

*Global Information
Management*

**SWIM Common Registry
(SCR) Conceptual Vision
and Architectural
Considerations**

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Agenda

- Introducing SCR
- Objectives
- Context
- Problem
- Architectural Considerations
- Architectural Solution
- Current and Planned Activities
- Status of SWIM Registries

Introducing SCR

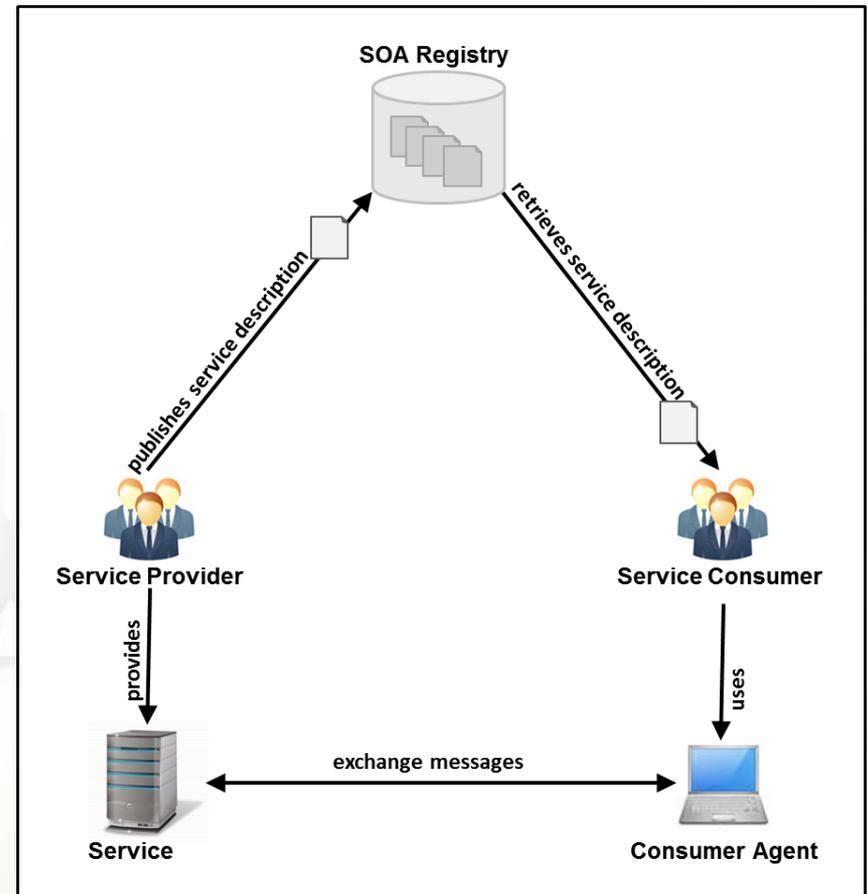
- The SWIM Common Registry (SCR) is envisioned as a comprehensive, systematic, and dynamic mechanism for publishing, discovering, and understanding information about ATM SOA-based services that currently are catalogued in two separate service registries: the SESAR European SWIM Registry and the FAA NAS Service Registry/Repository (NSRR).
- The SCR is being developed as a joint effort of both SWIM programs under the umbrella of the SESAR Joint Undertaking (SJU) Coordination Plan (CP) 2.1.

Objectives

- To facilitate exchange of information between two SWIM communities, by making services -- regardless of original organizational affiliation -- readily discoverable, easily identifiable, and consistently understandable.
- To support reuse and composition in the development of SWIM-enabled services and to support software developers in building interfaces to services.
- To serve as a foundation for further advancement of SOA Governance efforts within interoperability frameworks, legislated by both European and USA governmental and international aviation organizations.

Relevant Concepts

- A *service registry* is an authoritative, centrally controlled catalog of *service descriptions*. A *service registry* usually allows service descriptions to be retrieved as a result of a query.
- A *service description* (referred to in the context of SCR as a *meta-card*) is a collection of information about a single service that is needed to use, deploy, manage and otherwise control that service.

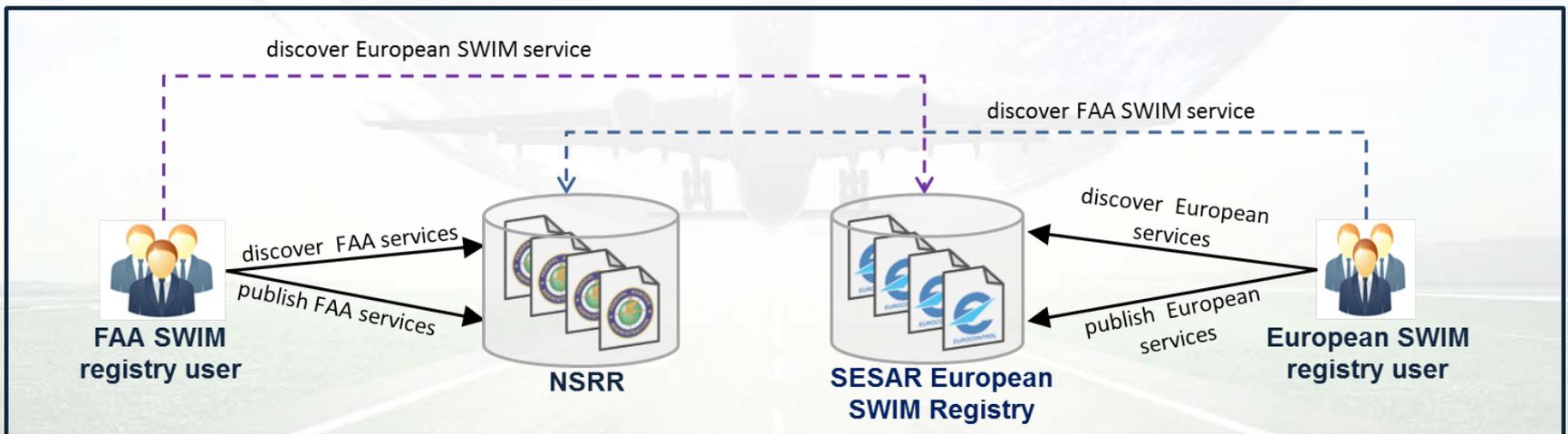


Context

- Both FAA and SESAR implementations of SWIM have established their respective registries: the *NAS Service Registry/Repository (NSRR)* and the *European SWIM Registry*. They are very similar in terms of conceptual vision and set of basic functionalities.
- Both registries are:
 - Components of the same information domain (ATM SWIM-enabled services)
 - Design-time registries
 - Registries/repositories
 - Designed to support SWIM Governance processes

Problem

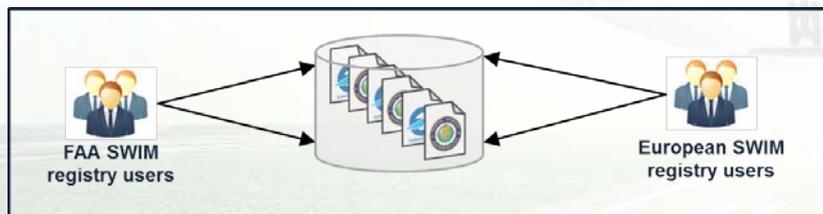
- The information stored in the registries cannot easily be integrated, correlated, or compared.
- The lack of technical, semantic, and organizational interoperability prevents SWIM registries from sufficiently exchanging service meta-data and will have a negative impact on potential reuse of SWIM-enabled services.



Architectural Alternatives

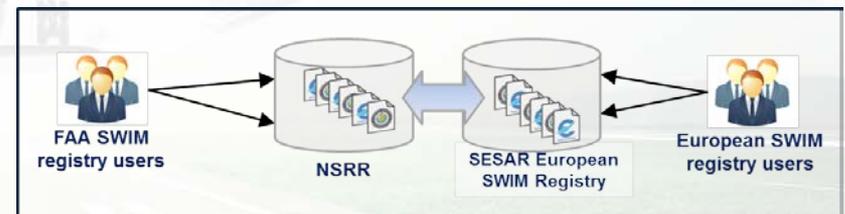
Integration

The two registries are combined into one fully integrated system at the physical, application and business levels, i.e., they will form a single registry shared by both SWIM organizations.



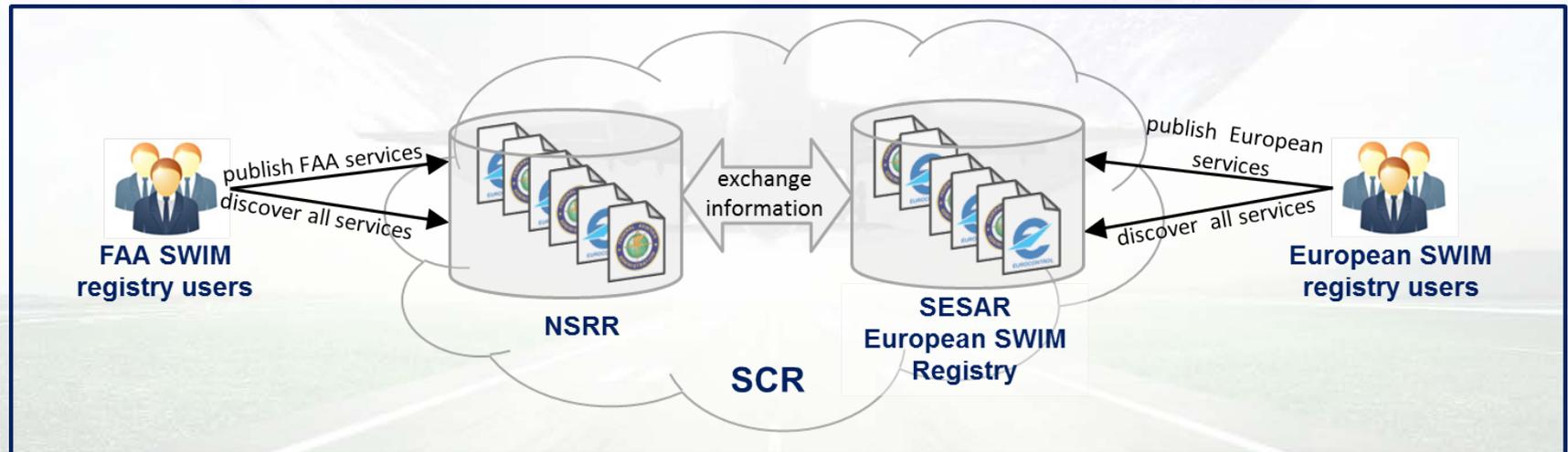
Interoperation

The two registries are connected by a communication network and will exchange information through a common interface while continuing to implement locally their own work flow and governance logic.



Architectural Solution

- The SCR will be implemented as an integration of two autonomously functioning service registries capable of exchanging service metadata, i.e., replicating each other's contents.
- Each registry will be able to ingest service information made available by the other registry and present it as a common view to SWIM stakeholders.



Addressing Interoperability

SCR uses the interoperability model established by the [European Interoperability Framework \(EIF\)](#).

<i>Type of Interoperability</i>	<i>EIF Definition</i>	<i>Implementation in SCR</i>
LEGAL	Aligned legislation so that exchanged data is accorded proper legal weight.	SCR will comply with legal regulations established, or adopted, between both SWIM organizations.
ORGANISATIONAL	Coordinated processes in which different organizations achieve a previously agreed and mutually beneficial goal.	Shared set of rules and policies for registering and presenting service information will be developed and followed by both SWIM organizations.
SEMANTIC	Precise meaning of exchanged information which is preserved and understood by all parties.	Common sets of vocabularies will be developed and/or adopted by both SWIM organizations.
TECHNICAL	Planning of technical Issues involved in linking computer systems and services.	Public internet with ubiquitous Internet protocols will be used for communication between SCR components.

Current and Planned Activities

- An interface between registries will be identified and an interface specification will be developed. A common system of service identification in the context of SCR will be established.
- A common service description conceptual data model ([SDCM](#)) has been identified and adopted. An exchange model(s) will be developed based on the interface technological solution.
- A shared semantic vocabulary will be adopted or jointly developed. A common set of taxonomies, to leverage searches across the registries, will be agreed upon.
- A set of rules and policies for registering and presenting service information will be developed.

SWIM Registries: Status

SESAR SWIM Registry

The SESAR European SWIM Registry is currently implemented as a prototype in the scope of SESAR's research development phase, and it has been identified for early deployment as part of SESAR deployment in 2016.

NSRR

The NSRR is currently undergoing a major update. The new version, NSRR 2.0, will be able to support potential SCR requirements. The first release of NSRR 2.0 is expected in early 2016.

Both registries are implemented using the same web application open-source development platform.

Where to Find More Information

References

[Concept of Operations for the SWIM Common Registry \(SCR\)](#) ,Draft, April 2015

[SWIM Common Registry: Concept, Architecture, and Implementation](#), White paper, June 2014

[Service Description Conceptual Model \(SDCM\)](#), Working Draft, March 2014

Points of Contact

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