EUROCONTROL

SWIM TI Yellow Profile

What is the SWIM Technical Infrastructure?

The SWIM TI is a collection of software and hardware used to enable the provision of information services. Applications consume information services via a SWIM TI that enables the exchange of information over an IP network (either the public internet, or a private network e.g. PENS). Both the service provider (responsible for the information service), and the service consumer (responsible for the consuming application) are responsible for the implementation of their own infrastructure. Only a few components such as the PKI are required to be deployed externally to the stakeholders' infrastructure as common infrastructure components.

What are the capabilities provided by the SWIM TI?

The SWIM TI enables the secured and reliable exchange of information based on infrastructure capabilities that include:

- **Messaging Capabilities:** Enable the actual exchange of information enabling various exchange patterns (e.g., publish/subscribe, request/reply).
- **Security Capabilities:** Enable the secured exchange of information, including, but not limited to identity access management, digital certificates, encryption, etc.
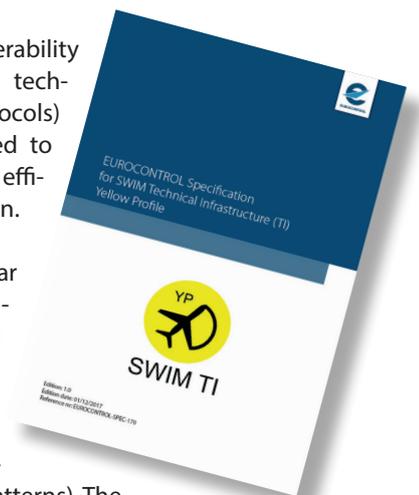
- **TI Management Capabilities:** Enable monitoring of the technical infrastructure for fault and performance, ensuring reliable and high-performing execution of the information exchanges.
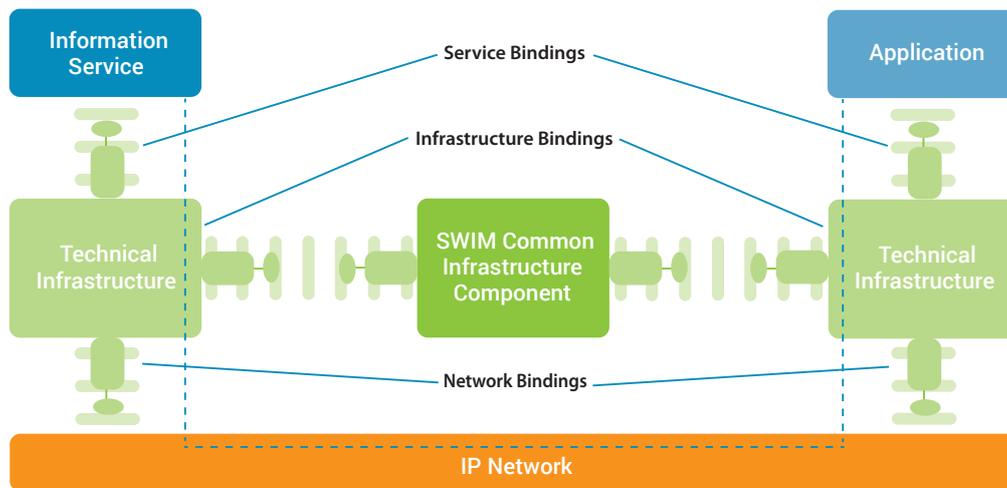
What is SWIM Technical Infrastructure Yellow Profile?

The EUROCONTROL SWIM TI Yellow Profile is a specification that provides requirements for the implementation of SWIM technical infrastructure.

It enables technical interoperability by specifying standardized technical interfaces (e.g. protocols) and the capabilities required to enable a reliable, secure and efficient exchange of information.

The specification is modular and provides different implementation options based on mainstream technology, taking into account a wide range of information exchange needs (e.g. security, information exchange patterns). The specification is intended for use by technical experts designing and implementing systems and services.

EUROCONTROL Specification for SWIM Technical Infrastructure (TI) Yellow Profile

YP
SWIM TI

Edition: 1.0
Edition date: 01/12/2017
Reference nr: EUROCONTROL-SPEC-170

SUPPORTING EUROPEAN AVIATION

FOUNDING MEMBER
SESAR
JOINT UNDERTAKING

NETWORK MANAGER

How the SWIM TI YP contributes to interoperability?

The SWIM TI YP enables technical interoperability by defining a common set of interface bindings that provide consistent, self-contained grouping of interface requirements that specify the protocols and configuration options to be used for the exchange of information between systems. There are three types of bindings:

- **Service Bindings:** Specifying the protocols that are used by the application to interoperate with information services.
- **Infrastructure Bindings:** Specifying the protocols used to interoperate with SWIM Common Infrastructure Components (i.e. PKI).
- **Network Bindings:** Specifying the protocols used to interoperate with the network.

Which technologies are included in the SWIM TI YP?

The specification includes technologies that address the different exchange needs in ATM, and provide a good balance between modern and mature technologies that are widely adopted including:

- The **WS-Light** binding that include technologies that enable the implementation of modern APIs, including the use of REST, OPEN API defined interfaces, and geospatial standards such as WFS.
- The **WS-SOAP** binding that is based on mature technology, and although not that common in new implementations, it is still considered widely implemented and provides the benefits of widely defined and standardized messaging capabilities.

- The **AMQP Messaging** binding that is based on a standardized protocol that allows multiple topologies and enables the asynchronous exchange of information.

What are the key concerns addressed by the SWIM TI YP?

The SWIM TI YP provides requirements for TI implementation taking into account:

- **Technical interoperability:** The SWIM TI YP enables systems to exchange information based on mainstream standards.
- **Information security:** The SWIM TI YP enables the secure exchange of information based on the robust security protocols and best practices.
- **Agility:** The SWIM TI YP enables to the stakeholder systems providing a business agnostic layer that provides flexibility and enables the adoption of off-the-shelf software.
- **Widely adopted standards:** The SWIM TI Yellow Profile is based on technologies that have been standardized and are widely adopted and supported by the industry.
- **Modern and mature technologies:** The SWIM TI Yellow Profile provides a consolidated set of modern and mature technologies that aims at providing a good balance between interoperability and flexibility.
- **Cost efficient implementation:** The SWIM TI Yellow profile uses widely adopted technologies and best practices that lowers the cost of implementation based on the reuse of available products, including open source and wide industry support.