

➤ Automated registration API
  • Replace (and standardize) manual developer registration processes

➤ Trusted app operator identities
  • Reusable credentials
• Increased security over shared secrets
  – E.g., RSA, Elliptic Curve
• Simplified Key Management
  – Public Key Infrastructure
• Increased confidence for actions beyond read-only access
• Authorization Extension Objects
  – Allows for extension of authorization data as required by workflows
The user wishes to access their data held by a system where they don't have credentials. They specify an approved identity provider for authentication.

The user has access to their information held by the healthcare system or health insurance company.

Any UDAP-compatible FHIR client app

The user logs in at their chosen identity provider with their existing IAL2 credentials.

The identity provider asserts the user's identity to the healthcare system or health insurance company.

Trademark Notice: UDAP and the green lock design are trademarks of UDAP.org and are used with permission.
UDAP Tiered OAuth Benefits

- No advance testing or integration is required by ecosystem participants (client app, relying party data holder, and credential service provider implement UDAP profiles and use in real-time discovery and trust validation) for true scalability.
- Patients can use one trusted set of credentials representing their identity to interact with multiple healthcare systems/fewer credentials to maintain.
- Health record systems have a high level of confidence about which patient has been authenticated, as well as protection from breach severity knowing they are using publicly-available security and patient matching standards, particularly if the hl7_identifier is used for more perfect patient matching.
Ecosystem Benefits

• Scalability
  – Frictionless app onboarding & life cycle management; automated discovery
  – Reusable credentials for apps, servers, & users

• Security
  – Trusted apps and servers are identified through digital certificates, eliminating
    1. app impersonation due to a compromised secret
    2. server impersonation leading to compromised user’s or app’s credentials or compromised PII or PHI, and
    3. data provenance and credential trust issues
  – Exchange health data directly between trusted endpoints & trust the source of assertions made, e.g. Purpose of Use, HIPAA Authorization, verified Identity Attributes
    • Identity information is exchanged directly from IdP to FHIR server using Tiered OAuth
    • Verifiable directory information and endpoint identity
• Requirements/reliance on UDAP
  – FHIR Security specification for R5
  – HL7 FAST Interoperable Digital Identity and Patient Matching IG
  – Da Vinci HRex

• Support for UDAP
  – CARIN Blue Button IG

• Implementations utilizing FAST Security
  – TEFCA Facilitated FHIR
  – Carequality FHIR IG
  – CommonWell FHIR IG
  – eHealth Exchange Authorization Framework
Industry Implementation & Testing

- **Implementations**
  - Diverse industry efforts
  - HL7 FHIR Connectathon Testing
  - IHE/Carequality Connectathon Testing
  - Commonwell Connectathon Testing
  - Open-Source Reference Implementations (next slide)
  - CARIN POC tested UDAP Tiered OAuth and *FAST* Identity concepts, and the [final report](#) recommended this approach as one of two preferred paths toward digital identity federation
Evernorth/Okta Reference UDAP client app, client SDK, and server:

https://github.com/Evernorth/hl7-fhir-udap-docs

Opensource Spring Boot – UDAP Client (client_credentials grant)

https://github.com/udap-tools/udap-spring-boot

.NET Reference Implementation covering the full implementation guide. NuGet packages for building Client, Metadata Server, Auth Server and Tiered OAuth (IdP).

Stable Home: udap-tools/udap-dotnet: reference implementation for .NET (github.com)

Daily development: https://github.com/JoeShook/udap-dotnet/tree/develop
• https://udaped.fhirlabs.net is a visualization of UDAP.
  o Explore the home page to find negative use cases to experiment with.
  o Experience the Implementation Guide in action with UdapEd.

• Examples of how build clients and servers with .NET UDAP NuGet packages. Developers can spin up a lab environment locally covering the whole Implementation Guide.
  o https://github.com/JoeShook/udap-devdays-2023
  o https://github.com/JoeShook/udap-devdays-2024

• The Interoperable Digital Identity and Patient Matching RI is using the .NET UDAP RI for their implementation of UDAP.
Discussions around the use of the Security IG continue and have increased with the adoption of the IG by TEFCA

The co-leads have been categorizing updates to be part of an STU Update or STU2

The FHIR Connectathon wrapped up with testing done using the updated RI and new test scripts. As with Identity we are looking into the results of testing, including what we tested and what issues came up, to refine the Track description for July / September.
Implementers will share their stories and answer the following core questions:

- Why did you implement the FAST Security IG?
- What value are you getting from it?
- What have folks already implemented that provides a glidepath to implementation?
Q&A
Engaging with FAST
# Simple Ways to Join FAST’s Work

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<td>HL7 Project Page <a href="https://hl7-org.zoom.us/j/99770852614?pwd=Sk1QUDBJY0huSNxYVQ4YW5KNkpzd09">Security for Scalable Registration, Authentication, and Authorization</a></td>
<td>HL7 Project Page <a href="https://hl7-org.zoom.us/j/95314390248?pwd=QUhvNktmTVJiWUk2ZnRHSmdWcHpmzd09">Directory</a></td>
<td>HL7 Project Page <a href="https://hl7-org.zoom.us/j/99145025586?pwd=bE01OFVHZkVta051SlRjbjJZMTFRQT09">Interoperable Digital Identity &amp; Patient Matching</a></td>
<td>HL7 Project Page <a href="https://hl7-org.zoom.us/j/93156049340?pwd=UmpibnBHN0NSZThmZUhpdkppWE5td09">Consent</a></td>
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**Public Meetings**

**Public Meetings the 2nd and 4th Tuesdays Each Month at 2PM ET**
[https://hl7-org.zoom.us/j/99770852614?pwd=Sk1QUDBJY0huSNxYVQ4YW5KNkpzd09](https://hl7-org.zoom.us/j/99770852614?pwd=Sk1QUDBJY0huSNxYVQ4YW5KNkpzd09)

**Public Meetings: Biweekly meetings on Mondays at 3pm ET as of April 29th**
[https://hl7-org.zoom.us/j/99145025586?pwd=bE01OFVHZkVta051SlRjbjJZMTFRQT09](https://hl7-org.zoom.us/j/99145025586?pwd=bE01OFVHZkVta051SlRjbjJZMTFRQT09)

**Public Meetings the 1st and 3rd Thursdays Each Month at 2PM ET**
[https://hl7-org.zoom.us/j/99145025586?pwd=bE01OFVHZkVta051SlRjbjJZMTFRQT09](https://hl7-org.zoom.us/j/99145025586?pwd=bE01OFVHZkVta051SlRjbjJZMTFRQT09)

**Public Meetings:**

Launched April 5th and calls to be held 2nd and 4th Fridays at 2 pm ET
[https://hl7-org.zoom.us/j/93156049340?pwd=UmpibnBHN0NSZThmZUhpdkppWE5td09](https://hl7-org.zoom.us/j/93156049340?pwd=UmpibnBHN0NSZThmZUhpdkppWE5td09)

**Chat.fhir Stream**

[https://chat.fhir.org/#narrow/stream/294749-FHIR-at.20Scale.20Taskforce.20.28FAST.29.20Security](https://chat.fhir.org/#narrow/stream/294749-FHIR-at.20Scale.20Taskforce.20.28FAST.29.20Security)

[https://chat.fhir.org/#narrow/stream/283066-united-states.2Fnational.20directory](https://chat.fhir.org/#narrow/stream/283066-united-states.2Fnational.20directory)

[https://chat.fhir.org/#narrow/stream/294750-FHIR-at.20Scale.20Taskforce.20.28FAST.29.20.20Identity](https://chat.fhir.org/#narrow/stream/294750-FHIR-at.20Scale.20Taskforce.20.20Identity)

[https://chat.fhir.org/#narrow/stream/426241-FHIR-at-Scale.20.28FAST.29.20Consent-Management](https://chat.fhir.org/#narrow/stream/426241-FHIR-at-Scale.20.28FAST.29.20Consent-Management)

**Implementer Support Office Hours are on the first Tuesday each month from 1 – 2 pm ET**

[Join the Implementer Support Hours Conference Call](https://hl7-org.zoom.us/j/99770852614?pwd=Sk1QUDBJY0huSNxYVQ4YW5KNkpzd09)
Want to learn more about becoming a member of the HL7 FAST FHIR Accelerator?

Want to work with us to implement and test the FAST Security IG?

Contact fast@hl7.org
Thank You

For more information on the FAST Initiative, visit the FAST Project Page

Have any further questions/suggestions? Please contact fast@hl7.org
FAST – Level Setting
What is the Problem?

**TODAY - Exchange**
Exchange characterized by point-to-point interfaces
Adoption trajectory is slow, expensive, and fragmented

**FUTURE - Interoperability**
A common & consistent infrastructure approach to API implementation
Consensus on implementation guides for key enablers, such as directory, security, patient matching, exchange and testing

**DESIRED RESULT:**
A national interoperability approach that enables consistent data exchange via API. We have this for administrative transactions (X12, clearinghouses, WEDI) and pharmacy transactions (NCPDP, Surescripts). We do not have this for HL7-FHIR.
The FHIR at Scale Taskforce (FAST) is a representative community of motivated healthcare industry stakeholders and health information technology experts who have identified HL7® Fast Healthcare Interoperability Resources (FHIR®) scalability gaps and are actively working on solutions to address current barriers to enable scalable data exchange using FHIR APIs.

**OCT 2017**
**Payer + Provider (P2) FHIR Taskforce Established**
Originally focused on Payer/Provider collaboration

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**ONC FHIR at Scale Taskforce (FAST)**
*Purpose:* Identify ecosystem barriers, propose solutions, and develop standards to implement solutions

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**HL7 FHIR at Scale Taskforce (FAST) Accelerator**
*Purpose:* Identify ecosystem barriers, propose solutions, and develop standards to implement solutions

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**And the Future**
Continue Collaborative Work to Develop FAST Solutions (IGs) Under the HL7 FHIR Accelerator Program

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**Analysis, Barrier identification, Solution Concepts, Gather Industry Feedback**

**Implementation Guide Dev Begins**

**Transition to FHIR Accelerator**

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All content is available on the [FAST Project Page](#)
Conceptual Architecture

FAST CAPABILITIES

REQUESTING SYSTEM
- Patients
- Providers
- Payers
- IT Vendors
- EHRs
- Population Health
- Public Health
- Social Services
- Networks
- Intermediaries

RECEIVING SYSTEM
- Payers
- Providers
- Patients
- Intermediaries
- Networks
- Research
- IT Vendors
- Social Services
- Public Health
- Population Health
- EHRs

Identity
Digital Identity/Patient Matching

National Directory
Endpoints – Profiles – Versioning
Trust - Conformance

Hybrid/Intermediary Exchange

Security
(Authenticate/Authorize)
UDAP Trusted Dynamic Client Registration
UDAP Tiered OAuth User Authentication
UDAP JWT-Based Client Authentication
UDAP JWT-Based Authorization Assertions

Consent

Global Extensibility

VERSIONING

TESTING
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