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SWIM - SETTING STANDARDS TOGETHER

Part I: Overview

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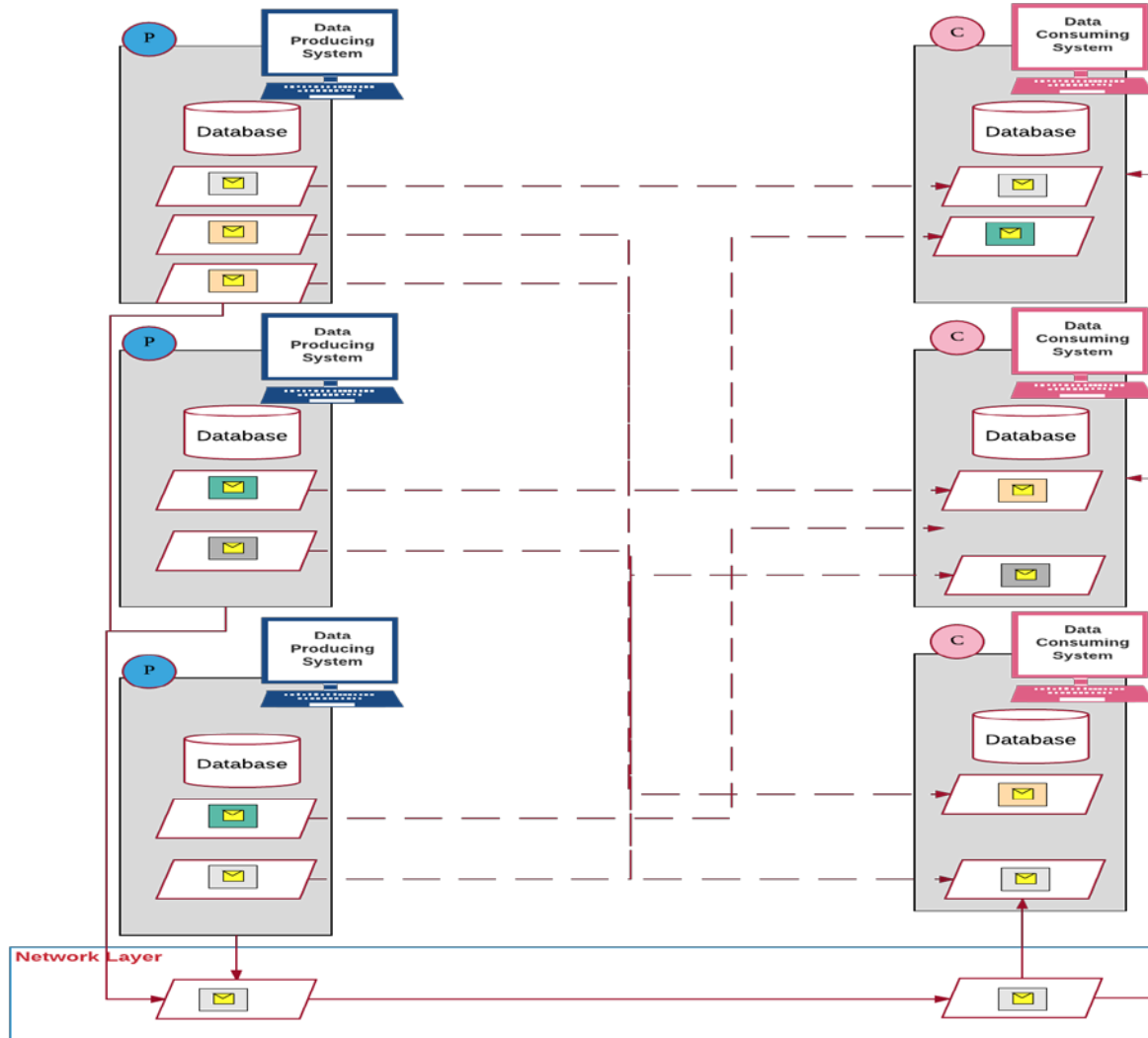
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INFORMATION FLOW

CURRENT STATE

CAN YOU FIND THE INFORMATION?



CURRENT STATE

- › lack of data sharing due to legacy product centric approach
- › extensive data duplication
- › inconsistent data and quality
- › costly 'point-to-point' system-to-system integration
- › different formats, standards, protocols
- › multiple and potentially conflicting data sources
- › systems not designed and implemented to be locally and globally interoperable without significant design changes
- › many and not interoperable interfaces limits to accommodate new users, additional systems, new content or changed formats
- › message-size limitations with the present infrastructure
- › present infrastructure make it difficult and costly for one stakeholder to access, on a timely basis, information originated by another stakeholder

ICAO

DOC 10039 – SWIM Manual

- SWIM consists of **standards, infrastructure** and **governance** that enable administration of Air Traffic Management (**ATM**) information and its exchange between **qualified parties** via **interoperable services**

DOC 9854 – Global ATM Operational Concept:

- The ATM operational concept envisages the application of a system-wide information management concept, where information management solutions will be defined at the overall system level, rather than individually at each major subsystem (programme/ project/ process/function) and interface level, as has happened in the past
- Information management provides accredited, quality-assured and timely information used to support ATM operations. Information management will also monitor and control the quality of the shared information and provide information-sharing mechanisms that support the ATM community; and
- Information management will achieve a seamless transfer of relevant information between parties in a flexible, adaptable and scalable information environment.

SESAR/FAA

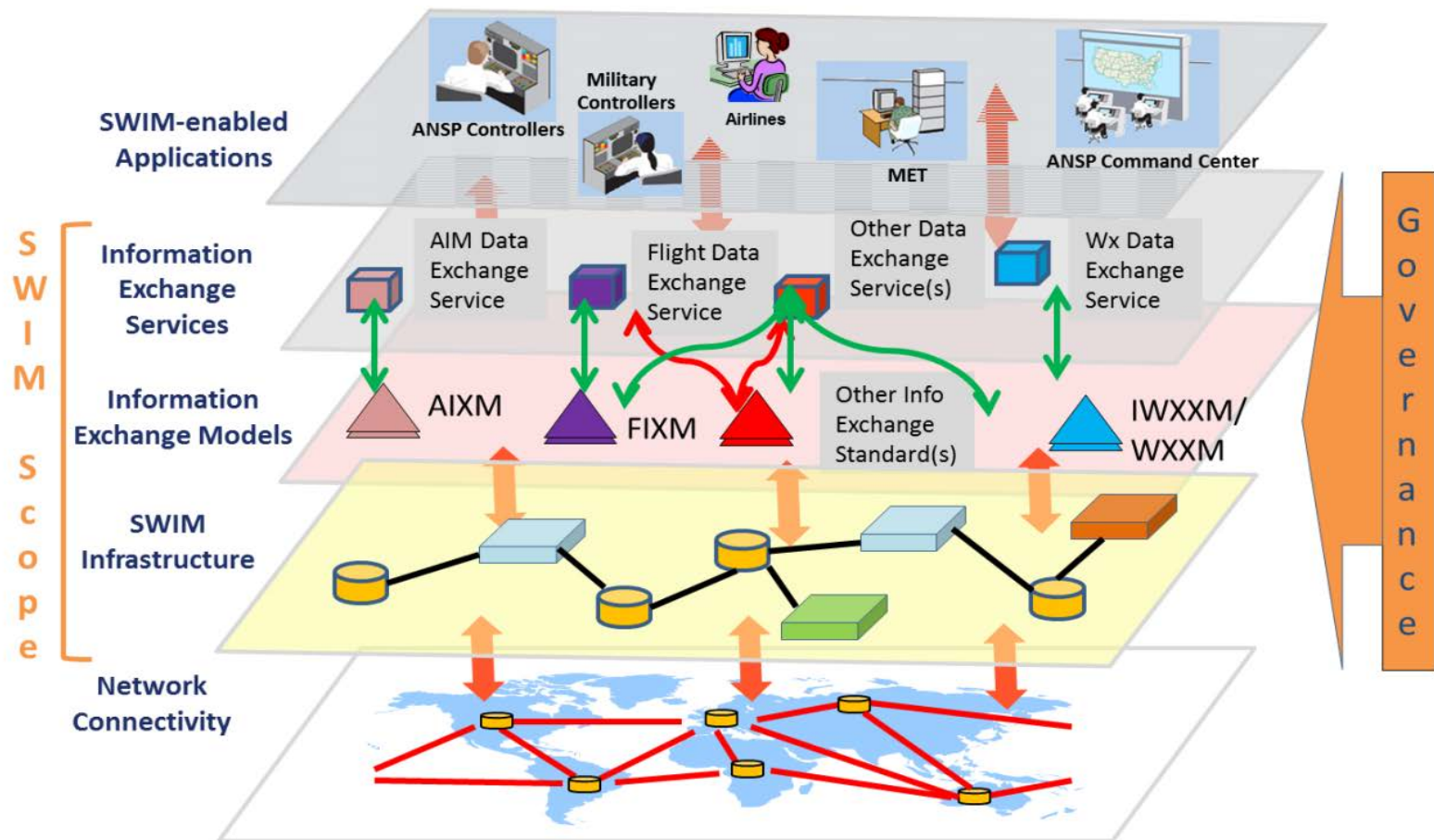
SESAR

- › SWIM consists of standards, infrastructure & governance enabling the management of ATM information and its exchange between qualified parties via interoperable services.



FAA

- › SWIM is the infrastructure that allows members of Aviation community to access the information needed to facilitate an innovative and efficiently run National Airspace System.
- › SWIM makes it possible to have access to real-time, relevant information so user can respond faster, more accurately, creating collaboration opportunities with industry.

SWIM INTEROPERABILITY FRAMEWORK




PRODUCER

- P** **Producer:** A system/application that generates/creates information to be published on SWIM
- I_p** **Information:** The Producer prepares information in one of the formats
 - XML  refers to FIXM, IWXXM, AIXM
 - ATS  refers to current data exchange format (ICAO 4444,TAC)
- A_p** **API Plug-in:** Implements SWIM APIs. It is a computer code to be executed by the Producer to put data onto the SWIM infrastructure (queues)

SWIM

- E** **SWIM Information Exchange Services:** Pub/Sub or Req/Reply gets information from the Producer queues and provides additional SWIM services
- T** **SWIM Transformation Service:** Transforms ATS format into XML format
- R** **SWIM Routing Services:** Distributes information over network onto Consumer queues

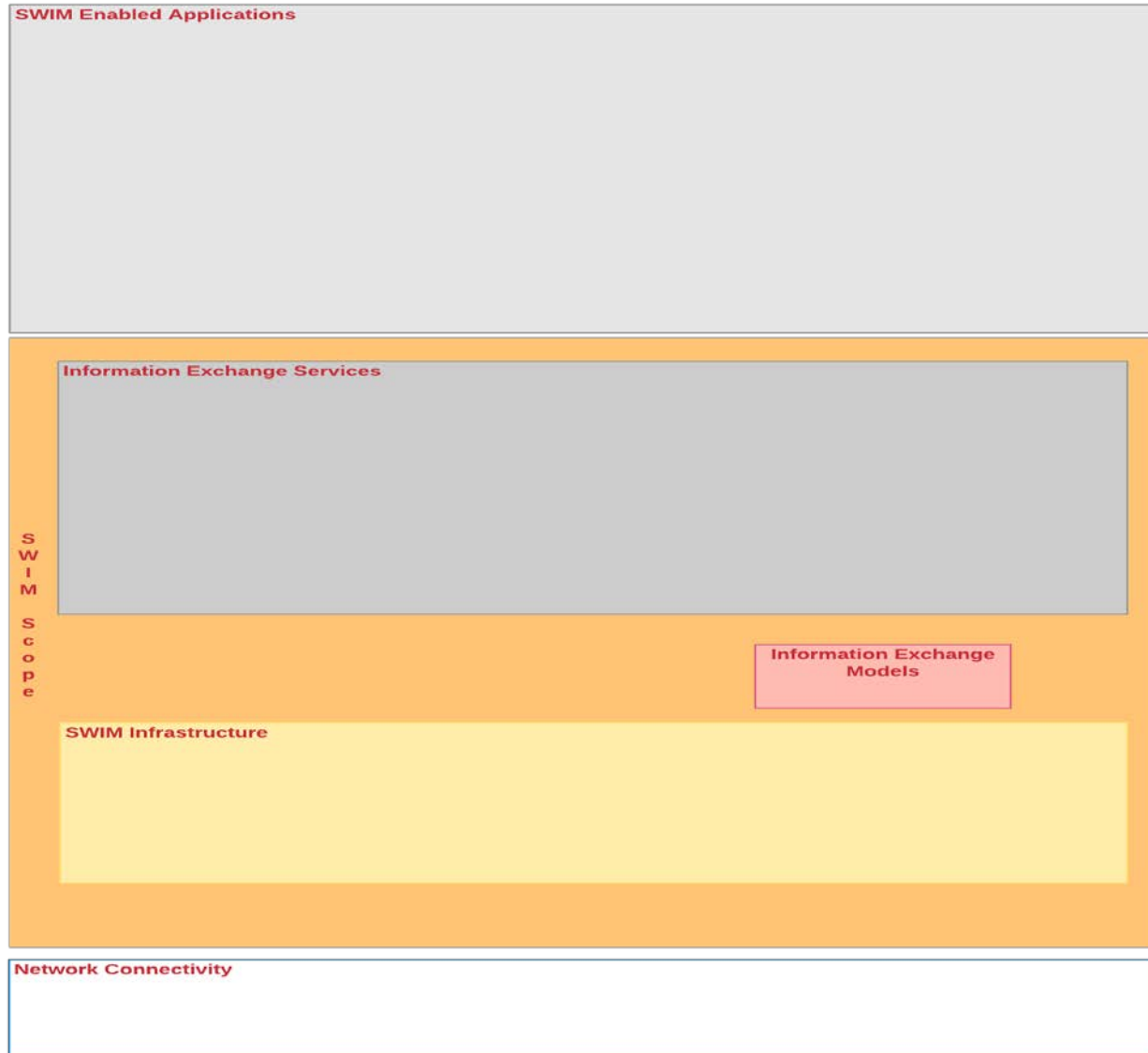
CONSUMER

- A_C API Plug-in:** A computer code to be executed by the Consumer to retrieve information from SWIM infrastructure (queues)
- I_C Information:** The Consumer receives information in XML  format
- C Consumer:** A system/application that uses SWIM information

REGISTRY

- R** Registry enables
- service providers to publicize **Service(s)**
 - consumers to discover services (through **Service Catalogue**), and locate assets (**Service Artifacts**), and
 - make decisions about which ones are best to use among many that might be similarly appropriate or adequate

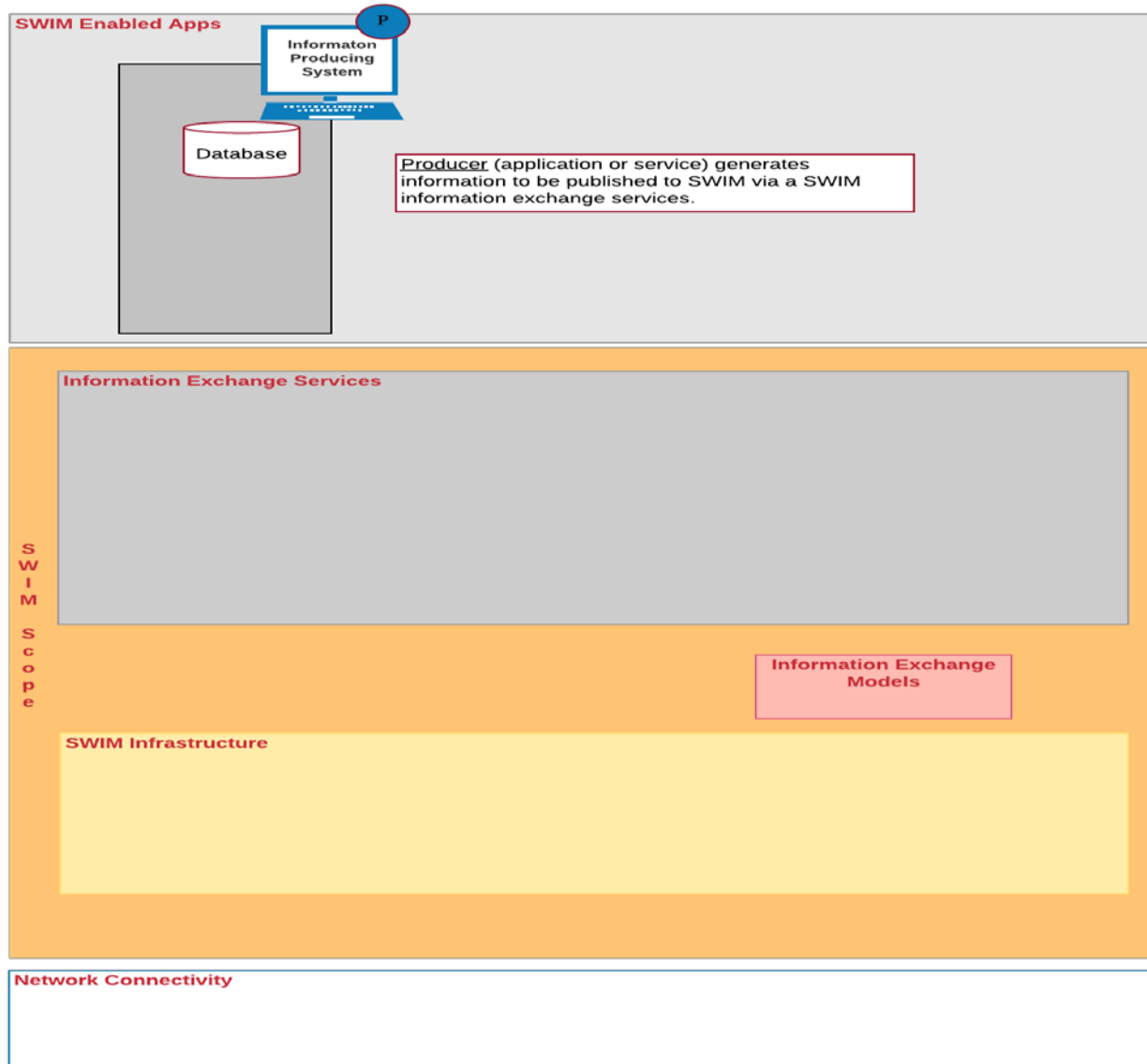
FRAMEWORK LAYERS



SWIM INFORMATION FLOW

PRODUCER

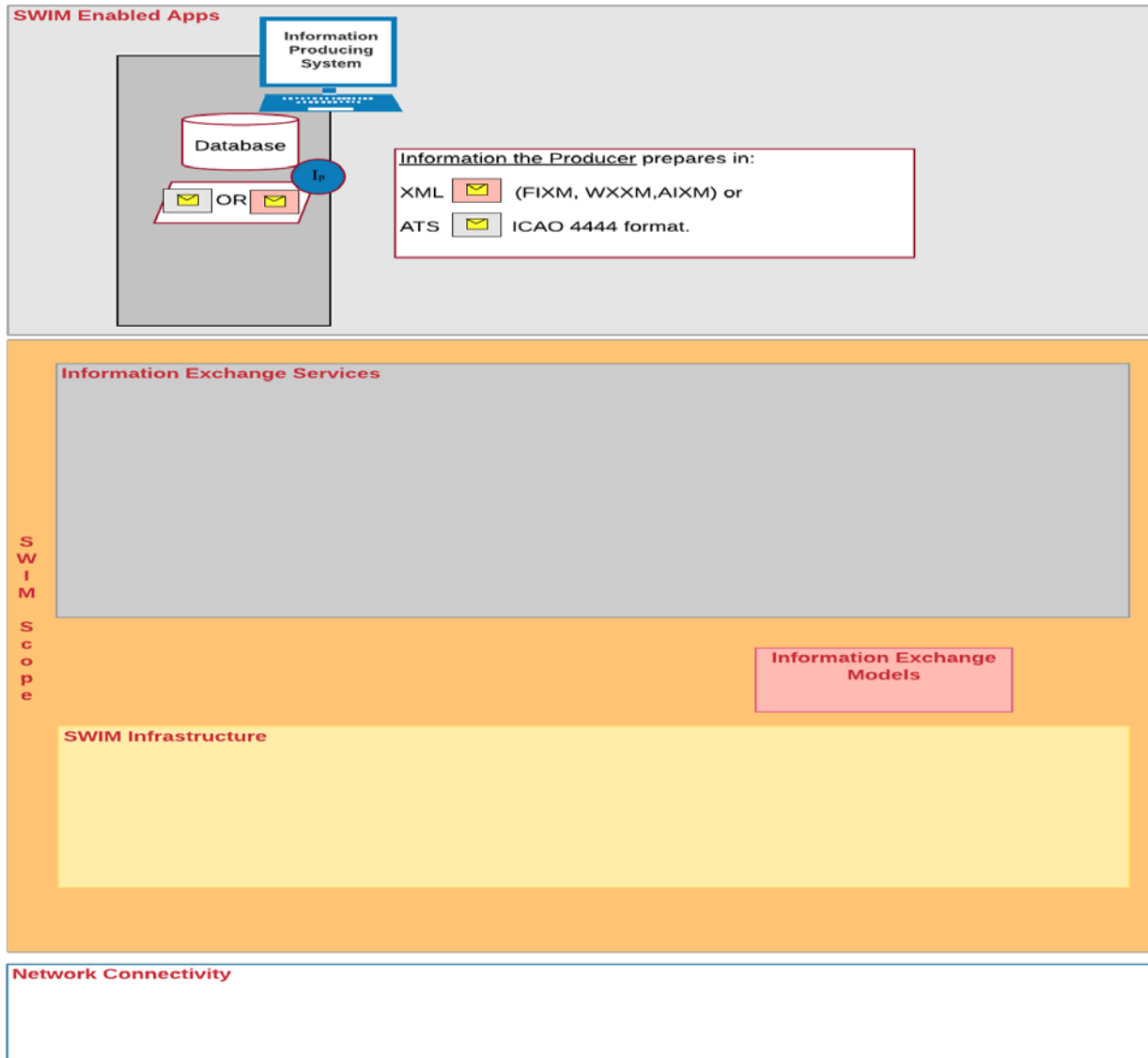
INFORMATION SERVICES



SWIM INFORMATION FLOW

PRODUCER

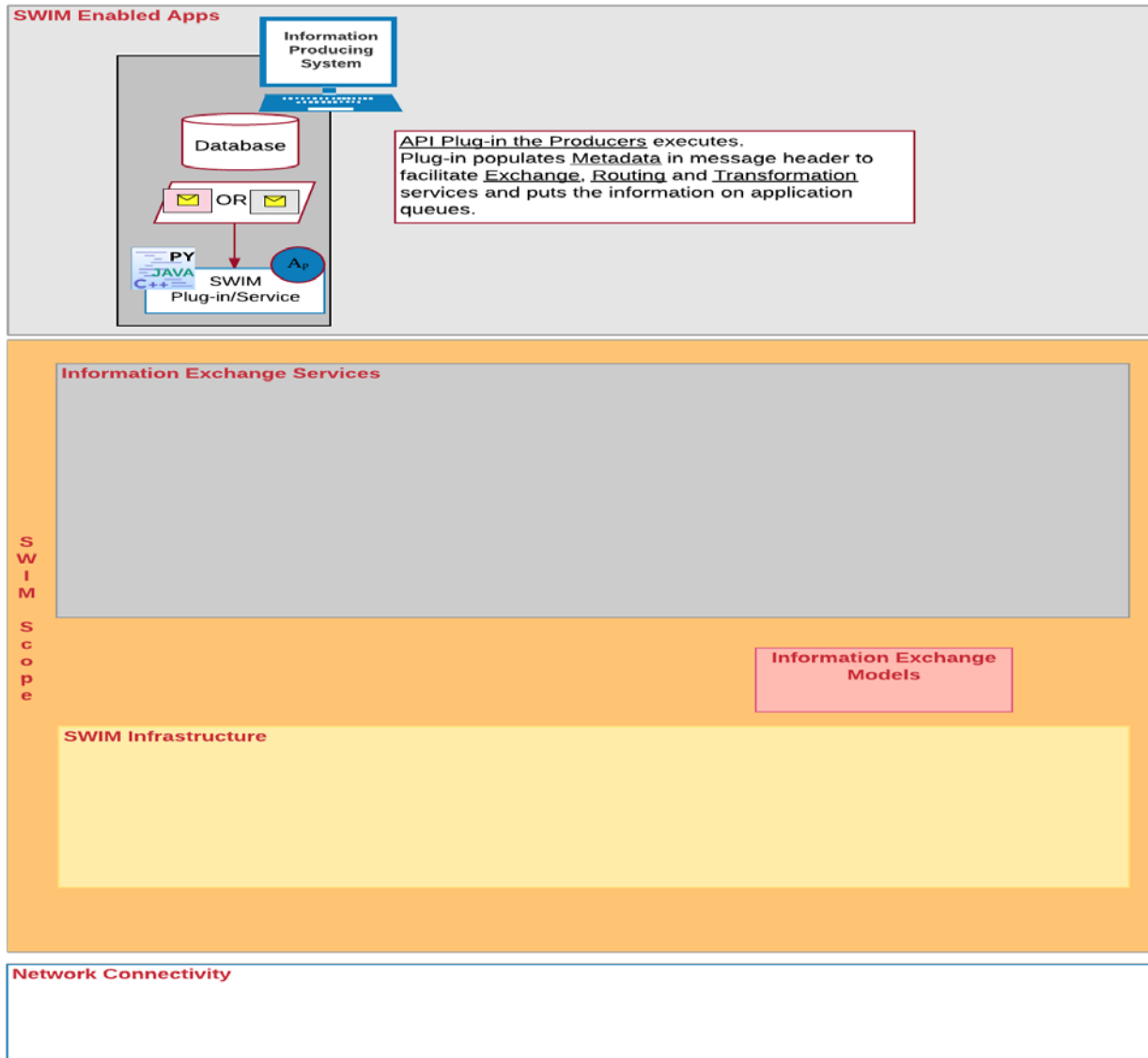
FORMAT OF INFORMATION



SWIM INFORMATION FLOW

PRODUCER

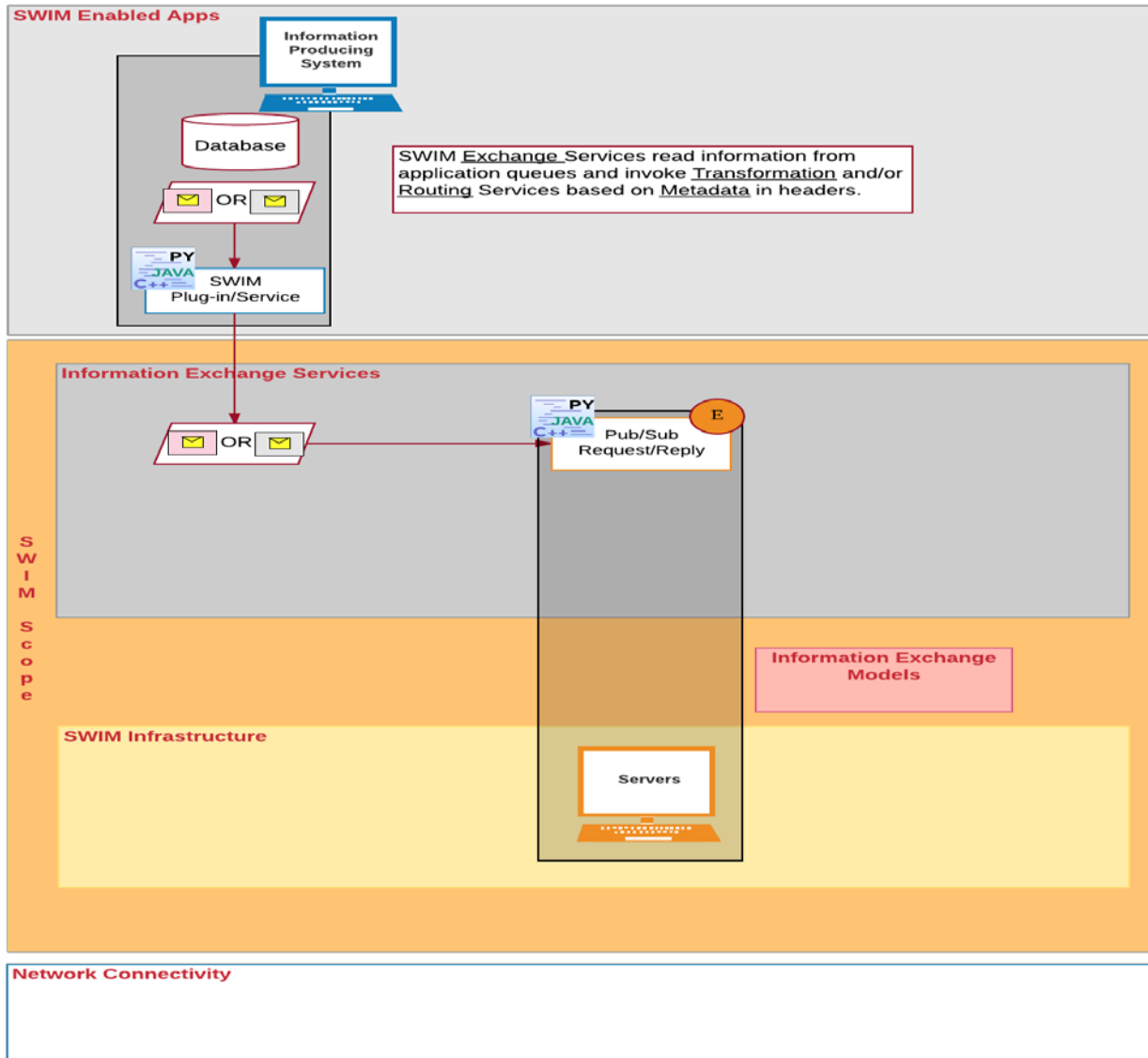
PUBLISHING OF INFORMATION



SWIM

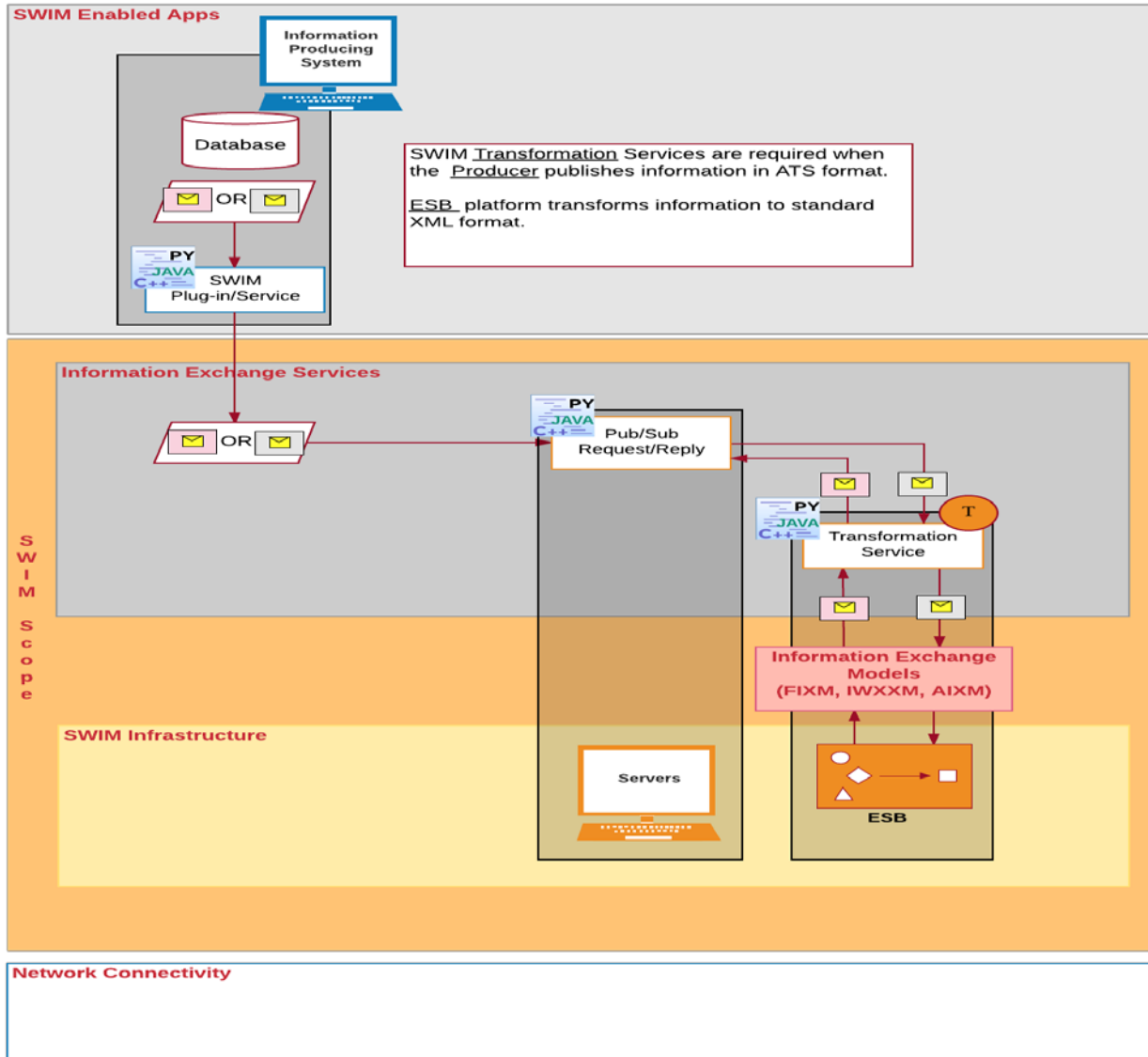
INFORMATION EXCHANGE SERVICES

(PUB/SUB, REQUEST/REPLY)



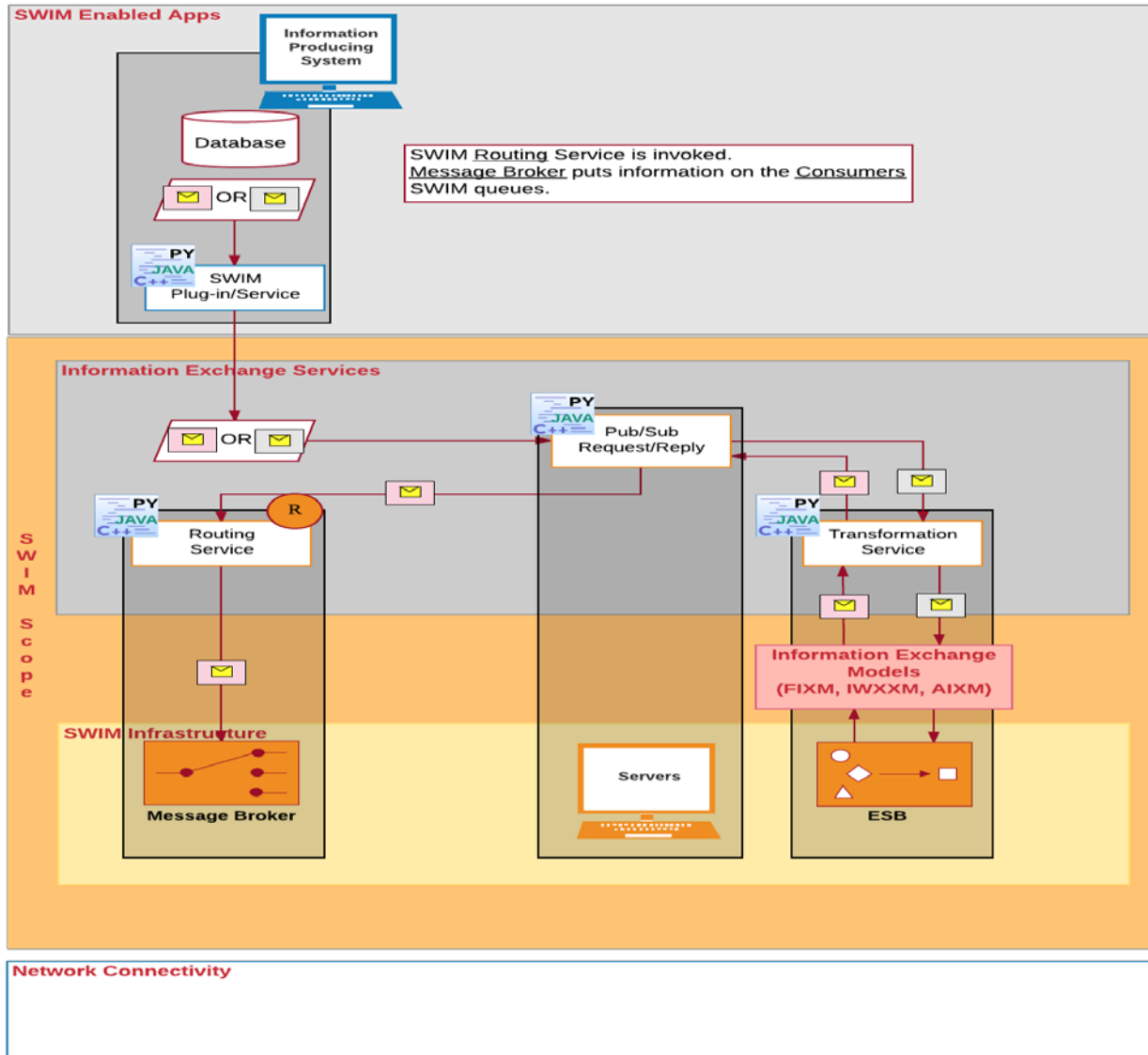
SWIM

TRANSFORMATION SERVICES



SWIM

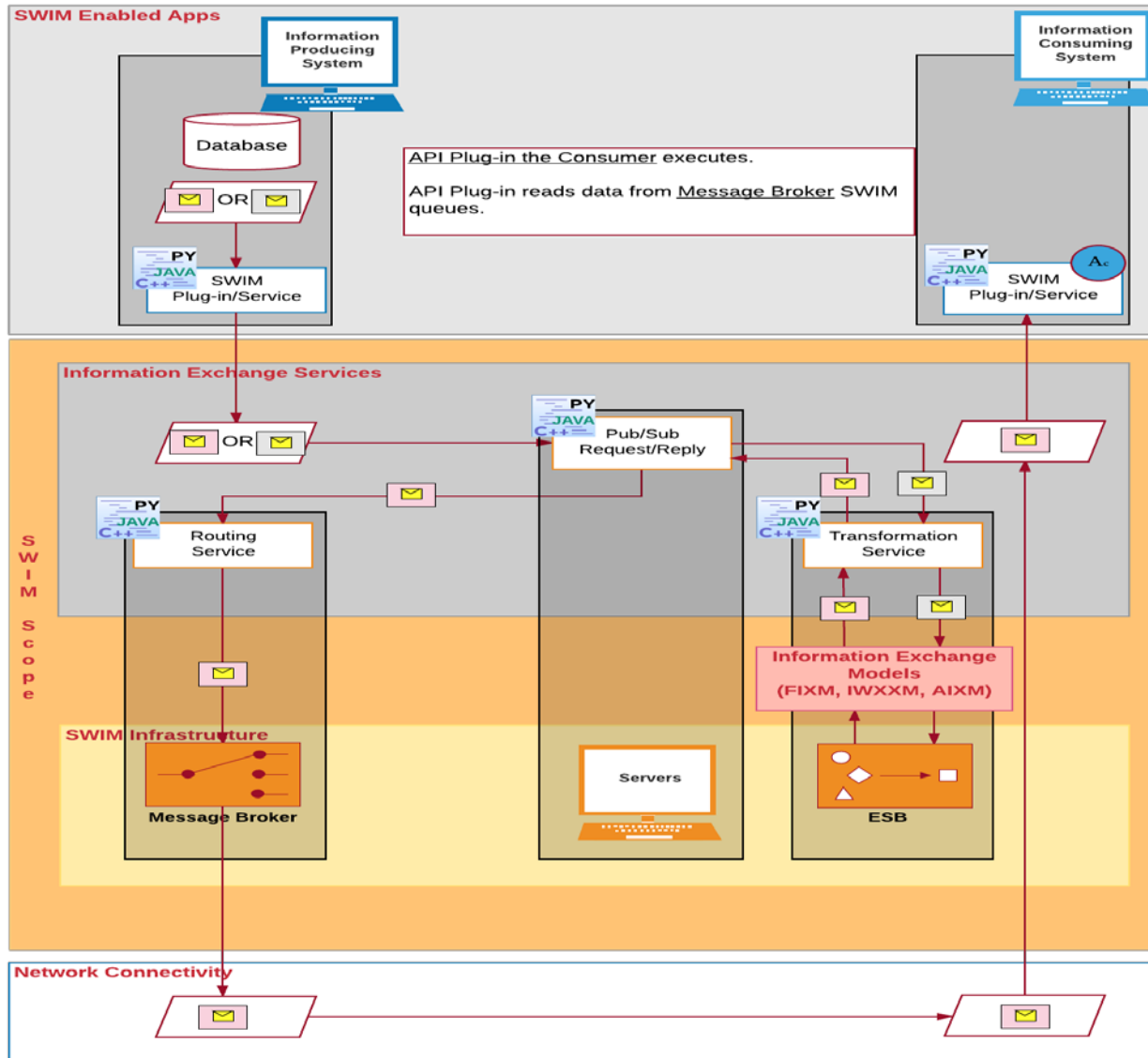
ROUTING SERVICES



SWIM INFORMATION FLOW

CONSUMER

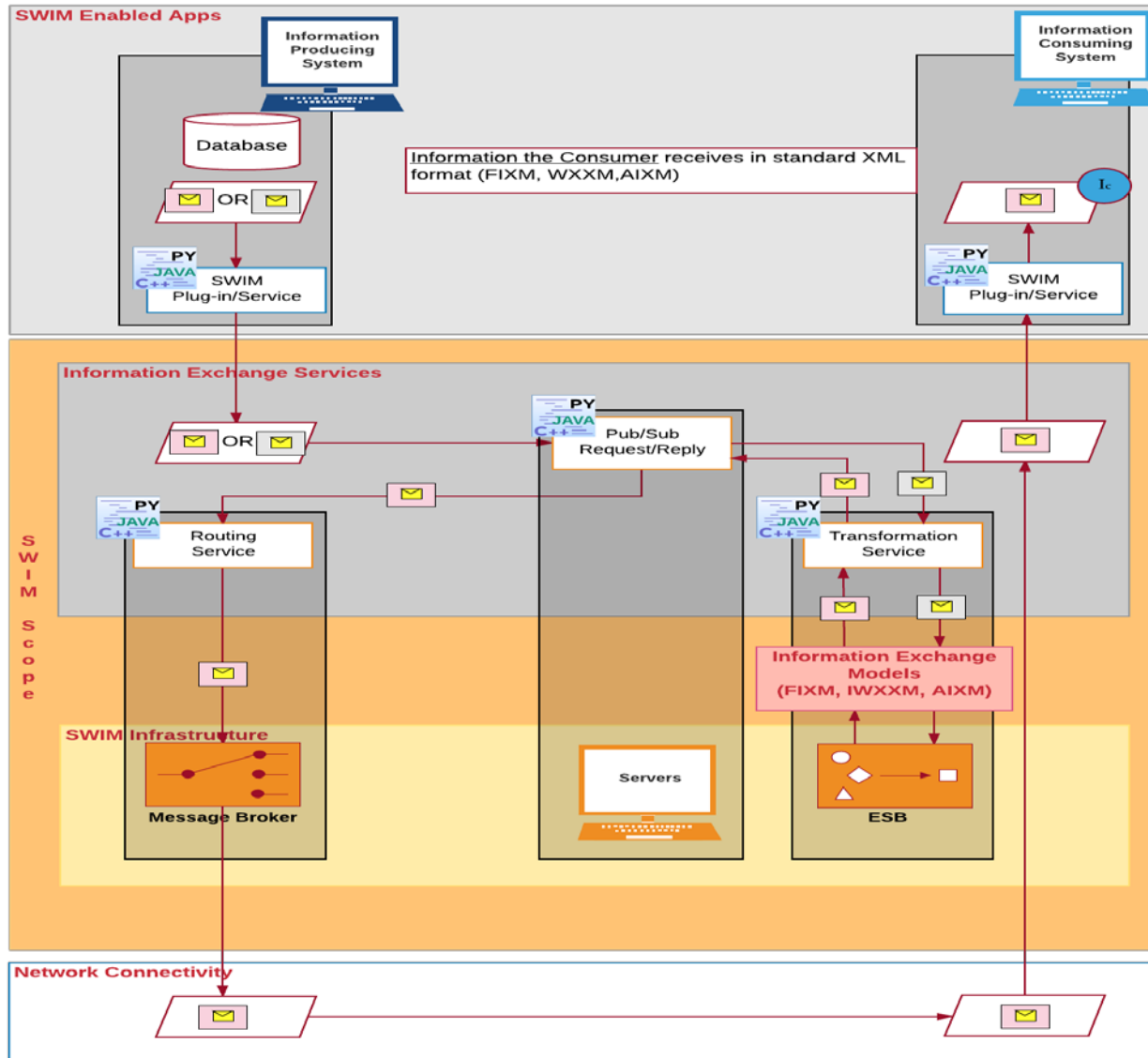
INGEST OF INFORMATION



SWIM INFORMATION FLOW

CONSUMER

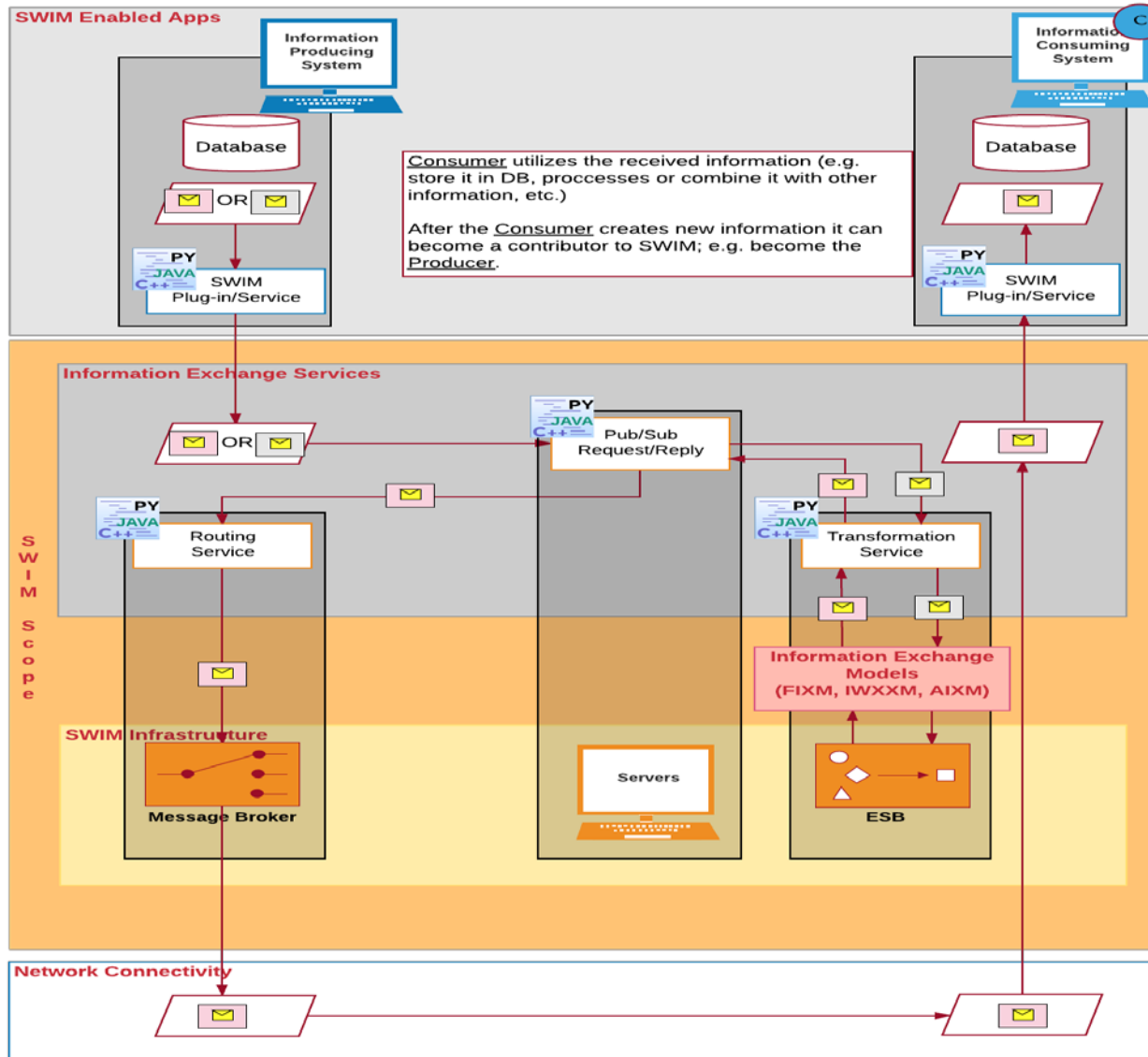
INFORMATION FORMATTING



SWIM INFORMATION FLOW

CONSUMER

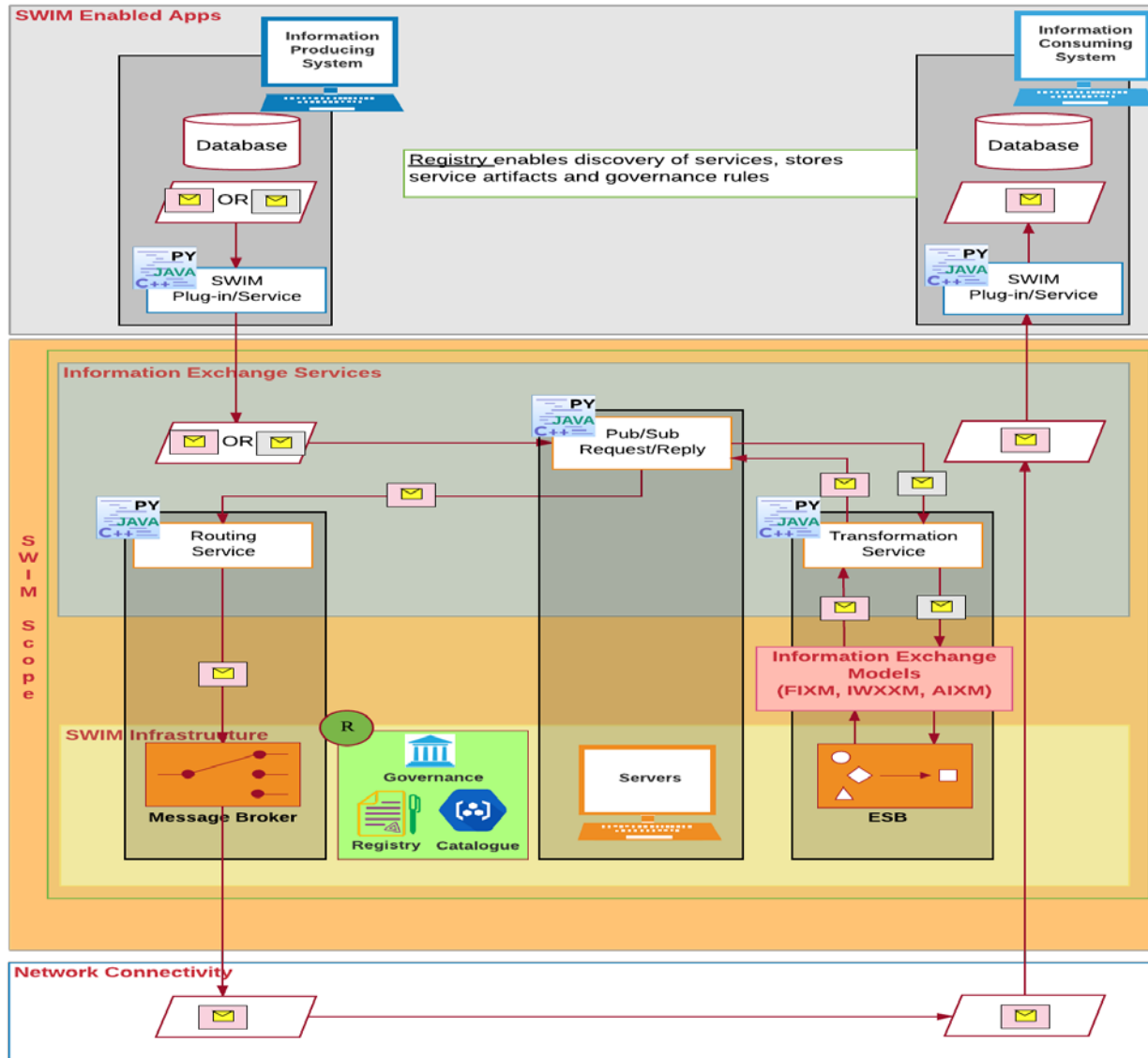
INFORMATION USE



SWIM INFORMATION FLOW

REGISTRY

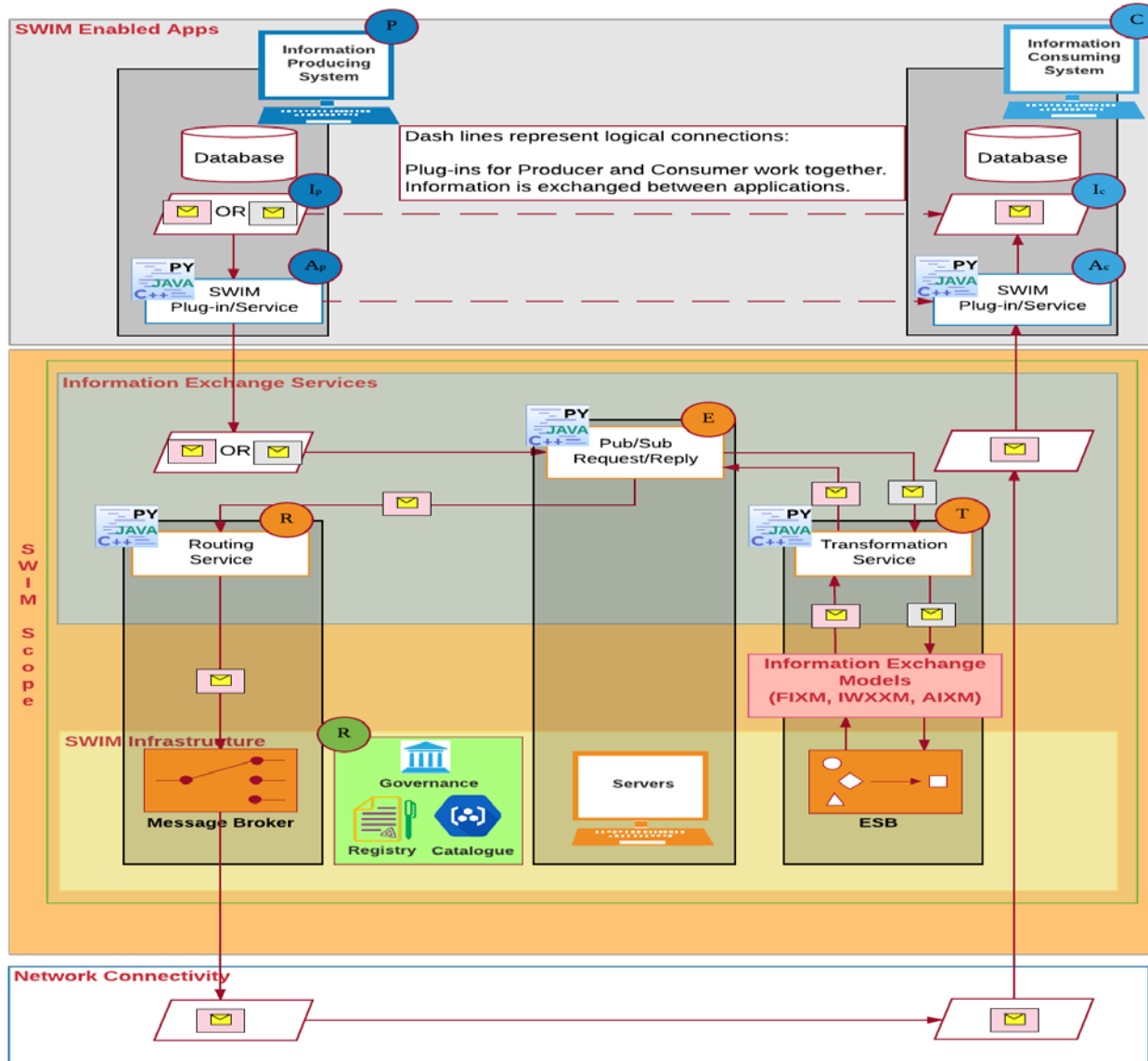
SERVICE DISCOVERY, ARTIFACTS, GOVERNANCE



SWIM INFORMATION FLOW

OVERVIEW

EASY ACCESS TO INFORMATION



OVERVIEW

- C** **Service Catalogue:** List of services available with their state – dev, staging, production, decommissioned; facilitating the discovery of information with search and browse capabilities;
- S** **Service:** An interface developed using service artifacts and based on SWIM-compliant standards for an exchange of information.
- A** **Service artifacts:** After an analysis of the processes and needs of business domains, the required functionality is developed, packaged and implemented as a suite of interoperable services that can be used in a flexible way within multiple separate systems. Various artifacts related to service are WSDL, XSD, XML samples, on-ramping documents, etc.

MORE ABOUT REGISTRY

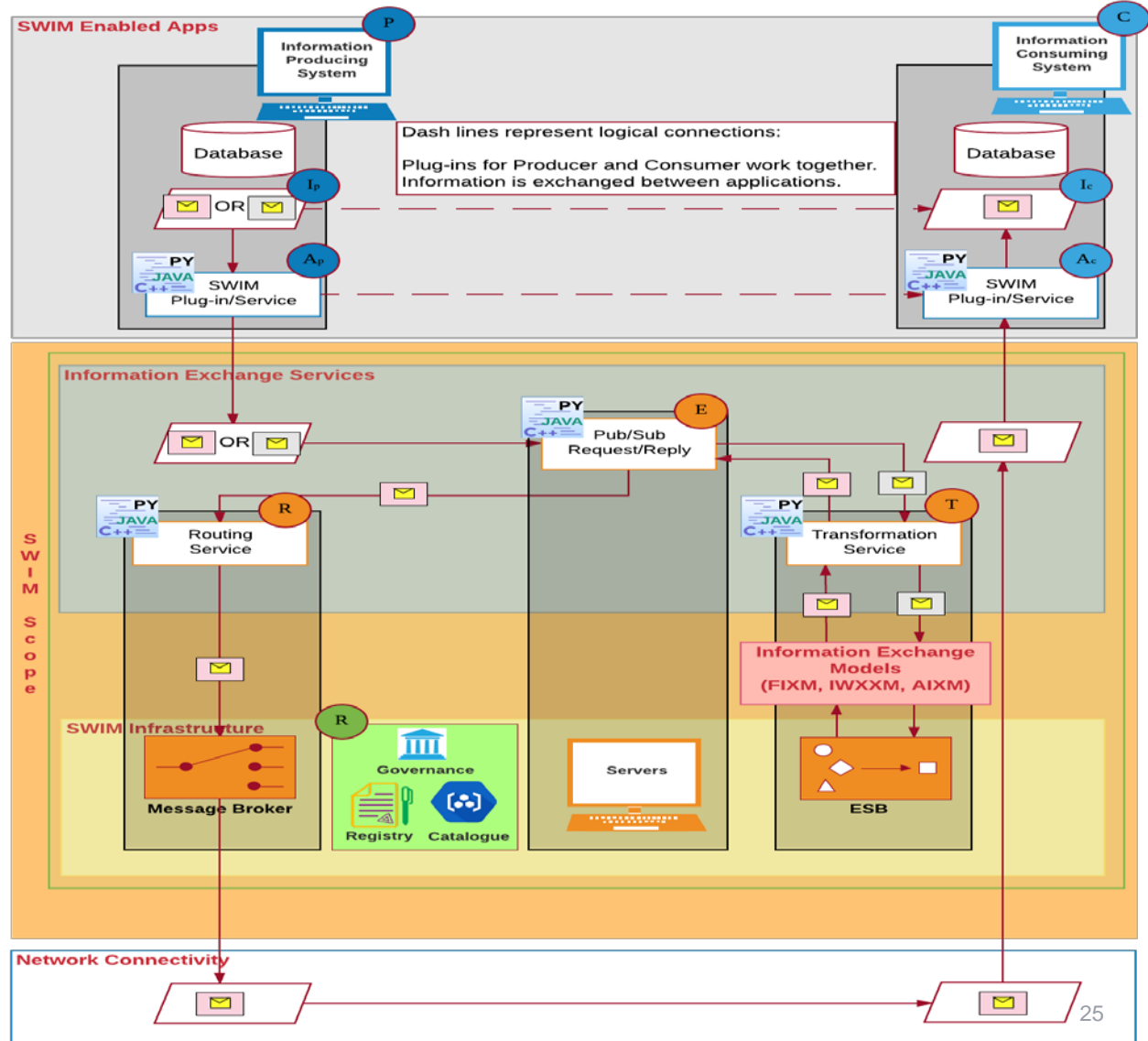
EXAMPLE



SWIM INFORMATION FLOW

SUMMARY

- P Provider
- I_P Information produced
- A_P Information Publishing: API Plug-in
- R Registry
- E Exchange Service
- T Transformation Service
- R Routing Service
- A_C Information Consuming: API Plug-in
- I_C Information consumed
- C Consumer



QUESTIONS ?



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