DATEX II

Exchange 2020

Exchange Guide

6TH FORUM
WEBINAR SERIES

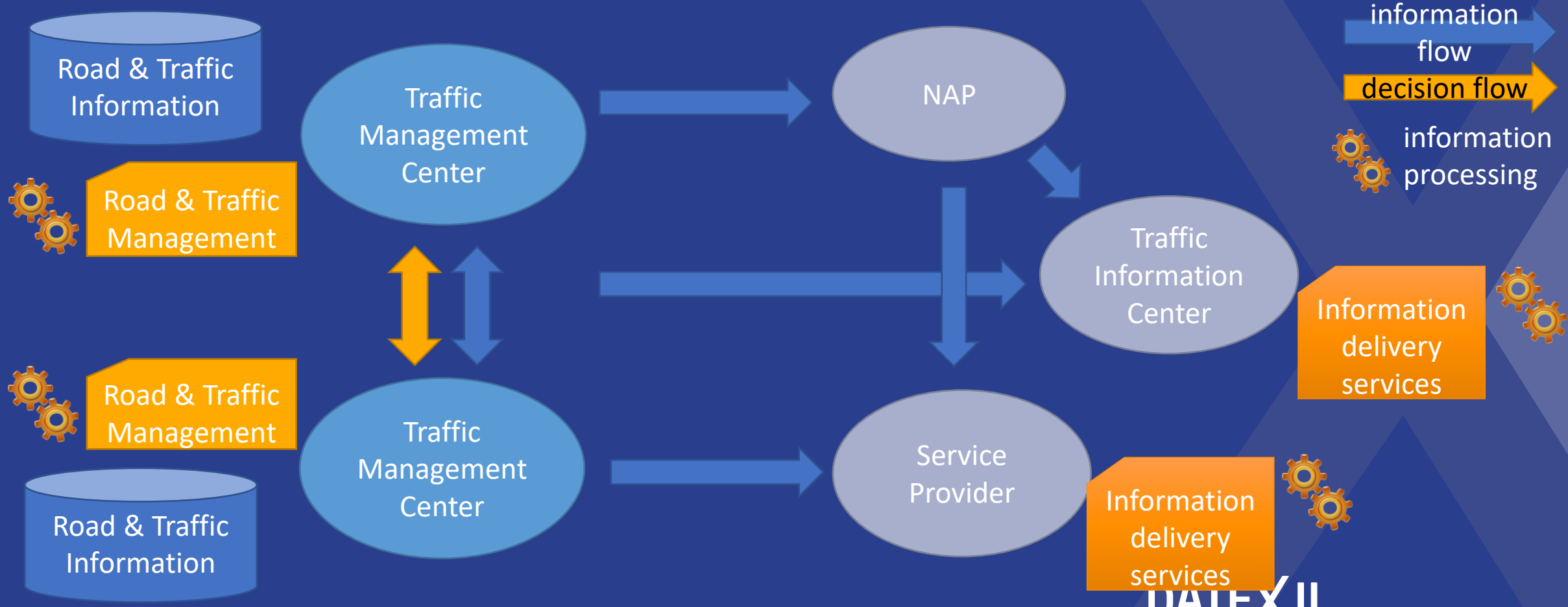
Please ask your questions in the Q&A

European Commission

Overview

- How to select the EP PSM fitting your use case requirement
  - Widely known use cases
  - Exchange Features
  - Exchange EP Selection
- Further developments to be assessed

Exchange Specification supporting DATEX II



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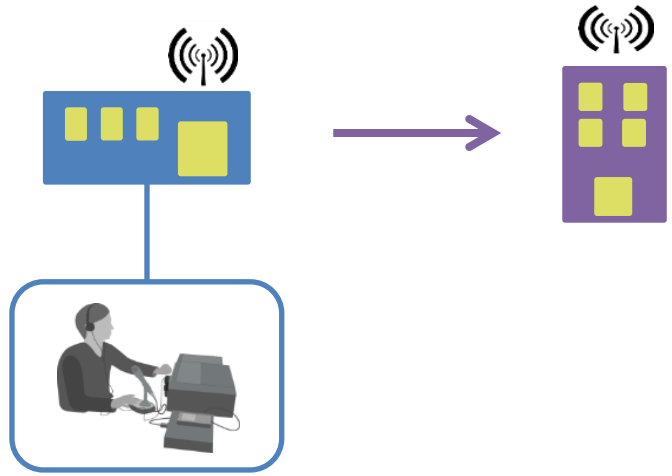
First of all let's find the Business Scenario

Information Delivery

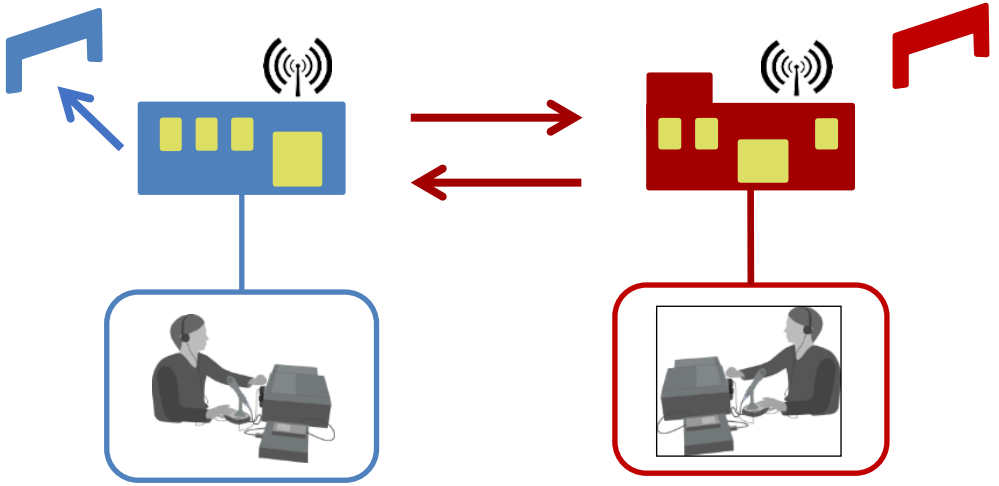
TMC → TIC/SP



fire & forget
independent

Collaborative ITS Services

TMC ←→ TMC



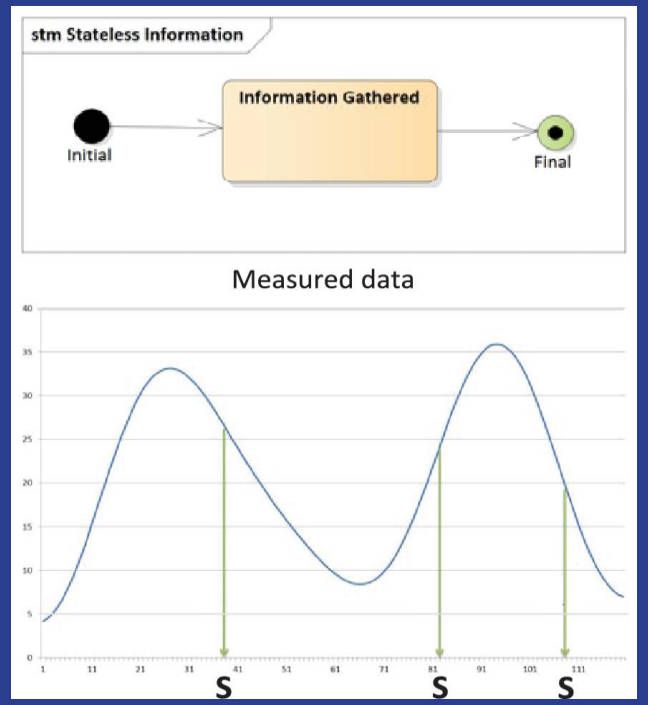
dependent
handshaking

Information Delivery

- The main objective is to deliver information to a stakeholder who manages this information to deliver services on its own.
- No need to have information of how the information process is managed
- Evident error control management possible
- Offline error managament

Stateless Information Patterns

Sampled information



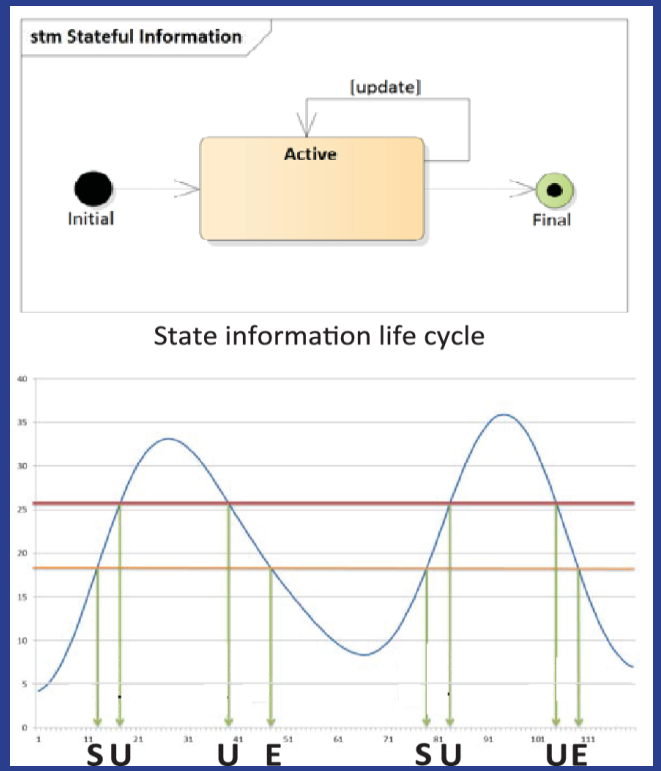
- Data are retrieved based on supplier logic triggerting time
- **Stateless** information, any sample of data has its validity at time they are sampled
- Data Accuracy is managed in the sampling rate

Sampled Data

- Sampling vs On Occurrence!
  - Measured and elaborated data information
- Information are managed as snapshot
  - information services updated on a periodic time base
  - slight delay on information do not decrease the service quality.
  - Frequency sampling interval can be managed to ensure the needed level of services, depending on processing costs.
- Categories when on occurrence information is not usually needed
  - Parking data
  - VMS table, Measurement sites table
- Other categories when on occurrence information is not needed
  - VMS messages
  - Parking data
  - VMS table, Measurement sites table

Lifecycle information pattern

- Threshold triggered information
- (Journalistic information)



- Asynchronous information
- Information
  - start when condition is valid
  - updated for new condition valid
  - ends when the condition is not valid anymore
- Status condition and full lifcycle management
- Triggering condition status update among supplier and client

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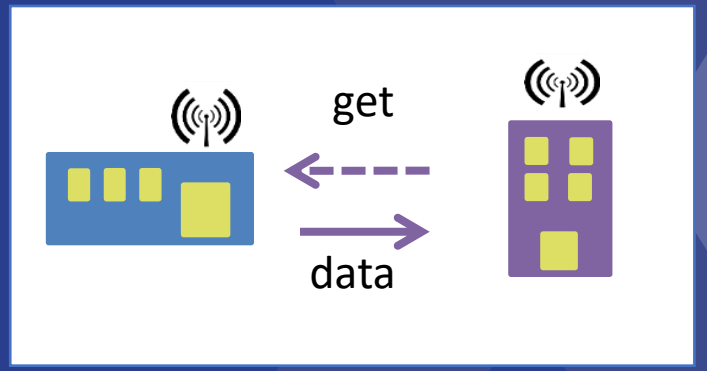
Status triggered and Journalistic information

- Status condition triggers asynchrously
  - Information from road when an observation is available
  - Information from TMG when decision for Traffic Management is taken
    - Roadworks
    - Lane carriageway closures
    - Traffic conditions evolution
    - Incident management
- **On occurrence operation** mode for timely triggering of information processing among centres
  - Situation information
  - Traffic Management Plan activation

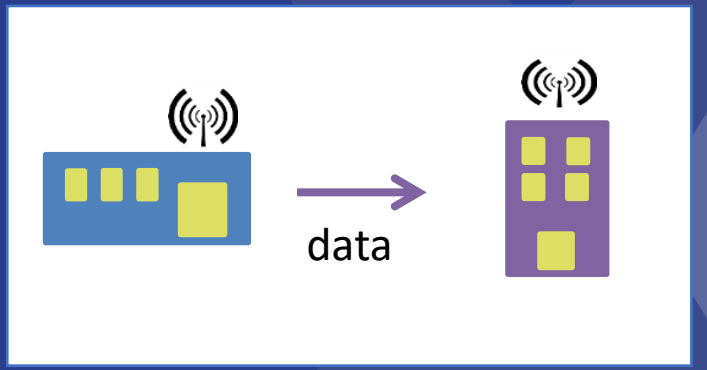
Snapshot Pull Framework

- Pull Snapshot is the easiest implementation
  - Server side
    - Static payload file generated at timestamps
    - On the fly built payload based on Pull webservices
  - Client side
    - Process only when paylod is updated
    - Process only updated payload in the snapshot
  - Frequency rate may depend
    - Server payload generation for static XML
    - Client polling frequency rate



Snapshot Push Framework

- Snapshot Push enable timely delivery when payload is ready / updated.
  - Sample data at sampling rate
  - Journalistic information when an update occurs
  - No polling interval and useless processing by the client.
- Simple implementation
- Client checks for updated data to process



Simple Push

- Triggering of data as Snapshot Push

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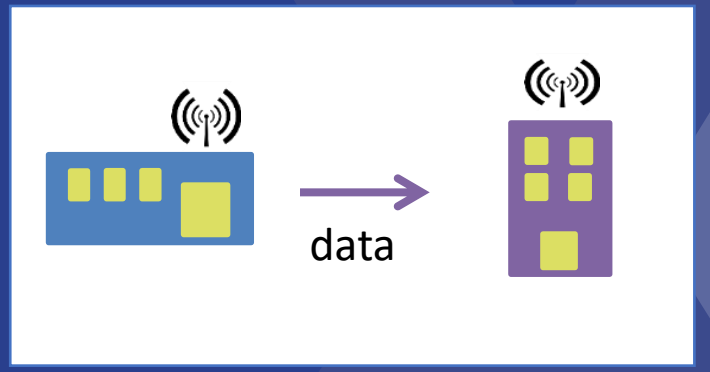
- Push only the updated data
  - Updated element operating mode
- Snapshot used for Synchronisation
  - Initialisation / Start of Exchange
  - Reconnection after error
- Link monitoring enabled by «keep alive»



Stateful Push

Simple Push

- Triggering of data
- Synchronisation
- Link Monitoring

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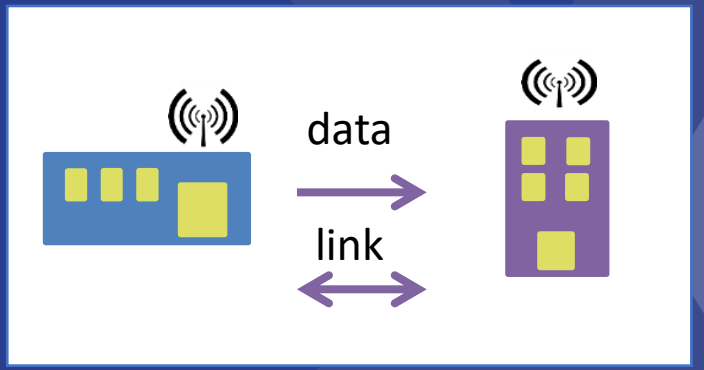
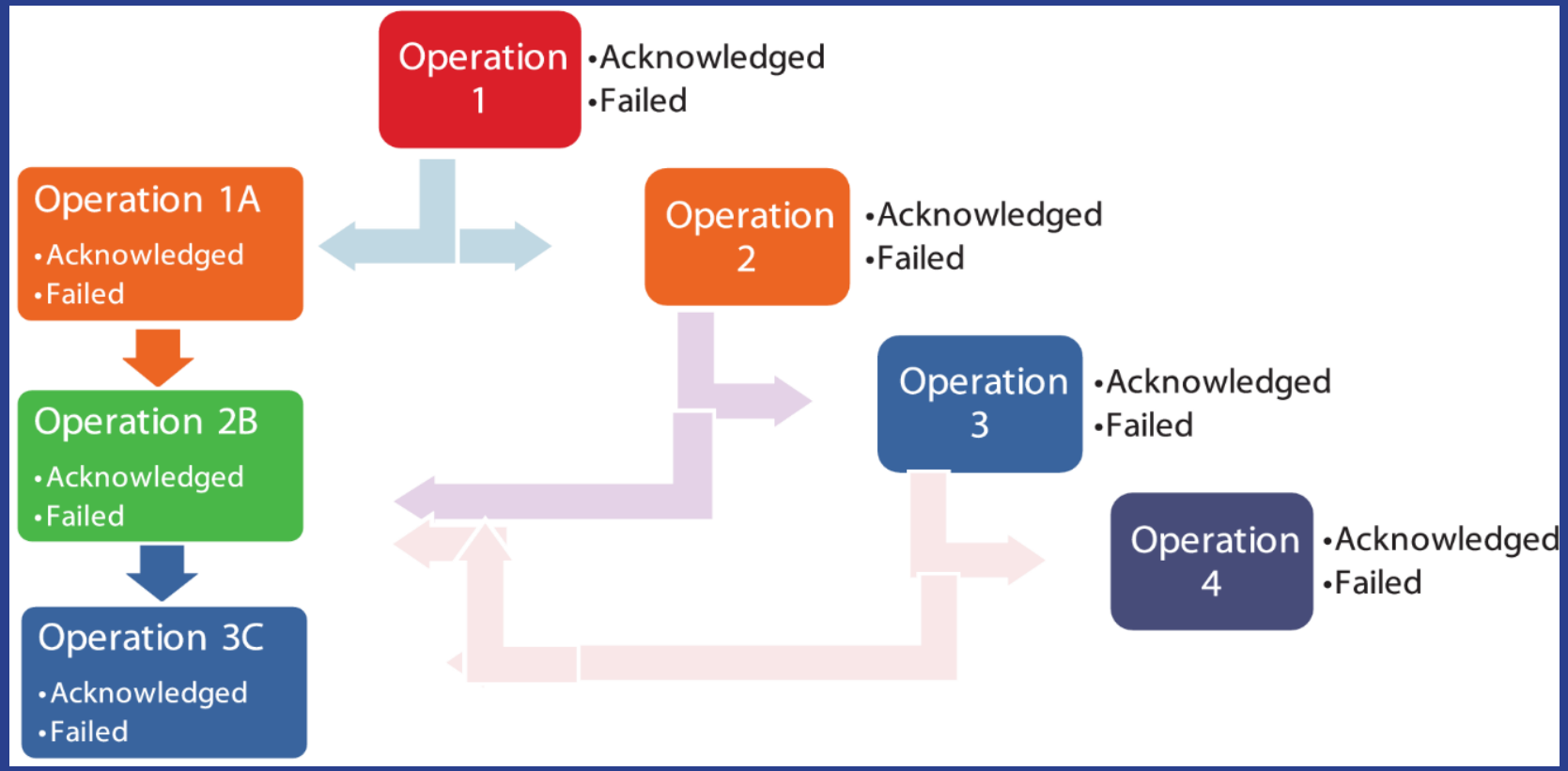
- «Application» Session Management
  - Checks identity / security management besides communication layer
  - Further error connection management
    - Double connection
    - Wrong Exchange context
    - Wrong session request



Collaborative ITS Services

- The main objective is to deliver collaborative ITS Services among two or more stakeholders.
- Information processing on the Service Provider site is essential.
- Feedback on errors on the information triggers new action ➔
- Processing support
- Workflow management support

Support to application level workflow management → e.g. Traffic Management Plan



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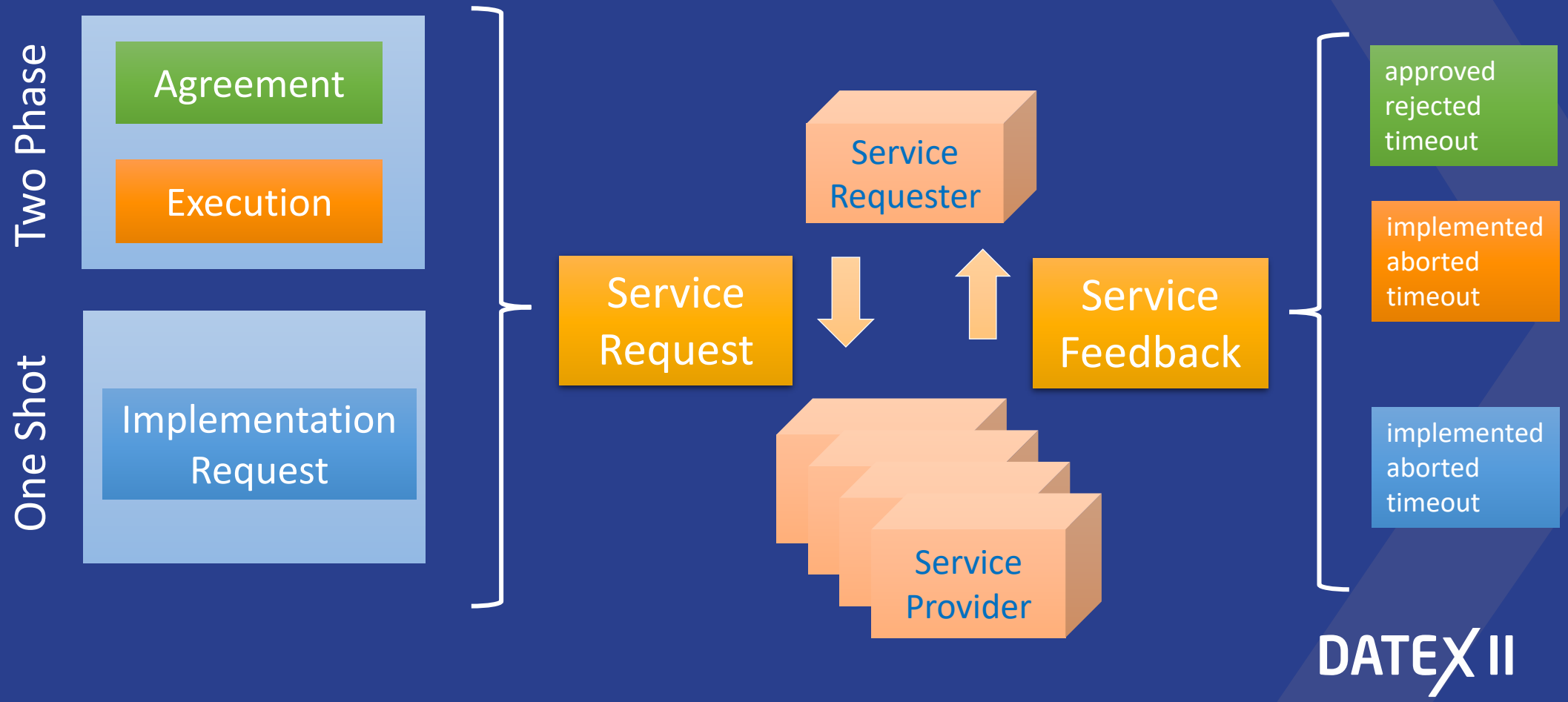
CIS Operation Workflow Management



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Service Request Workflow Model

service request

compliant

or rejected as not compliant

optional relevant application dependent intermediate outputs

ok / ko

ok / ko

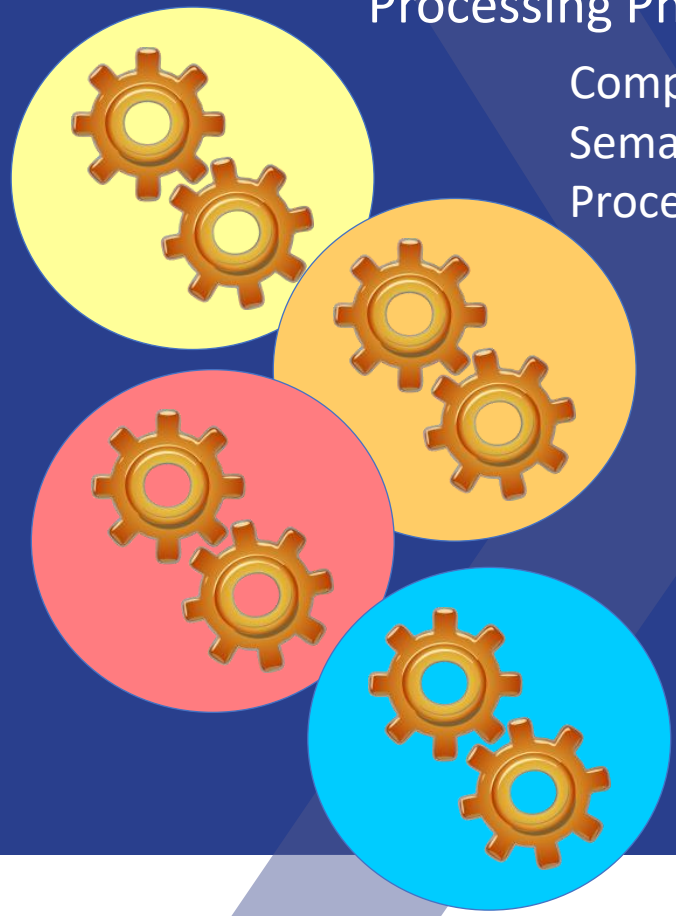
ok / ko

processed

final status

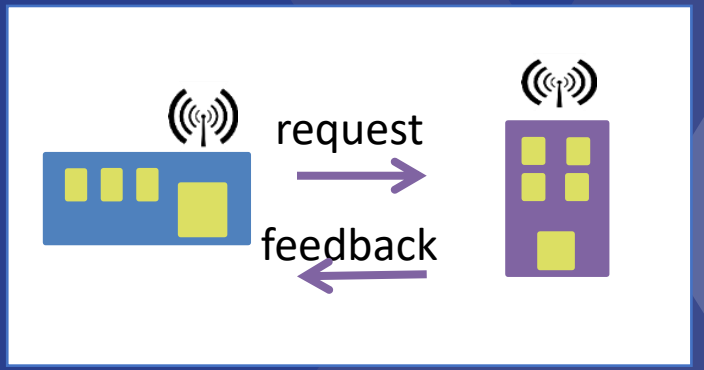
Processing Phases

Compliance check
Semanthic and
Processing errors

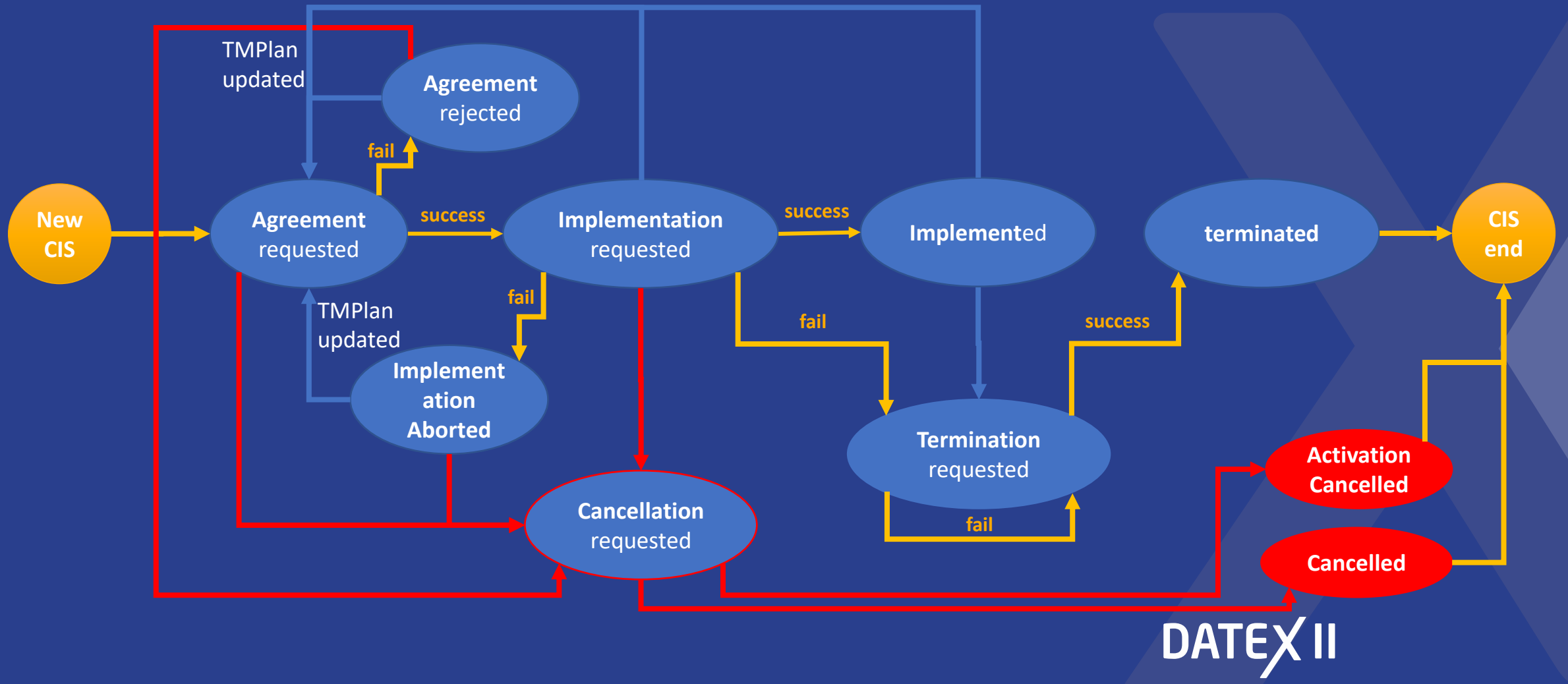


Simple CIS

- ServiceRequest
- ServiceFeedback
- Asynchronous:
  - Request when needed
  - No need for session
  - Feedback do not imply limitation to the request
  - When the provider is unavailable

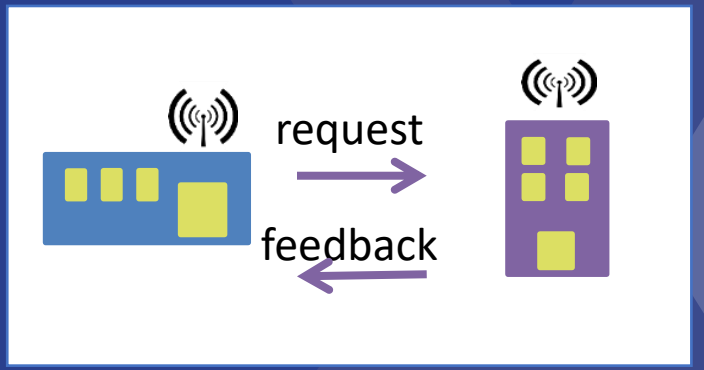


TMPlan workflow: TMPlan operation status



Stateful CIS

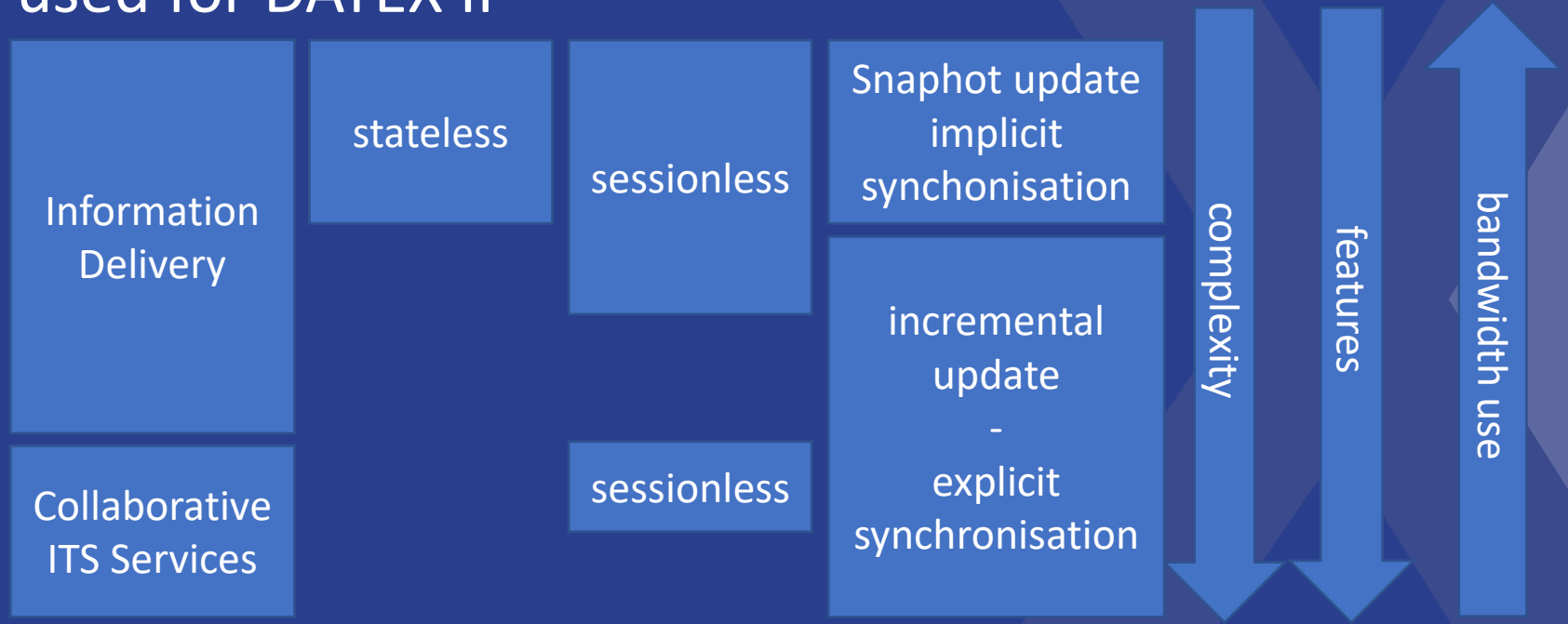
- Full Workflow management support enabled by
  - Session management
    - Setting up a TMPlan management session
    - Permanent session established with essential co-service providers
  - Link monitoring
    - Availability awareness of TMC/TIC involved in a TMPlan
      - When a node/service is unavailable triggers to another configuration
    - Evolving situation
      - Service setting up failure
      - Termination request for any further necessity



Exchange Patterns and Functional Exchange Profiles Recap

Selected EP+FEP to be used for DATEX II

- Snapshot Pull
- Snaphot Push
- Simple Push
- Stateful Push
- Simple CIS
- Stateful CIS



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Thanks for listening

DATEX II Act. 5
https://datex2.eu/activity-5

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