ICAO CAPACITY & EFFICIENCY

Enabling SWIM Service Composition with REST-based API

WP10

Presented to: The Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7)

Presented by: Federal Aviation Administration (FAA), USA

Bangkok, Thailand, 09 – 12 May 2023

Agenda

1. Introduction
2. Discussions
   - SWIM Discovery Service (SDS)
   - Open Geospatial Consortium (OGC) Testbeds
3. Actions by the Meeting

1. Introduction

- Service Oriented Architecture (SOA) as foundation for SWIM
  - Reusability independent of technologies, programming languages, or platforms
- Representational State Transfer (REST) as design principles of World Wide Web
  - Standardized protocols and operations further reduces the barriers of communications via Web Services
- Motivation for exploring REST as SWIM evolves
  - Delivering context-driven information to consumers
  - Improving developer productivity and service deployment
  - Achieving global interoperability

2. Discussions

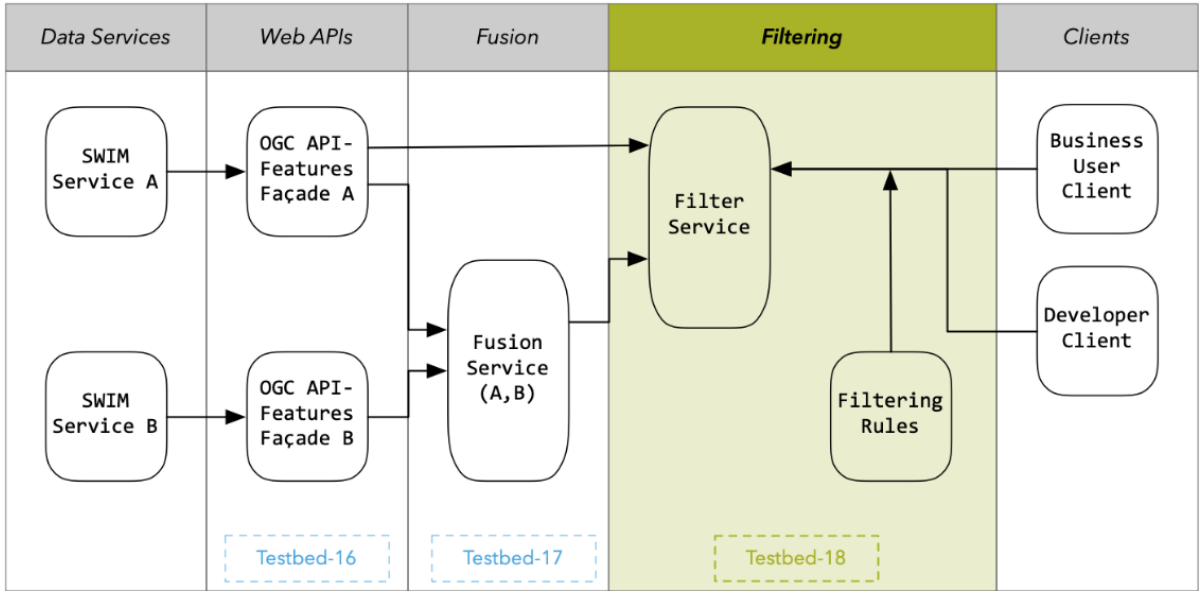
SWIM Discovery Service (SDS)

- Joint effort to facilitate the exchange of service metadata
  - Architectural perspective – Individual discovery services are composed together via REST APIs
  - User's perspective – Querying a network of interconnected discovery services to discover information
- Web services consistent with the REST principle
  - Resources are defined and uniquely identified using URI
  - Open API allows a new SDS implementer to jump start the development effort

2. Discussion

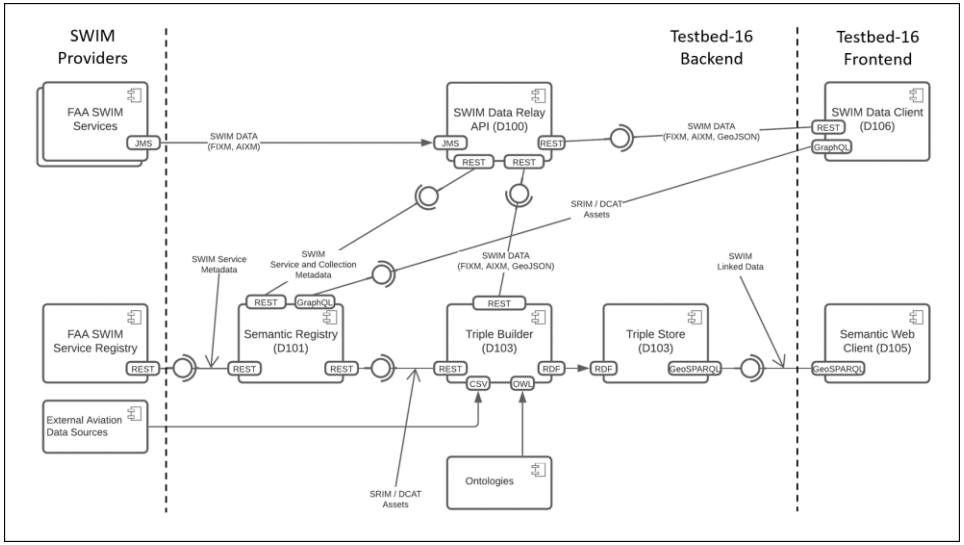
OGC Testbeds

- FAA and OGC explored how standard-based API can enhance SWIM data distribution
  - Engineering Reports (ER)
  - Live demonstrations



2. Discussion

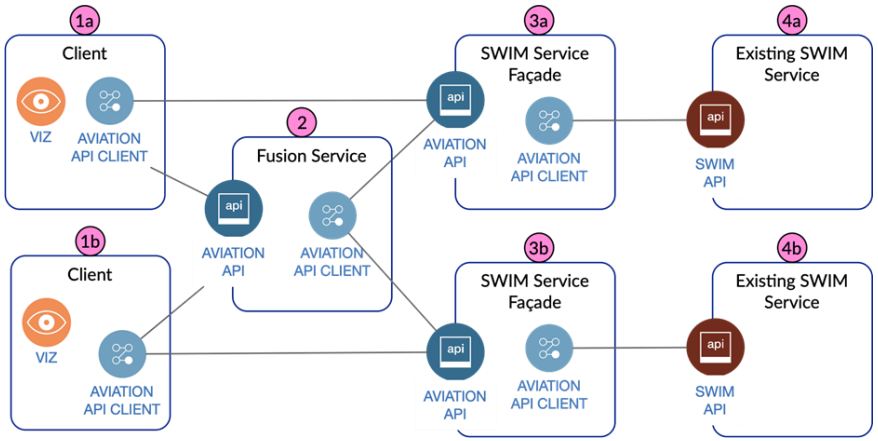
Foundation for REST API in Testbed 16



- Use of OpenAPI improved developer productivity
  - 5 different organizations
  - 6 different software components
  - Completed in a few months
- Lessons Learned
  - Need for defining “features”
  - Need to handling large data volume.

2. Discussion

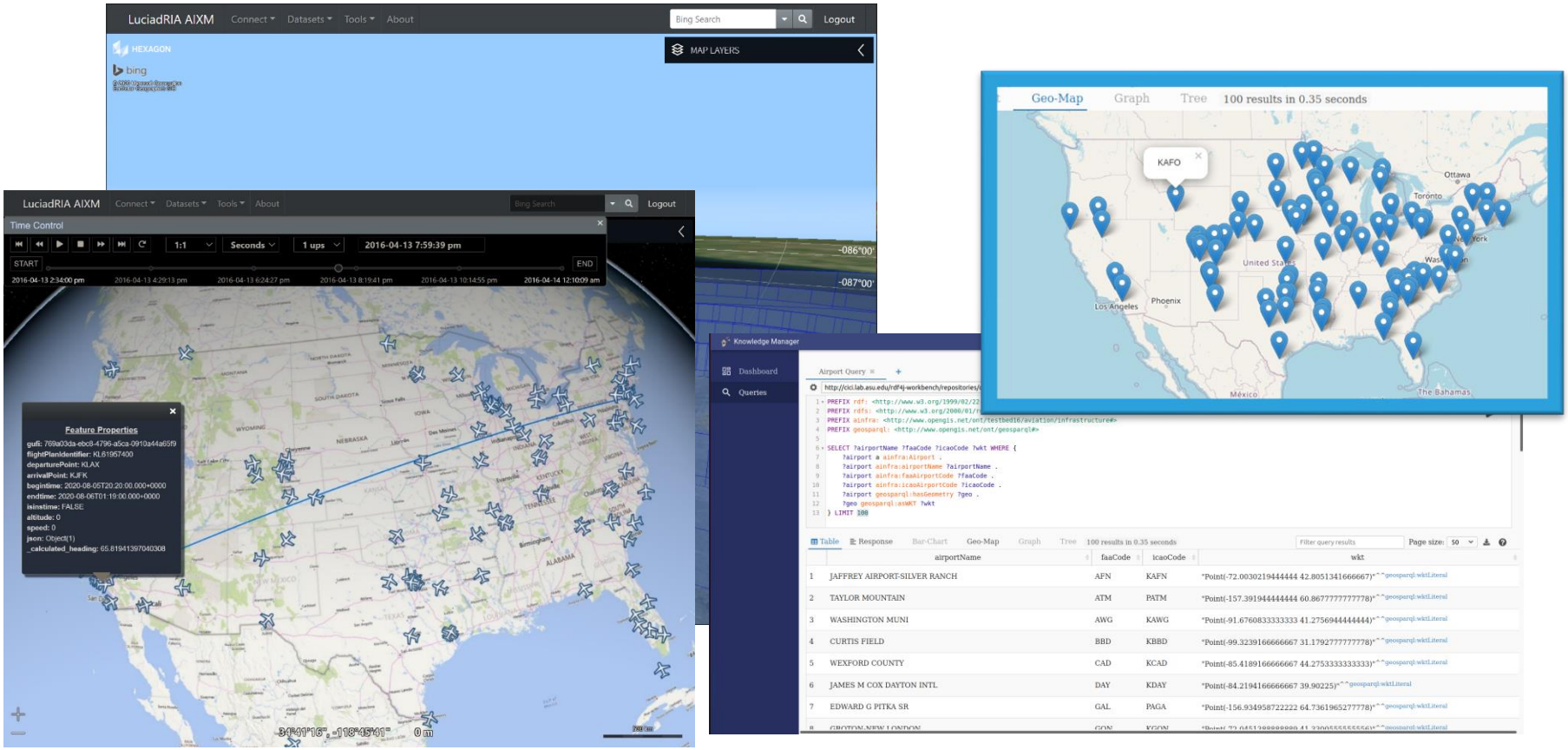
Service composability in Testbed 17



- Two fusion scenarios
  - Flight Restrictions Data Fusion Service with multiple FAA SWIM services
  - International Flight Data Fusion Service fused flight plans across US and European airspaces
- Two demo perspectives
  - Fusion developers
  - Business Users
- Lessons Learned
  - Combine data elements from multiple sources and resolve discrepancies

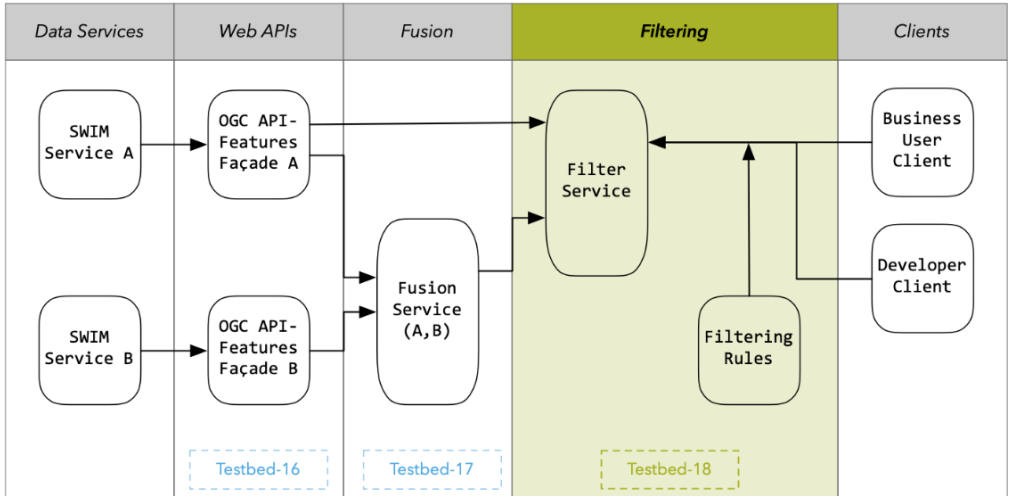
2. Discussion

Business and Developer Clients



2. Discussion

Filtering mechanisms for feature data in Testbed 18



- A subset of the data provided by a SWIM service
- Decoupling filtering rules from data services

3. Actions by the Meeting

- Note the information contained in this paper
- Discuss any relevant matter as appropriate

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