



FHIR at Scale Taskforce (*FAST*)

SME Session Summary Report

An HL7 FHIR Standard Based Solution for Intermediary Exchange
and Reliable Routing With Metadata

June 29, 2020



Meeting Introduction

The FHIR at Scale Taskforce (*FAST*) obtained industry subject matter expert (SME) input to further refine the Taskforce proposed solutions to FHIR scalability challenges.

Twelve subject matter experts from across the healthcare ecosystem participated in the *FAST* HL7 FHIR Standard Based Solution for Intermediary Exchange Expert Panel Discussion on June 29, 2020, providing feedback based on their individual expertise and domain knowledge. The scalability needs and challenges of a broad range of stakeholders were represented, including clearinghouses and other intermediaries, associations, health information exchanges (HIEs), The Office of the National Coordinator for Health Information Technology (ONC), The Centers for Medicare & Medicaid Services (CMS), providers, payers, and electronic health record (EHR) vendors. The SMEs shared their expertise and input with ONC *FAST* facilitators regarding the proposed solution approach for reliable transaction routing, the appropriate *FAST* outputs and next steps, as well as the potential path forward to gain consensus on the proposed solution within the industry. Feedback received through the SME Sessions will advance the Taskforce proposed solutions into actionable recommendations and support the

development of the *FAST* Action Plan. The *FAST* Action Plan is intended to define and communicate Taskforce technical recommendations and next steps to the industry.

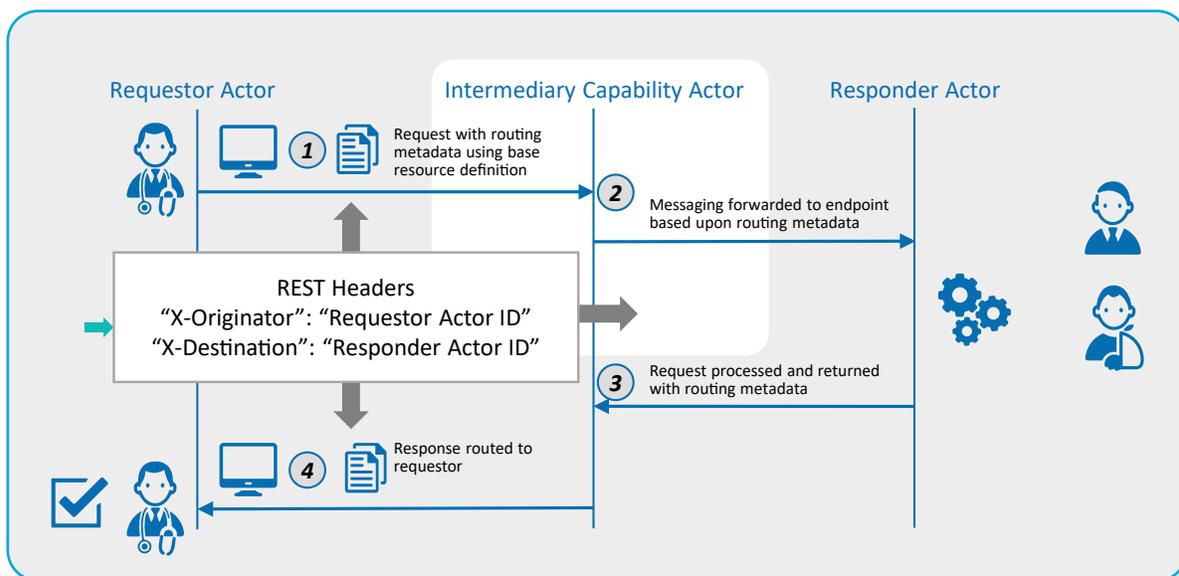
To learn more about the *FAST* solutions development process as well as the objectives and meeting materials for each SME Session, please visit the [FAST Proposed Solutions – Subject Matter Expert Panel Sessions](#) Confluence pages.

Solution Overview

The *FAST* team reviewed proposed solutions that focus on enabling consistent and reliable transaction exchange, and are designed to support a hybrid environment where both point-to-point and intermediary models will continue to co-exist in the industry. Within the context of transaction exchange, metadata refers to the routing information that is carried along with the transaction so that it can reliably route across multiple intermediaries (eg, clearinghouses, HIEs, etc.), or “hops,” and arrive at the appropriate destination.

The team proposed two solutions for exchanging metadata:

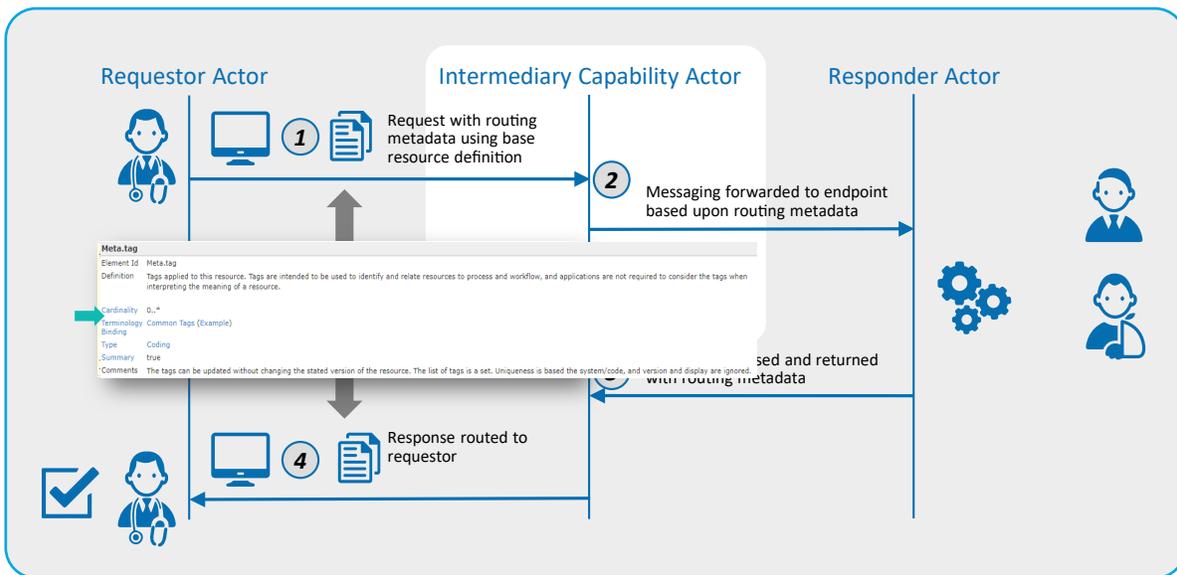
1. RESTful Headers





In this proposed solution, routing metadata (eg, X-Originator and X-Destination) is placed in the RESTful¹ header so that intermediaries can determine where to deliver the message and response. One advantage to this solution is that this is a common, lightweight pattern that has been used in healthcare and other industries for many years. Another advantage is that this solution is universal, and can be used regardless of FHIR transaction (eg, if there are no FHIR resources being exchanged in a search or match transaction, routing information is still available).

2. Meta Tags in Base FHIR Resource



In this alternate proposed solution, meta tags within the base FHIR resource could be used to send routing metadata (eg, Originator and Destination). The advantage to this solution is that routing information becomes part of the FHIR resource and can be persisted indefinitely for querying and reporting.

To learn more about the proposed solutions, please review the pre-reading and presentation materials available on the [FAST HL7 FHIR Standard Based Solution for Intermediary Exchange - Expert Panel Discussion](#) Confluence page.

The SME group strongly preferred working toward a single solution, to reduce variability in the industry. Since the RESTful Header approach could be used across more FHIR exchange scenarios, the group favored this solution, though SMEs recognized value in the alternate meta tag solution as well.

SMEs overwhelmingly agreed that the proposed metadata solutions are needed to scale FHIR across the industry and

they are aligned with the direction the industry is moving towards. A strong majority concluded that these solutions are needed to scale FHIR, and only a small fraction indicated they somewhat agreed, citing that a dynamic point to point model would be simpler, more performant, and scale better, even though there are business and technical reasons for some stakeholders to continue using intermediaries. Similarly, most SMEs agreed that the proposed solutions are directionally aligned, with a few SMEs commenting that the RESTful header solution is more aligned with where the industry is headed than the meta tag solution.

¹**REST** (Representational State Transfer) is a software architectural style that defines a set of constraints to be used for creating Web services and promotes interoperability among computers and third-party applications.



Discussion Topics

The group dove into various requirements for data transmission between exchange participants and intermediaries using FHIR. Deliberations were organized around five discussion topics, which are summarized as follows.

1. Immutable Transactions

The team briefly discussed how the proposed solutions assume that FHIR transactions are immutable transactions. These are transactions whose data cannot be modified at a “hop,” or transfer point such as an intermediary (eg, clearinghouses, HIEs, etc.), between the sender and receiver. The group noted that transactions may be immutable in flight but headers may not be. Because not every hop is tracked, the receiver should be readily able to discern whether the transaction was authentic and unchanged from the original author or whether it was changed by an intermediary during its journey.

2. “Lightweight” Provenance

The team also discussed the threshold levels that are needed to ensure provenance of the data, minimize burden, and meet varying industry use cases. The team proposed a “lightweight” provenance solution where the “floor” represented the baseline as required under the Interoperability and Patient Access [final rule](#) issued in March 2020 by CMS, and could be included in meta tags within the base FHIR resource. The proposed “ceiling,” or full Provenance data as described in the [US Core Provenance Profile](#), could be requested as needed.

SMEs expressed concern that the Provenance resource should be used as intended. Taking the SME group’s feedback into consideration, the *FAST* team determined that any additional solution work on Provenance should be deferred for now.

3. Implementation Effort

The level of effort for implementation could vary significantly depending on what is being done, the organization, and the status of its FHIR-based infrastructure. If just headers and provenance are being added, it would be a minimal lift for organizations with a robust FHIR-based infrastructure. Other organizations – including small providers or payers without a robust FHIR-based infrastructure – would need a year or more for implementation. The group agreed that implementation was not so much of an issue in and of itself; the key is getting the infrastructure in place. Because there are so many organizations at various points on the FHIR adoption continuum, it could take multiple years to achieve widespread organizational alignment and testing across the industry.

SMEs also observed that certain requirements and implementation considerations may differ by use case (eg, asynchronous vs. synchronous exchanges or unsolicited exchanges) and suggested that the team consider providing implementation-level use case detail for the industry to further assess the solution.

4. Adoption Considerations

Education will be essential to bringing along organizations that are not FHIR-based or that lack a robust FHIR-based infrastructure. There was also a call to consider any concerns about alignment with regulations implementing provisions of the Health Insurance Portability and Accountability Act (HIPAA), such as privacy and security. The group noted that HIPAA does not directly apply to certain stakeholders, such as third-party vendors. Although such entities may be brought under HIPAA through trading partner or business associate agreements, the team agreed that regulatory considerations may be needed in the future to clarify their roles and responsibilities under HIPAA. Other oversight, certification, and regulatory actions also may need to be considered to vet third-party vendors.



5. Support for Implementation Guide Efforts

The *FAST* team sought SME input on the appropriate path forward for creating and maintaining industry guidance on the proposed solutions.

The group discussion did not arrive at a specific conclusion, but agreed that it would make the most sense for the *FAST* team to transition their solution work to a standards development organization. They noted the importance of determining a funding model to support ongoing solution development efforts, as well as the need to convene solution stakeholders across multiple domains, including security.

Moving Forward

After a productive SME session, the *FAST* team analyzed the feedback they received and incorporated what they learned into the next iteration of their solution documentation. At the time this report was written the team had further developed their action plan and is seeking industry feedback and consensus through the HL7 balloting process, targeting the May 2021 ballot cycle. SME recommendations were taken into account, and the team is taking the following actions:

Immediate Actions

- Focus efforts on the preferred solution, RESTful headers
- Transition solution to the path identified for execution, HL7
 - An HL7 Project Scope Statement has been reviewed and approved by the HL7 FHIR Infrastructure Workgroup to initiate an Implementation Guide development project with HL7
 - Test the proposed RESTful header solution at the January 2021 HL7 FHIR Connectathon

- *FAST* solution documentation has been updated to:
 - Outline the use cases where meta tags could optionally be used
 - Indicate that the team considered the option of using meta tags as a way to convey a lightweight lineage, but based on SME input the team recommends using the standard Provenance model

Path Forward

- Explore dependencies with other *FAST* solutions through Connectathon testing and pilot planning
- Explore implementation models
- Consider adoption drivers, including regulatory considerations