



FHIR at Scale Taskforce (*FAST*)

SME Session Summary Report

Scaling Requirements for FHIR RESTful
Exchange in a Hybrid Environment

December 6, 2021



Meeting Introduction

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

More than two dozen SMEs from across the healthcare ecosystem participated in the *FAST* Scaling Architecture Proposed Solution Expert Panel on December 6, 2021. They provided feedback based on their individual expertise and domain knowledge. The scalability needs and challenges of a broad range of stakeholders were represented, including interchange associations/Health Information Exchanges (HIEs), The Office of the National Coordinator for Health Information Technology (ONC), providers, payers, electronic health record (EHR) vendors, and technology vendors.

The SMEs shared their input with *FAST* facilitators concerning opportunities and challenges related to:

1. The approach, architecture, and scope of performance expectations that both intermediaries and endpoints should agree to support to ensure predictability of transactions
2. The role of intermediaries in supporting trust networks
3. Testing and certification of intermediaries
4. Regulatory adoption and enforcement of interoperable solutions

Feedback received through the SME Sessions will advance the Taskforce’s proposed solutions into actionable recommendations and support project prioritization as *FAST* transitions to an HL7 FHIR Accelerator.

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.

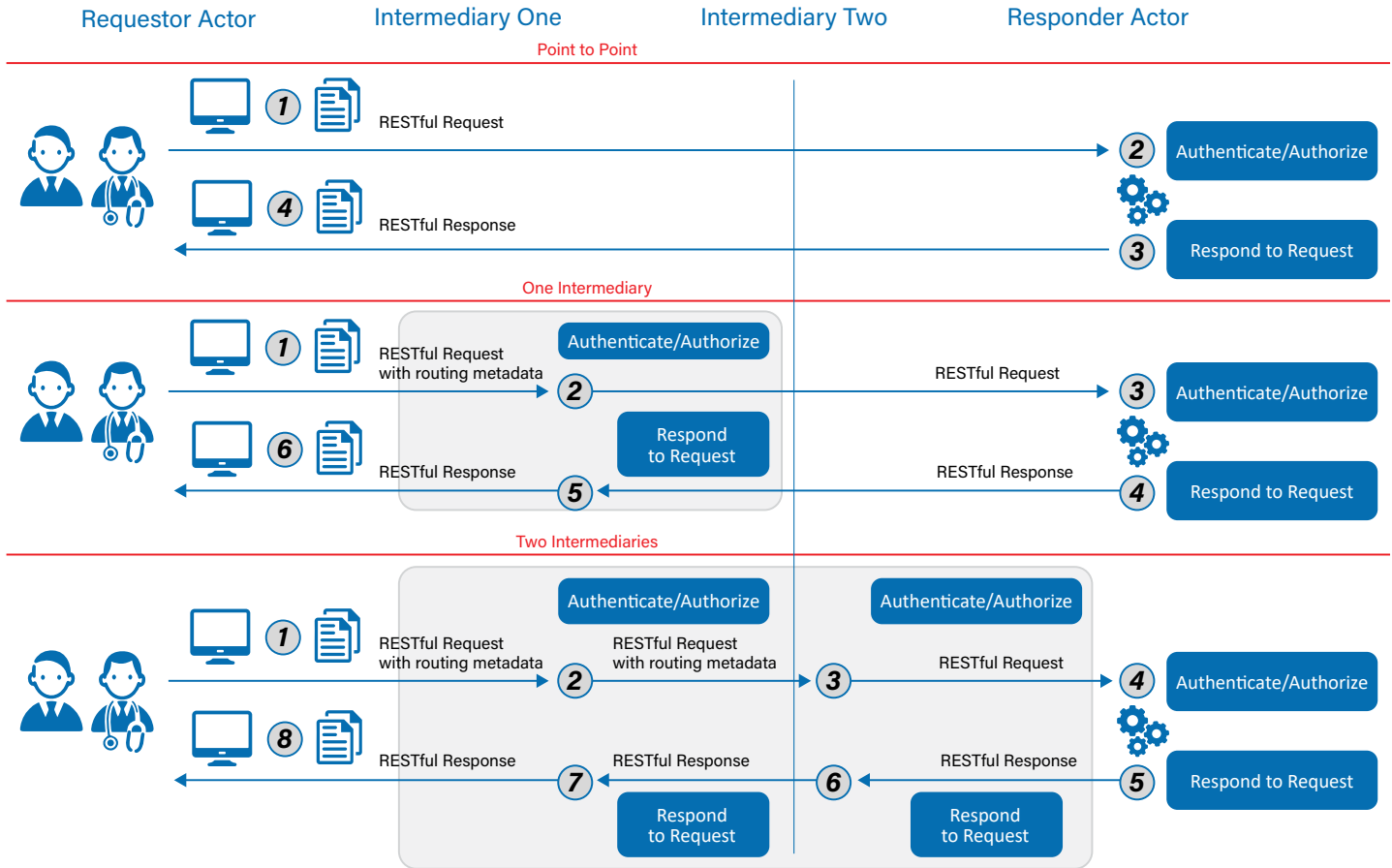
Solution Overview

The *FAST* team is proposing a solution that will support a hybrid environment moving forward, including point-to-point, gateway, and intermediary models. Minimum availability and performance requirements need to be established for any scale architecture including one or more intermediaries, with the requirement to support synchronous transactions and maintain “state” across intermediaries (i.e., systems remember preceding events that occurred across multiple systems or actors). Intermediaries will need to support all FHIR workflow operations and be capable of handling volume, response time, and routing to all available endpoints. Consistent support of metadata is also needed for routing through multiple intermediaries. Finally, testing will validate conformance with these exchange and Service Level Agreement (SLA) requirements.

The goal is for ubiquitous access to permitted endpoints regardless of the architecture (i.e., point-to-point, one intermediary, or multiple intermediaries). The performance reliability and availability characteristics should be substantially the same for intermediary connections and point-to-point connections and must be acceptable for real-time information exchange where there is a provider/patient waiting for the response before clinical workflow can continue. The ultimate application user, system, and API endpoint should see the rest of the world as a consistent set of endpoints, regardless of whether there is one or more intermediaries sitting in the middle of the exchange.

Intermediaries will be needed to scale FHIR across a growing number of healthcare ecosystem participants in anticipation of future healthcare needs and increased transactions embedded in clinical workflows. Yet there are no “rules of the road” for intermediaries to meet minimum requirements for performance, availability, or response times in support of synchronous end-to-end real-time data exchange.

To learn more about the proposed solution, please review the pre-reading and presentation materials available on the [FAST Scaling Requirements for FHIR RESTful Exchange in a Hybrid Environment - Expert Panel Discussion](#) Confluence page.



Discussion Topics

The group spent an afternoon discussing the proposed solution and related technical and regulatory aspects. In general, SMEs believed that some minimum level of standards are necessary to ensure interoperability, and those standards should apply to all endpoints, not solely focused on intermediaries. However, SMEs wanted to leave specific requirements to the market, through mechanisms that exist today such as trust communities and business agreements between exchange partners. The discussion focused on the following topics.

1. Scope of the Solution

The goal is to create a foundation on which the various exchange models can co-exist and there is reliability in performance, regardless of the model. SMEs suggested clarification is needed, whether the recommended solution is intended to define governance and policy, or the technical workflows and routing capabilities. The SMEs generally agreed that FAST should focus on technical architecture issues, defining how RESTful FHIR transactions flow. Some participants suggested that the governance and policy issues should be handled by the network or trust community that exchange participants belong to, whether that be a regional or future national trust framework.



2. Intermediary Definition

The SMEs agreed that the definition of an intermediary needs to be refined. The group generally agreed that an intermediary exchanges data on behalf of an organization or other sets of organizations. There are distinctions, however, depending on the actors involved, the data being exchanged, and whether that data is retained, acted upon, or only routed to another recipient. SMEs agreed that it is important to document these distinctions so that it is clear whether specific entities will need to adhere to the rules being proposed for intermediaries.

3. Parameters of Service Level Agreements

The SMEs agreed that Service Level Agreements (SLAs) should be use case specific and are essential to ensuring that requirements are met. The danger of not having an SLA is that users will not have assurances on the expected performance levels which could diminish adoption and usability of the FHIR-based interactions. However, there was concern regarding setting specific rules within implementation guides or potentially regulation that could not easily be adjusted. The group's inclination was to set some minimum base level standards or a framework, but leave the specific performance and availability requirements to the trust networks or business agreements between exchange partners.

Considerable discussion surrounded the need for a trust mechanism for SLAs, whether that be through business agreements outside of a network, inside an existing trust community, or inside a network that is part of a national framework. Some SMEs expressed concerns about reliance on a national trust network, since one currently does not exist. That said, some SMEs insisted that entities will need to join a trust community/network/framework and operate within it, a viewpoint that reflects their organizational perspectives.

4. Intermediary-to-Intermediary Connectivity

There was discussion about intermediary connectivity to other intermediaries. Should they be required to connect with each other? Should intermediaries be aware of other intermediaries as data are being routed? SMEs believed that intermediaries should not be treated differently from any other endpoint, which do not have requirements to connect to each other. Again, the SMEs suggested the answers depend on the trust frameworks the intermediaries participate in – intermediaries are required to connect with each other if they participate in the same network or framework, but should not be required to connect with other intermediaries participating outside of their trust communities.

5. Testing and Certification of Intermediaries

The SMEs believed intermediaries should adhere to the same requirements as all other endpoints in testing and certification. If there are specific tests for various actors (e.g., initiators or responders), then any endpoint acting in those roles would need to complete the same tests regardless of whether it is an intermediary or not. Other SMEs noted that there may be use cases intermediaries need to support that typical responders may not, and that testing and certification needs to be more granular. SMEs generally agreed that testing and certification is needed to verify that all endpoints provide secure services, compliant functionality, and can achieve/uphold their service agreements and interoperability claims.



Moving Forward

The *FAST* Team is analyzing the feedback they received. Results of this meeting will be incorporated into the next iteration of their solution documentation as needed, and will inform which recommendations will be prioritized for further solution development work.

Next Steps

- Clarify the definition of an intermediary, including the nuances regarding the different roles and functions intermediaries play
- Assess what aspects of the proposed solution should be further developed to meet the “minimum level of standards necessary to ensure interoperability” proposed by SMEs
- Explore how the concept of trust could be built into the proposed solution for exchange participants who may not be members of an existing trust community or framework, or may be members of different trust communities or frameworks
- Clarify the differences between endpoint and intermediary requirements as the proposed solution is refined
- Collaborate with the *FAST* Testing & Certification Tiger Team to discuss testing requirements