ONC FAST Birds of a Feather
Building the Infrastructure Needed to Reach The Interoperability Destination
Presenters – ONC Lead & FAST Chief Architects

Stephen Konya
Senior Advisor to the Deputy National Coordinator for Health IT HHS/ONC
ONC Lead, FHIR at Scale Taskforce (FAST)

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Senior Enterprise Architect, Cigna/Evernorth
FAST Chief Architect

Patrick Murta
Chief Interoperability Architect & Fellow Humana
FAST Chief Architect
The ONC FHIR At Scale Taskforce (FAST) (Hereinafter “Taskforce”) is committed to full compliance with existing federal and state antitrust laws.

All members involved in the Taskforce effort, including its advisory groups, will comply with all applicable antitrust laws during the course of their activities. During Taskforce meetings and other associated activities, including all informal or social discussions, each member shall refrain from discussing or exchanging competitively sensitive information with any other member. Such information includes, but may not be limited to:

- Price, premiums, or reimbursement charged or paid for products or services
- Allocation of customers, enrollees, sales territories, sales of any products or contracts with providers
- Any other competitively sensitive information that is proprietary to a member company

If you have any specific questions or concerns, seek guidance from your own legal counsel.

Members should not bring confidential information or intellectual property (hereinafter “Intellectual Property”) owned by their respective member companies into Taskforce meetings. To the extent such Intellectual Property is shared with the Taskforce that shall not be construed as a waiver of member company’s rights to, or ownership in, the Intellectual Property.
• What is FAST?
• Big FAST News!
• Overview of FAST’s Work
• FAST Action Plan Snapshot
• Get Involved
The FHIR at Scale Taskforce (FAST), convened by the Office of the National Coordinator for Health IT (ONC), brings together a highly representative group of motivated healthcare industry stakeholders and health information technology experts.

The group is set to identify HL7® Fast Healthcare Interoperability Resources (FHIR®) scalability gaps and possible solutions, analysis that will address current barriers and will accelerate FHIR adoption at scale.
Collaborative Efforts Towards FHIR Adoption

**FUNCTIONAL USE CASES**

**HL7® FHIR® ACCELERATOR**
- Payers/Providers
- Provider/Provider
- Consumers
- Social Determinants of Health
- Cancer Care and Research
- Clinical Trials

**OTHER FHIR INITIATIVES**
- PACIO Project
- sequoia Project
- IHE

**CONTRACTUAL ENFORCEMENT**
- carequality
- commonwell

**NETWORK/CORE SERVICES**

**CORE SERVICES**

**INFRASTRUCTURE USE CASES**

**RAPID INDUSTRY ADOPTION OF FHIR-BASED SOLUTIONS**

- Patient & Provider Identity Management
- Directory Services
- Version Identification
- Scale
- Exchange Process/Metadata
- Testing, Conformance & Certification
- Security

**Technical Challenges to FHIR SCALABILITY**
FAST Organization & Community Engagement

Executive Steering Committee (public-private mix)

Coordinating Committee (public-private mix)

Seven Tiger Teams:
- Ecosystem Use Cases
- Identity
- Security
- Directory, Versioning and Scale
- Exchange
- Certification and Testing
- Pilots

Information Sharing with TLC through:
- Website
- Periodic Webinars
- Newsletters
- TLC Meetings
- LinkedIn Group

Updates

Feedback

Technical Learning Community (TLC)

Subject Matter Experts (SME) Panels
Lack of Consistent Infrastructure Impacts Flow
Well Planned Infrastructure Creates Efficiency
Big News for FAST!
• FAST has been exploring paths forward for some time – we’ve done our homework
• Socialized the idea with FAST Members and more broadly in various HL7 groups and public meetings with positive reception
• ONC and CMS support this transition
• A transition work group has been formed

Officially announced yesterday during the HL7 Plenary!
# FAST Transition Workgroup

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Representatives</th>
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<tr>
<td>Workgroup Lead</td>
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<td>Stephen Konya &amp; Alex Kontur, ONC FAST Leads</td>
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<td>CMS</td>
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<td>Wayne Kubick, HL7 CTO</td>
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<td>Bob Dieterle, FAST Coordinating Committee Member, DVS Tiger Team Co-Lead</td>
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<td></td>
<td>Alix Goss, FAST ESC Member, DVS Tiger Team Co-Lead</td>
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<td></td>
<td>Ashish Atreja, FAST ESC Member</td>
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<td>Lenel James, FAST ESC Member</td>
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<td>Deepak Sadagopan, FAST ESC Member</td>
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<td></td>
<td>Hans Buitendijk, FAST ESC Member</td>
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<tr>
<td>Workgroup PM Support</td>
<td>Dana Marcelonis, FAST PM Support</td>
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FAST Transition Working Group

• Cross-stakeholder team to build the plan
  – Define scope of FAST as Accelerator
  – Finalize Accelerator structure – operating model and governance framework
  – Finalize Accelerator funding model
  – Develop initial financial plans
  – Develop communications plan
  – Recruit initial members
  – Establish initial PMO
  – Begin transition process

• FAST will continue the work already in progress through transition
**FAST as FHIR Accelerator – What Could It Look Like?**

### HL7® FHIR® ACCELERATOR / COMMUNITY

- **Payers/Providers**
- **Social Determinants of Health**
- **Provider/Provider**
- **Cancer Care and Research**
- **Consumers**
- **CARIN**
- **VULCAN®**
- **ARGONAUT PROJECT**
- **DA VINCI**
- **CodeX**
- **Others - Future**

### Functional Use Cases
- **Payers/Providers**
- **Social Determinants of Health**
- **Cancer Care and Research**
- **Consumers**

### Common Scalability Approaches & Enablers
- **FAST**

### ARCHITECTURE
- **Sandbox, Testing, Feedback**
- **TBD**
- **Pilots & Certification**
- **TBD**
- **HL7 Working Groups**

### STAKEHOLDERS
- **PO**
- **PACIO Project**
- **IHE**
- **carequality**
- **commonwell Health Alliance**
- **And More...**

### ADOPTION AND FEEDBACK

### HL7 Governance Structure

**Government Participation/Contributions (ONC, CMS, CDC, VA, DoD, etc.)**
FAST Solutions Overview
Example FHIR Transaction Journey

**REQUESTING SYSTEM**
- 1. Formulates FHIR Request
- 2. Looks Up the FHIR Endpoint for Recipient
- 3. Transaction Information (eg, Header) Appropriately Configured

**RECEIVING SYSTEM**
- 3. Receives Transaction, Validates Requestor, Validates Version
- 4. Performs Patient Matching and Sends Back Not Found If Unable To Do So
- 5a. Authenticates FHIR User’s Role
- 5b. Filters Out Data That Does Not Have Consent
- 6. Generates & Returns FHIR Response

**DIRECTORY**
- 7. Requesting System Receives Data

**EXCHANGE**
- Versioning

**IDENTITY**
- Directory

**CONFORMANCE & CERTIFICATION**

**SECURITY**

**PILOTS**

- Patient visits Primary Care Physician (PCP)
- PCP needs information from Payer
- Payer receives PCP request
- PCP views patient information
- Payer receives PCP request
FAST Proposed Solutions

- **A US Wide Solution for a National Healthcare Directory**
- **A US Wide Methodology for Supporting Multiple Production Versions of FHIR**
- **US Wide Scaling Requirements for FHIR RESTful Exchange Intermediaries**
- **National Standards Based Approaches for Individual Identity Management**
  - Mediated Patient Matching
  - Collaborative Patient Matching
  - Networked Identity Management
  - Distributed Identity Management

**FAST Proposed Infrastructure Solutions**

- **An HL7 FHIR Standard Based Solution for Hybrid Intermediary Exchange**
  - Reliable Routing with Metadata Across Intermediaries
- **FHIR Testing & Certification Platform**
- **FAST Security for Registration, Authentication, and Authorization**
  - UDAP Trusted Dynamic Client Registration
  - UDAP Tiered OAuth for User Authentication
  - UDAP JWT-Based Client Authentication
  - UDAP JWT-Based Authorization Assertions
Conceptual Integrated Architecture

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

Exchange Routing
RESTful Headers – FHIR Meta Tags

Identity
Collaborative/Mediated Patient Matching – Collaborative/Mediated Identity Management

National Directory
Endpoints – Profiles – Versioning – Trust – Conformance

CONFORMANCE & CERTIFICATION (Testing & Certification Program)

PILOTS (FAST Capability Vetting with Existing HL7 Accelerators)
FAST National Healthcare Directory
Overview and status - National Healthcare Directory

**BARRIER**
The industry lacks a generally available method to find all FHIR endpoints and their associated capabilities and attributes, as well as a common process for maintaining the information and validating its accuracy.

**SOLUTION**
One national source for validated directory information that is available to any national or local directory workflow environment.

**IN SCOPE**
Individual and entity demographics to determine endpoint relationships, computable endpoint information such as accessibility requirements, metadata for routing, trust framework, implementation guides and certification status.
- Federated access by HIEs, state directories, EHRs
- A FHIR standard implementation guide for use of the directory

**OUT OF SCOPE**
Manual / portal access, creation of a trust framework, non-FHIR related endpoints, application certification process.

**STATUS**
Targeting 2022 Ballot Cycle
Incorporating feedback from industry stakeholders

**OPEN ITEMS**
Define the minimum viable product (MVP) and outline the incremental steps/roadmap to build a directory of endpoints

**CURRENT SOLUTION**
*FAST Endpoint directory proposed solution document (version 3)*
Project Page: National Healthcare Directory

Connectathon Track Page: 2021-09 National Directory US Realm (ONC FHIR at Scale Taskforce – FAST)

Project Scope Statement: National Healthcare Directory PSS
FAST Security for Registration, Authentication, and Authorization
Overview and status – Scalable Security Solutions

**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

**STATUS**
Published IG for HL7 Sept 2021
STU Ballot

**OPEN ITEMS**
- Ballot reconciliation
- Continue testing at Connectathons

**CURRENT SOLUTION**
*FAST Security proposed solution document (version 3 in progress)*
Security for Registration, Authentication, and Authorization

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

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

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

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

**UDAP Certifications & Endorsements:**
Trusted informational assertion

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

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**Project Page:** FAST: Scalable Registration, Authentication, and Authorization for FHIR Ecosystem Participants

**Connectathon Track Page:**
2021-09 ONC FAST Security & Identity

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

**Balloted Implementation Guide:**
Scalable Registration, Authentication, and Authorization – Sept STU Ballot
Now What?

- Continue to engage the community in further solution development, testing
- Ongoing collaboration with Carequality, CommonWell, and other stakeholders/implementers
- Continue to participate in HL7 Connectathons
- Incorporate community input from Connectathon testing and ballot comments

Join our public working sessions on the 2nd and 4th Tuesdays each month for ballot reconciliation – view the project page for details

<table>
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FAST Hybrid/Intermediary Exchange
**Overview and Status - Hybrid/Intermediary Exchange**

**BARRIER**
FHIR information exchange is typically performed “point-to-point” between trusted system endpoints. Because healthcare participants may also wish to leverage intermediaries in FHIR exchanges, a solution for conveying routing metadata is needed.

**SOLUTION**
Employ standard methods to convey routing information between exchange intermediaries.

**IN SCOPE**
Exchange using intermediaries in addition to point-to-point connections.
Methods for exchanging routing information among participating intermediaries.

**OUT OF SCOPE**
Value set defining exchange identifiers.
Capturing provenance information from exchange through multiple intermediary “hops”.

**STATUS**
Targeting HL7 Jan 2022 STU Ballot
Incorporating industry feedback into draft HL7 Implementation Guide

**OPEN ITEMS**
Continue testing proposed technical approaches during Connectathons

**CURRENT SOLUTION**
*FAST Exchange solution document (v3)*
## FAST Exchange Barriers to FHIR Scalability

<table>
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<tr>
<th>EXCHANGE BARRIERS</th>
<th>IMPLICATIONS</th>
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<tbody>
<tr>
<td><strong>USE OF DIFFERENT IDENTIFIERS</strong></td>
<td>The metadata will need to have a standardized identifier set and attribute name (NPI, Payer ID, etc.)</td>
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<tr>
<td><strong>SYNCHRONOUS &amp; ASYNCHRONOUS MODELS</strong></td>
<td>Both models need to be supported with reliable routing</td>
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<tr>
<td><strong>HYBRID ENVIRONMENTS</strong></td>
<td>The environment will consist of both dynamic point to point &amp; intermediary models</td>
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Supporting a Hybrid Model

- Provider EMR/EHR
- Payer
- Population Health
- Clearinghouse/Intermediary
- Payer
- Payer
Hybrid/Intermediary Exchange (Exchange With or Without Intermediaries)

Past HL7 Connectathons

- Jan 2021 – HTTP Header Model
- May 2021 – Query String vs. DNS Model
- July 2021 (CMS) – DNS vs. App Path Models

Sept 2021 Connectathon

Test Scenario 1: Route between two Intermediaries using routing information contained in HTTP Header Parameters

Test Scenario 2 (optional): Route between two Intermediaries using routing information contained in a URL query string

Project Page: FAST Hybrid/Intermediary Exchange

Connectathon Track Page: 2021-09 ONC FAST – Hybrid/Intermediary Exchange

Project Scope Statement: PSS for FAST Exchange Metadata

Draft IG: Hybrid/Intermediary Exchange
Now What?

- Incorporate community feedback/discussion into IG development
- Continue to engage the community and intermediaries in further solution development, testing
- Continue to participate in HL7 Connectathons
- Finalize the Implementation Guide

Join our public working sessions on the 1st and 3rd Tuesdays each month – view the project page for details

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<td>January 9, 2022</td>
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FAST Identity Management
Overview and status - Identity Management

**BARRIER**
The industry currently employs a range of patient matching and identity management processes with inconsistencies and limited scalability as volume and the number of participants increase.

**SOLUTION**
Establish a set of patient matching and identity management patterns and best practices that the industry can adopt to reduce the variations that exist today and provide a bridge to new approaches in the future.

**IN SCOPE**
Patient matching during payer/provider interactions: Mediated Patient Matching
Patient-directed workflows focusing on identity management: Networked Identity Management

**OUT OF SCOPE**
Patient as a requester or responder, contractual arrangements. (Security and directory considerations are addressed by other FAST solutions)

**STATUS**
Targeting 2022 Ballot Cycle
Incorporating feedback from industry stakeholders

**OPEN ITEMS**
Define Implementation Guide scope and test proposed solutions during Connectathons

**CURRENT SOLUTION**
FAST Identity proposed solution document (version 3 in progress)
Multiple options progressing from lower to higher complexity (technical and process)

1. Collaborative Patient Matching
   - Current state enhanced with best practices
   - Eg, roster exchanges

2. Mediated Patient Matching
   - Best practices compliant matching service using demographic data from Requestor

3. Networked Identity Management
   - Trusted Identity Providers as source of demographic data and metadata for matching

4. Distributed Identity Management
   - Patient directed access to identity and demographic data, support for multiple identities

Includes Patient directed workflows
Focus on patient matching

Payer/Provider interactions
Focus on identity management
Solutions 2 and 3 have been prioritized for further development as they are the most likely to be implementable in the near future.
FAST Solutions and Path to Execution
Moving Solutions to Standards Development & Implementation Readiness

**SOLUTIONS**
- An HL7 FHIR Standard Based Solution for EXCHANGE with or without Intermediaries
- A US Wide Solution FOR FHIR ENDPOINT DISCOVERY
- US Wide Model(s) for Scalable SECURITY Solutions

**ARTIFACTS**
- HL7 IG: FAST: Exchange with or without Intermediaries
- HL7 IG: Update VHDir for US Realm
- HL7 IG: Endpoint Query
- HL7 IG: Attestation and Validation
- BUILD ASSET: National Source of Truth Directory
- HL7 IG: Security for Registration, Authentication, and Authorization

**INDUSTRY ENGAGEMENT**
- Implementation Guide Development & Balloting
  - JOIN the HL7 Sponsoring Workgroup: Patient Administration
  - Targeting 2022 STU Ballot
- Implementation Guide Development & Balloting
  - JOIN the HL7 Sponsoring Workgroup: Security
  - Targeting January 2022 STU Ballot

**2021 Connectathons**
- Look for us at [Connectathons](#)
Moving Solutions to Standards Development & Implementation Readiness

SOLUTIONS
- National Standards Based Approaches for Individual IDENTITY Management
- Proposed HL7 IG: Interoperable Digital Identity & Patient Matching Capabilities
- Finalizing the Solution Path Forward: Exploring potential for RFI
- BUILD ASSET: Testing & Certification Tooling
- A US Wide Methodology for Supporting Multiple Production VERSIONS of FHIR
- US Wide SCALING Requirements for FHIR RESTful Exchange Intermediaries

ARTIFACTS
- Implementation Guide Development & Balloting
- Consider overlaps with other industry initiatives
- Socialize recommended solutions with relevant industry stakeholders
- Contact the Identity Tiger Team Leads
- Support RFI Process
- Respond to RFI
- Contact the Testing & Certification Tiger Team Leads
- SME Session to be Scheduled
- Look for updates/results from SME Session on the FAST project page

INDUSTRY ENGAGEMENT
- JOIN the HL7 Sponsoring Workgroup: Patient Administration
  - Targeting 2022 STU Ballot
- Public Health
  - Respond to RFI
  - Contact the Testing & Certification Tiger Team Leads
- Look for updates/results from SME Session on the FAST project page

Follow the FAST Technical Learning Community on LinkedIn for updates
FAST Upcoming Events and Resources

Speaker: Stephen Konya
## Simple Ways to Join the FAST Work

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<td>• Public meetings Thursdays at 11 am ET <a href="https://zoom.us/j/98424232906?pwd=dHV0T2hrN3o1Q1NQVTNHaTVaQURSQT09">https://zoom.us/j/98424232906?pwd=dHV0T2hrN3o1Q1NQVTNHaTVaQURSQT09</a></td>
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Want to learn more about the FAST HL7 FHIR Accelerator?

Contact fast@hl7.org

All content is available on the FAST Project Page or https://tinyurl.com/ONC-FAST

CONTINUE THE CONVERSATION!

Join the Technical Learning Community to stay up to date – receive updates about FAST presentations & events, provide additional input and follow our progress.

- JOIN THE LINKEDIN GROUP
- EXPLORE FAST ACTION PLAN
- SIGN UP FOR THE TLC

CONTINUE THE CONVERSATION!
Thank You – Today's Presenters

Stephen Konya  
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FAST Chief Architect  
Paul.Oates@evernorth.com

Patrick Murta  
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pmurta@humana.com

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

Have any further questions/suggestions?

Please contact fast@hl7.org