"Get into SWIM" session

Session Approach

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Donlon TOBT Setting Service Description

Created by Walter Van Hamme, last modified by Scott Wilson on May 06, 2019

This is an example of Service Description for a fictitious service, with the intention to illustrate the EUROCONTROL SWIM specifications.

Service Description Identification

title	Donlon TOBT Setting Service Description
edition	0.93
reference date	23/10/2018

General service elements

Service Identification

name	TargetOffBlockTimeSetting Service
version	1.0.0

Service Abstract

The TargetOffBlockTimeSetting service supports the Airport CDM concept and its implementation by allowing A-CDM Partners, typically aircraft operators and ground handlers, with the capability to set the Target Off-Block Time (TOBT) that indicates the target time for the aircraft to be ready for Off-Block.

It is part of a set of services supporting the Airport CDM concept and its implementation by providing the A-CDM partners with Common Situation Awareness about flights at a CDM airport.

Service Provider

organisation	Donlon Airport Operator

Quick Links

We will cover a subset of the Service Description

Contents

- Objectives

- Background
  - SWIM
  - EUROCONTROL SWIM Specifications
  - ICAO SWIM Manual
  - Service Oriented Architecture

- Available resources

- Session structure and outcomes

Objective

improved understanding of service orientation and architecture and **how** they relate to the requirements of the EUROCONTROL SWIM Specifications

improved knowledge about using the EUROCONTROL SWIM Specifications

improved understanding on how to fulfil the EUROCONTROL SWIM Specifications in a way that is also good from a global perspective
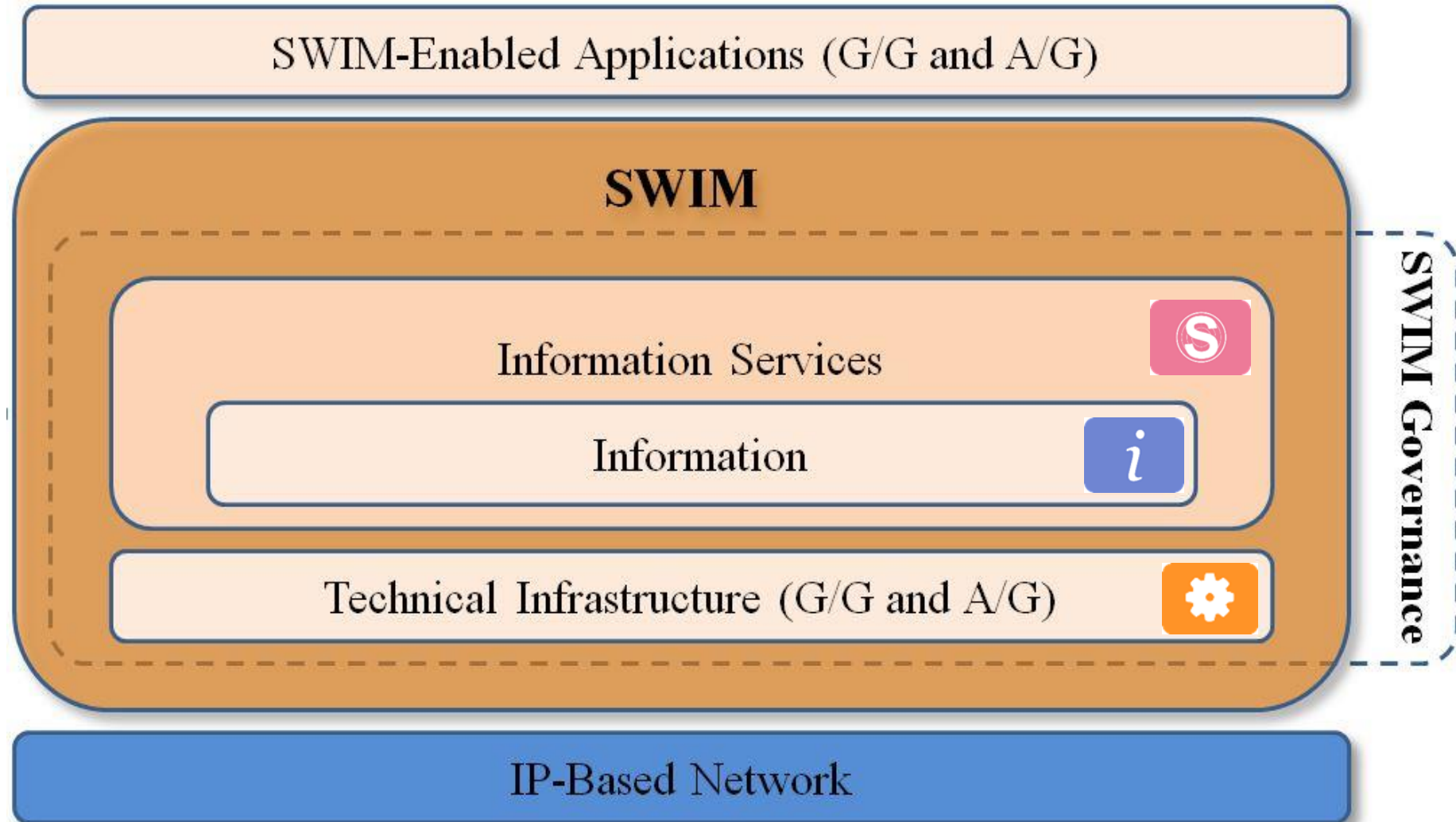
Objective

improved awareness of the resources and building blocks that are available

identification of additional resources and building blocks

System Wide Information Management

Starting point: EUROCONTROL SWIM Specifications

EUROCONTROL Specification
for SWIM Information Definition

EUROCONTROL Specification
for SWIM Service Description

EUROCONTROL Specification
for SWIM Technical Infrastructure (TI)
Yellow Profile

Supporting Material

Edition: 1.0
Edition date: 01/12/2017
Reference nr: EUROCONTROL-SPEC-169

Edition: 1.0
Edition date: 01/12/2017
Reference nr: EUROCONTROL-SPEC-168

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

Starting point: ICAO Doc 10039

Doc 10039
AN/511

MANUAL ON SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) CONCEPT

Procedures for
Air Navigation Services

Information Management

MANUAL ON SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)
(Doc 10039)
VOLUME I: SWIM CONCEPT
Version 0.3

10
11
12

DRAFT -

- Global perspective is being finalised
- Input for our supporting material

SWIM Principle

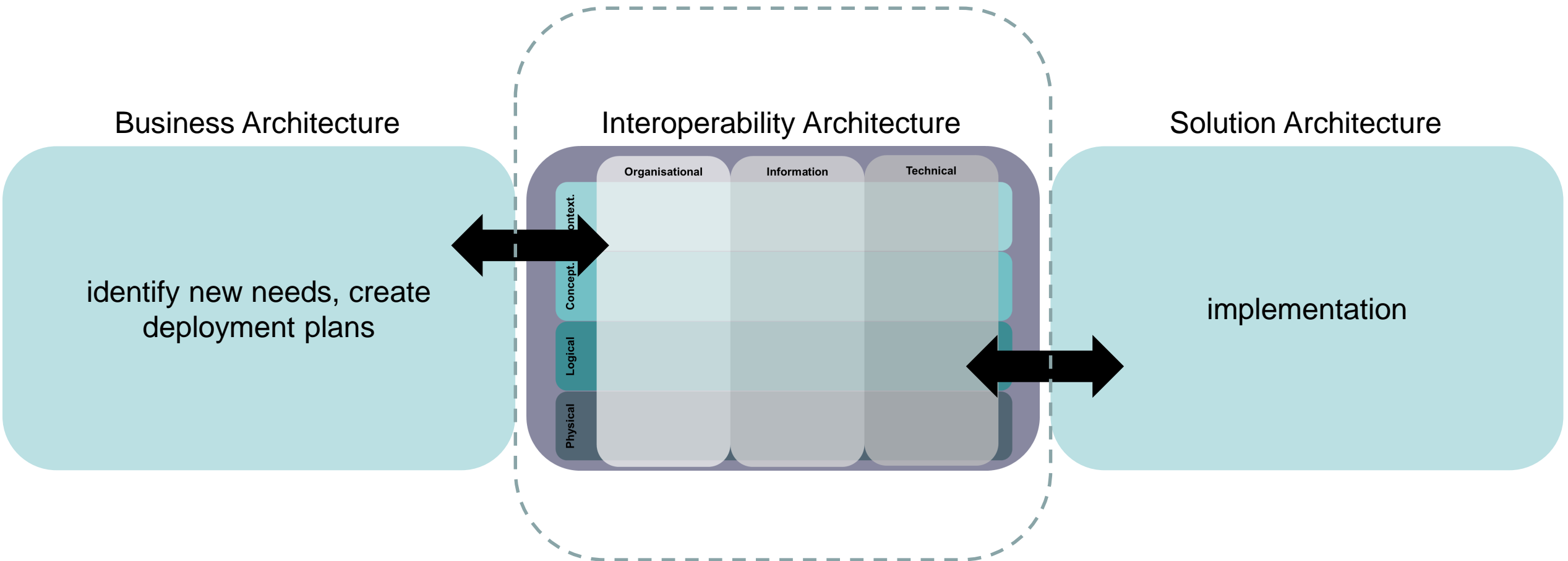**use of interoperable services**. After an analysis of the processes and needs of business domains, the required functionality is developed, packaged and implemented as a suite of interoperable services that can be used in a flexible way within multiple separate systems

Term

Service-Oriented Architecture (SOA). Architectural approach that supports designing systems in terms of services and service-based development.

Architecture means different things to different people

Business Architecture

identify new needs, create deployment plans

Interoperability Architecture

Organisational	Information	Technical

Context.

Concept.

Logical

Physical

Solution Architecture

implementation

Good SWIM practice

build SWIM team(s) as multi-disciplinary collaboration groups combining operational, service orientation, information, and technical infrastructure skills together.

business expert

business function, mission statements and value chain

service architect

service orientation

technical infrastructure expert

standardisation of the technical

operational expert

operational concept descriptions and performs the role of operational subject matter expert
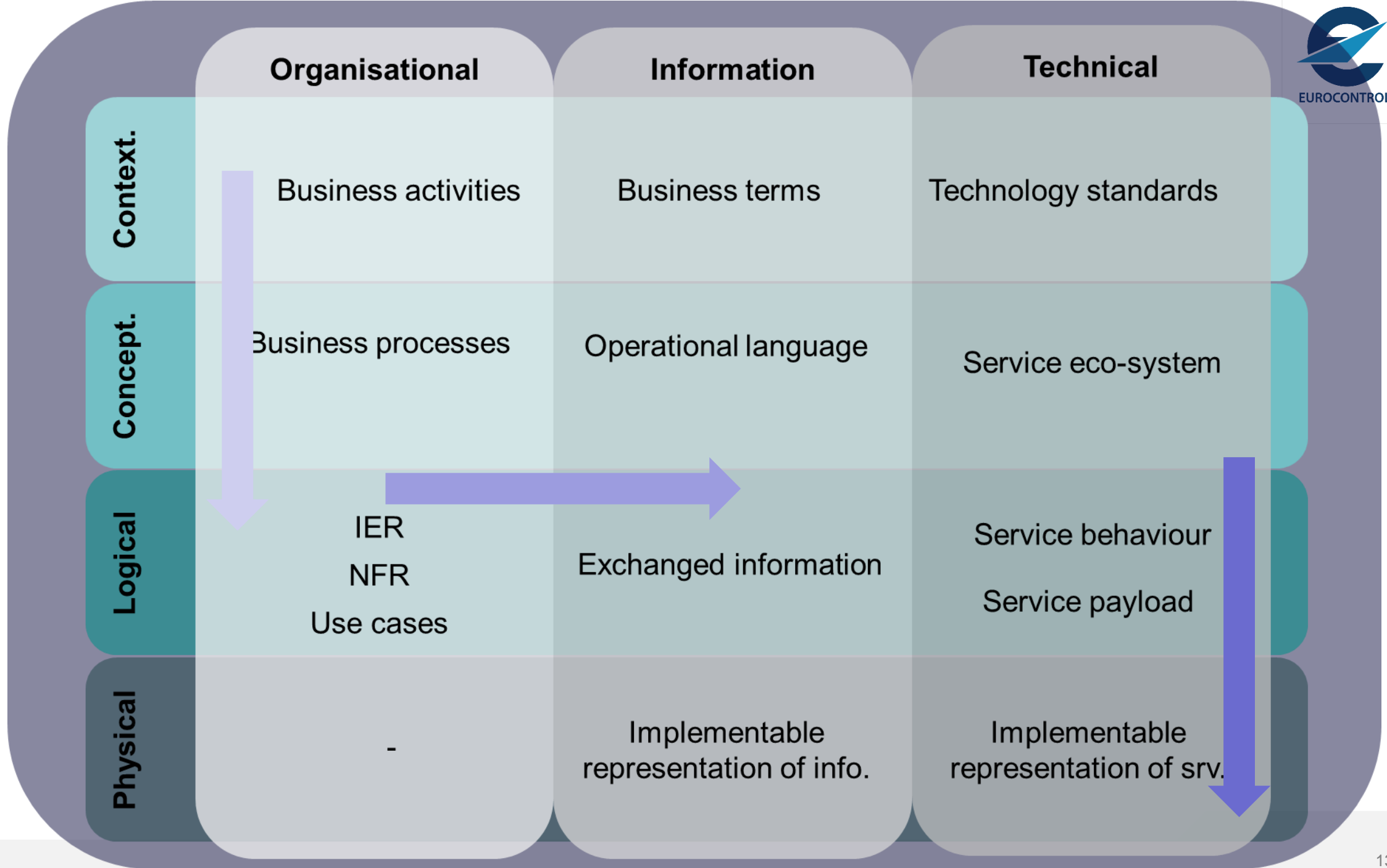
data/information architect

definition and representation of required data and information

solution expert

implementation of SWIM services and SWIM-enabled applications

	Organisational	Information	Technical
Context.	Business activities	Business terms	Technology standards
Concept.	Business processes	Operational language	Service eco-system
Logical	IER NFR Use cases	Exchanged information	Service behaviour Service payload
Physical	-	Implementable representation of info.	Implementable representation of srv.

Three perspectives
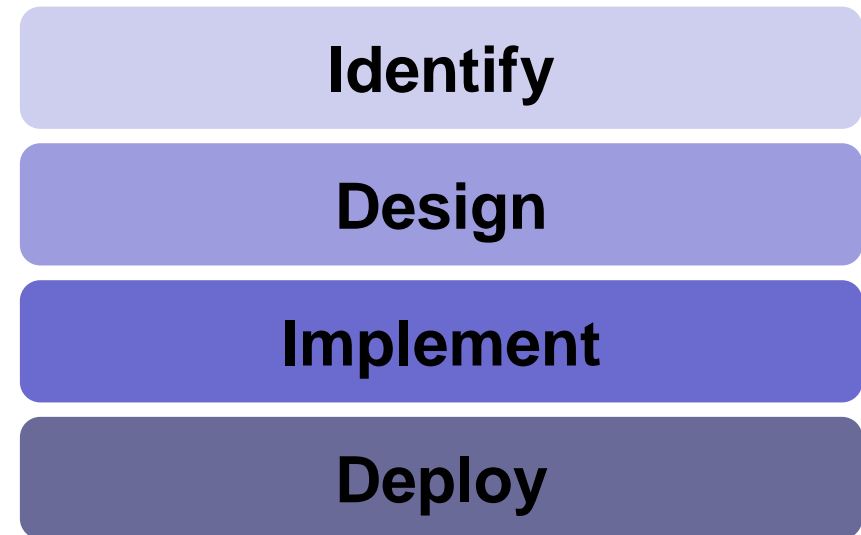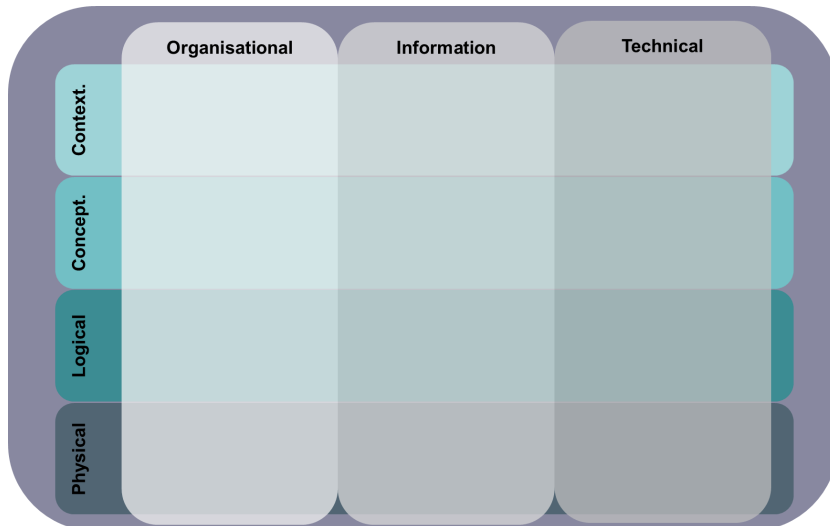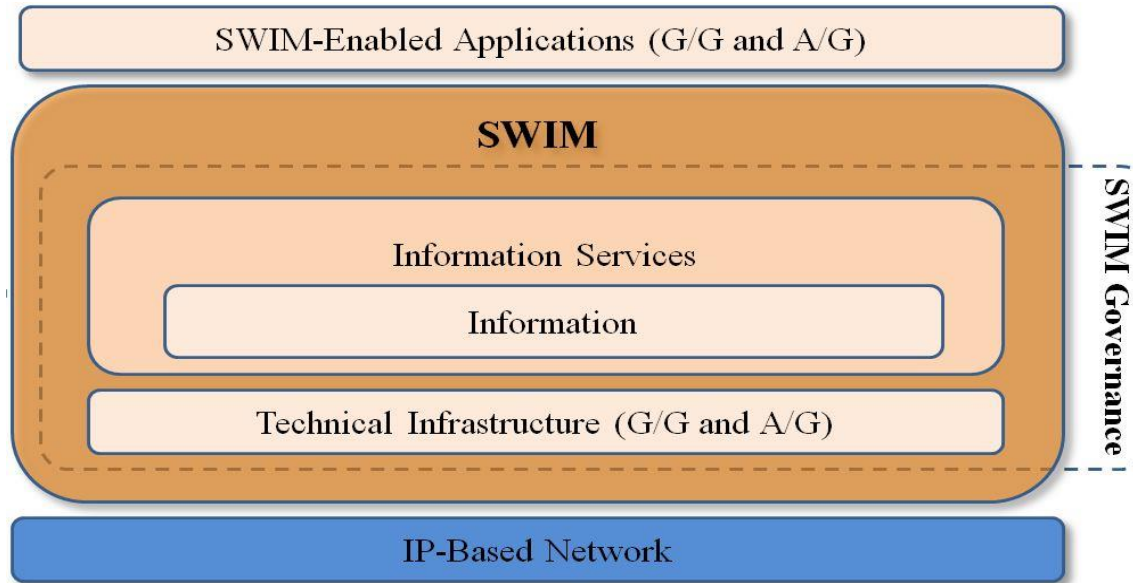
Service orientation process
Generic steps

Identify

Design

Implement

Deploy

Service orientation process
Identify

Identify

service identification is the set of activities involved in documenting the operational context of the service in relation to the business need, **information exchange requirements** (IER), **non-functional requirements** (NFR), and operational scope.

Design

Implement

Deploy

Service orientation process
Design

Identify

Design

service design is the set of activities involved in expressing what the service does and how it works. … typically use a modelling language notation (e.g. UML) to represent the blueprint of the information service as a **service model** (e.g. including service interfaces, service operations, and service payload).

Implement

Deploy

Service orientation process
Implement

Identify

Design

Implement

service implementation is the set of activities where the information service is implemented in a target environment and technology context.

Deploy

Service orientation process
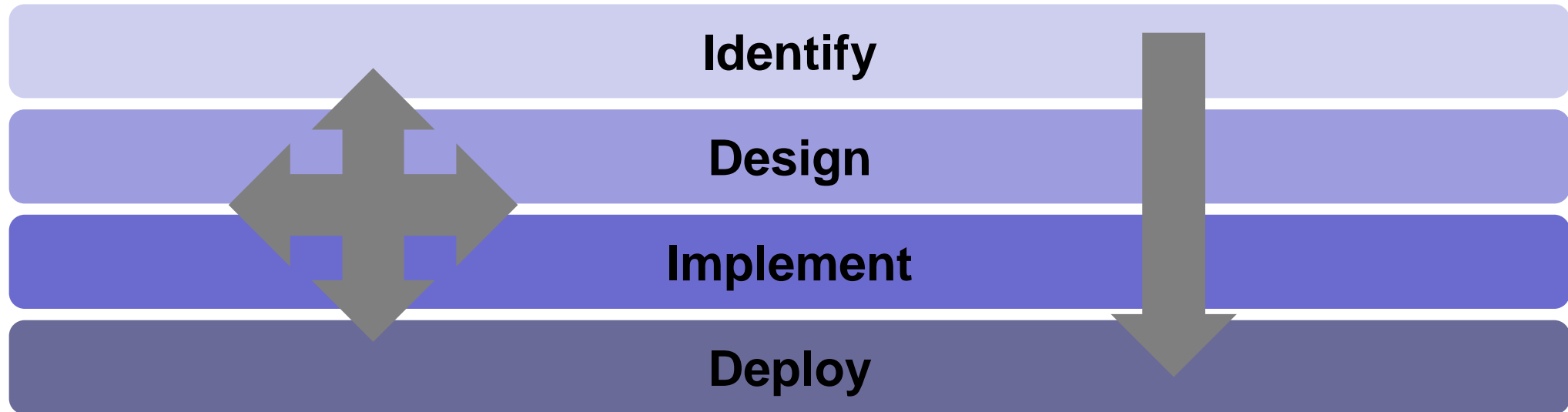# Deploy

Identify

Design

Implement

Deploy

service deployment is the set of activities where the information service instance is made available for use in operation.

Service orientation process
Iterative, many aspects done in parallel

Identify

Design

Implement

Deploy

Identify

service identification is the set of activities involved in documenting the operational context of the service in relation to the business need, information exchange requirements (IER), non-functional requirements (NFR), and operational scope.

- Description of operational environment
- Determination of operational process leading to the identification of information exchanges assigned to information service(s)
- Determination of IER and NFR
- Investigation of reuse of services
- Characterization of the identified information service in terms of functionality

- Documentation of operational processes and information flows
- Identification of one or more information service(s), with determination of operational context (scope), requirements, and functionality
- Service identification information (name, abstract, operational context, IERs, NFRs and functionality)

Design

service design is the set of activities involved in expressing what the service does and how it works. … typically use a modelling language notation (e.g. UML) to represent the blueprint of the information service as a service model (e.g. including service interfaces, service operations, and service payload).

- Selection of the message exchange pattern (MEP)
- Definition of the service (interface, service operations and information service payload)
- Sharing of service description information (e.g. using a SWIM Service Registry)

- Chosen MEP.
- Service model (service interface(s), service operation(s), service behaviour)
- Service payload (the logical). representation of the information exchanged by the service interface operations
- Service design information expressing what the service does and how it works

Implement

service implementation is the set of activities where the information service is implemented in a target environment and technology context.

- Selection/definition of the data format
- Definition of the message(s) used to interact with the service interface
- Selection of the service interface protocols
- Implementation of service(s) using technology and based on implementation choices made
- Integration of the service(s) into the target environment
- Verification and testing of the service(s)
- Validation of the service(s)

- Chosen XM or other data format.
- Chosen service interface protocol.
- Message definition
- Implemented service(s) (interfaces and operations)
- Machine readable service definition
- Verification report, validation report
- Service Overview (update)
- Verification report
- Validation report
- Service implementation information (e.g. service interface protocols and QoS characteristics)
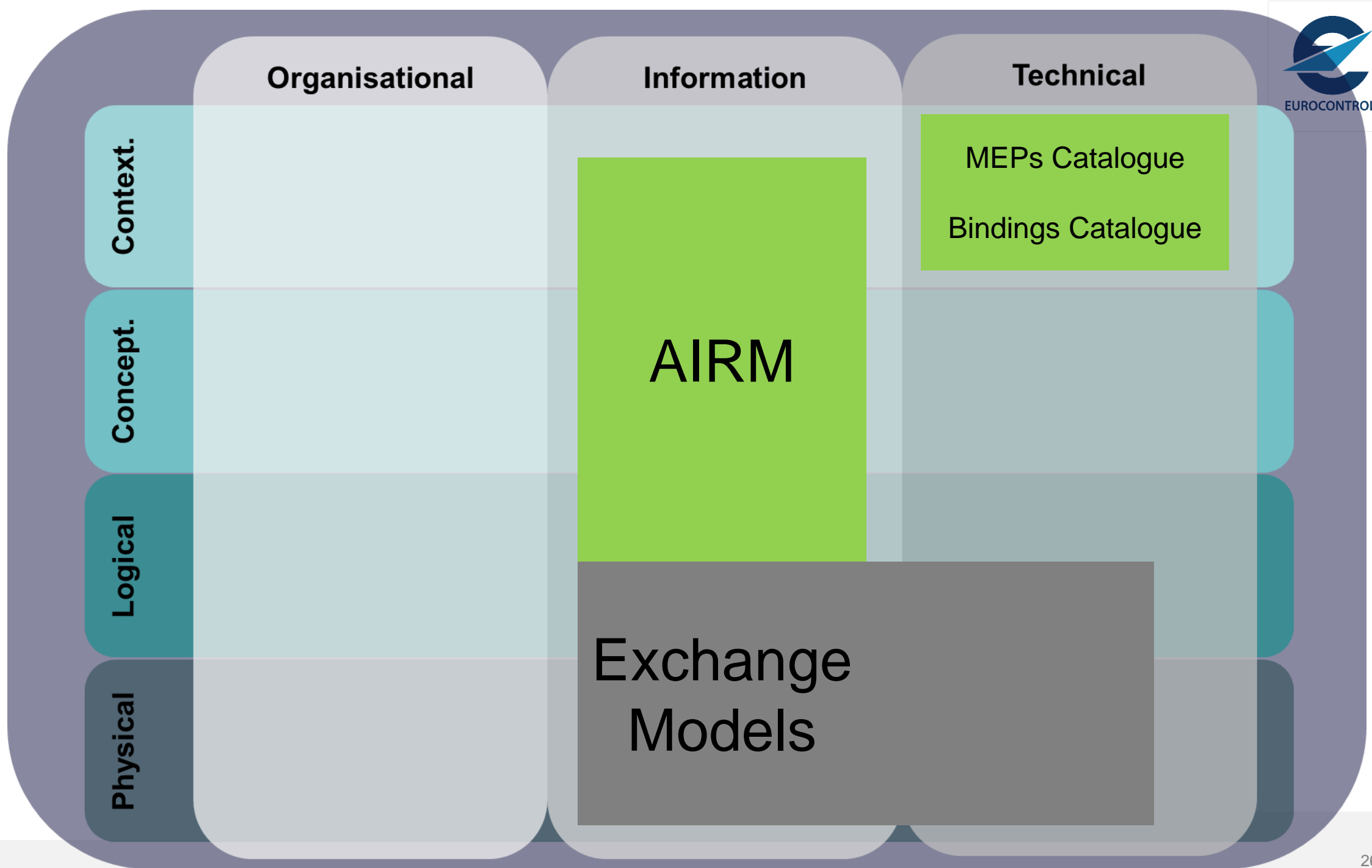
Deploy

service deployment is the set of activities where the information service instance is made available for use in operation.

- Deployment of the information service instance with an addressable end-point used in operations
- Completion of the description of the service for service consumers
- Registration of the information service instance to enable discovery of the service (e.g. using a SWIM Service Registry to publicize the service overview)

- A configured information service running and available for operational use by service consumers
- Completed Service Overview publicized with "operational status", to announce operational availability of the service

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	Organisational	Information	Technical
Context.			MEPs Catalogue Bindings Catalogue
Concept.		AIRM	
Logical			
Physical		Exchange Models	

Resources

SWIM Supporting Material
https://ext.eurocontrol.int/swim_confluence/display/SWIM/SWIM+Supporting+Material

Glossary
https://ext.eurocontrol.int/swim_confluence/display/SWIM/Glossary

AIRM Website
http://airm.aero/index.html

Resources

SWIM TI Foundation … an overall understanding of the SWIM TI, including scope, functional and non-functional decomposition and the guiding principles that characterise the TI.
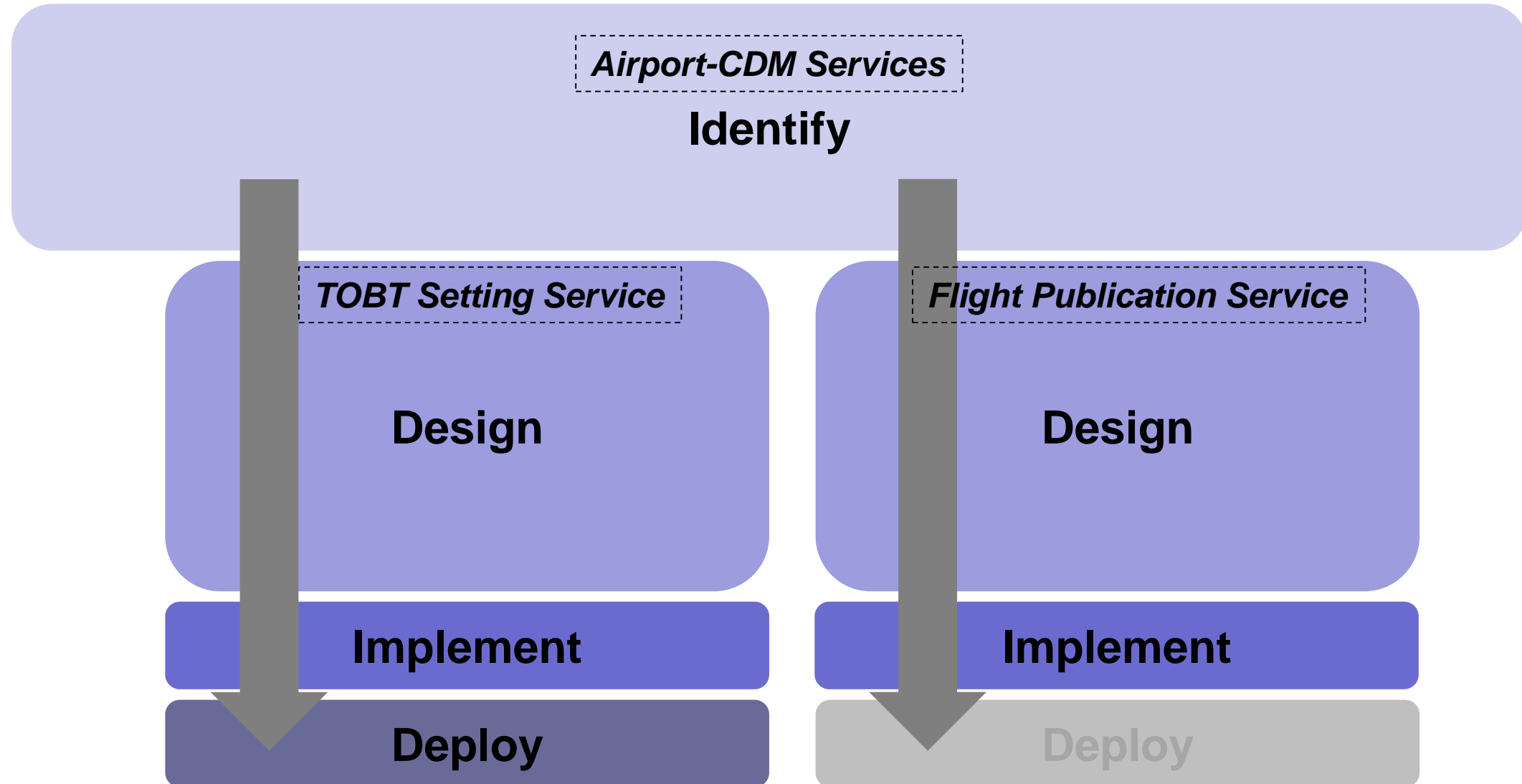
SWIM TI Message Exchange Patterns Identification Guidelines … understanding of message exchange patterns from an application and TI perspective.

SWIM TI Binding Selection Guidelines … understanding and selection of SWIM TI bindings.

SWIM TI Pub/Sub Push Implementation Guidelines … understanding of the pub/sub push pattern from an abstract perspective, as well as providing a description of a possible concrete implementation based on specific SWIM TI bindings.

Approach for today

Airport-CDM Services
Identify

TOBT Setting Service
Design
Implement
Deploy

Flight Publication Service
Design
Implement
Deploy

Outcome

Identify

Design

Implement

Deploy

Running Service

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Service Provider

organisation	Donlon Airport Operator

Quick Links

Why Airport CDM?

- emphasises collaboration – nice for SWIM

- service identification & design took place between SESAR and ACI ACRIS

- various exchanges, with various exchange patterns

- used as example in SWIM Supporting Material

AIRPORT CDM COMMON OBJECTIVES

Air Traffic Control

Aircraft Operators

- Improve predictability
- Improve on-time performance
- Reduce ground movement costs
- Optimise/enhance use of ground handling resources
- Optimise/enhance use of stands, gates and terminals
- Optimise the use of the airport infrastructure and reduce congestion
- Reduce ATFM slot wastage
- Flexible predeparture planning
- Reduce apron and taxiway congestion

Network Operations

Ground Handling

Airport Operations

Keeping you positioned

Activity

Description of an operational environment in which service orientation is envisaged

the description of the activity

the activity within the Service Orientation Process

parts covered by previous activities

how the activity relates to the Interoperability Architecture

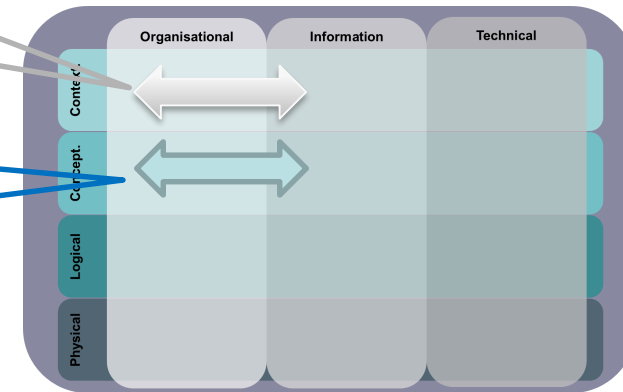specification requirements related to the activity

Identify

Operational environment

Oper. process, info. exchanges

IER and NFR

Reuse services

Scope & characterize services

Design

Implement

Deploy

Organisational | Information | Technical

Context

Concept.

Logical

Physical

SWIM-SERV-011 Operational needs