DATEX II

Exchange 2020

Exploring Exchange specifications

6TH FORUM
WEBINAR SERIES

Please ask your questions in the Q&A

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Overview

- DATEX II Docs website organisation https://docs.datex2.eu
  - Recall of Exchange Specification general information since Day 2 webinar
- PIM and PSM design
  - UML Diagrams
- Exchange Pattern specification insight
  - Snapshot Pull / Push (stateless exchange)
  - Simple Push
  - Stateful Push
  - Simple CIS
  - Stateful CIS
- PSM mapping
  - SOAP WSDL specifications

Exchange Specs
supporting DATEX II are
standardised under ISO & CEN
as
TS 19468
TS 14827-4

Exchange Specs Rationale

- 2006 V1.0 release
  - Exchange PIM and PSM
    - Push and Pull wsdl
    - Snapshot http/get – Low Cost Profile
- 2012 V2.x release
  - Exchange reference to V1.0
- 2014-2016 started discussion on how to approach
  - Different scoping in CEN and ISO for Data Exchange frameworks
  - Competing standards were approaching in ISO
- 2018 – Exchange2018
  - After long design drafting Exchange 2018 to support DATEX II v3.0
  - ISO TS 19468 approved Oct 19 for Exchage Platform Indipendente Model
    - A few flakes: LCP not consistent with old LCP paradigm
    - Missing some features and CIS not described
  - Start revision to next complete TS for PIM and PSM
- 2020 – revised specs Exchange2020

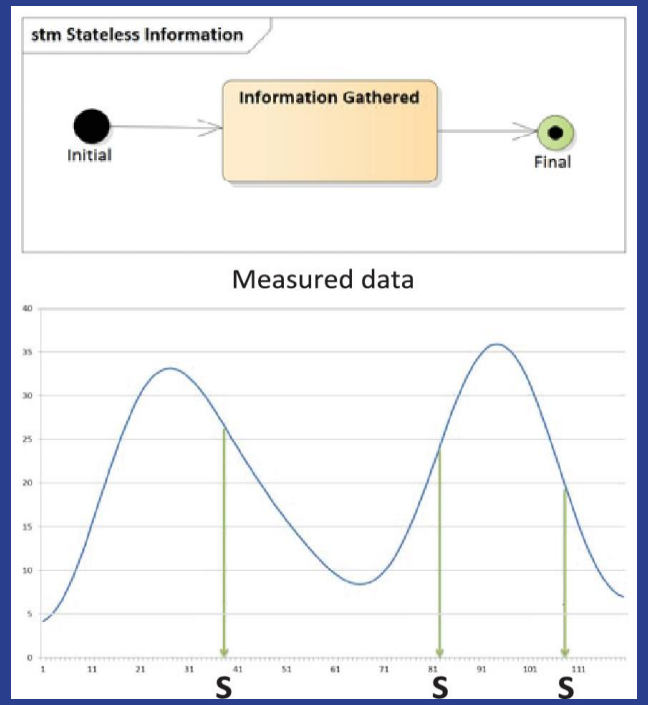
Exchange 2020

- Full PIM description for all Exchange Patterns
  - Information Delivery
    - Push & Pull
      - Stateless Snapshot Pull & Push
      - Stateful with state and session management
      - Simple Push added for simplified use cases using push + link monitoring

    Several paradigm have been chosen to fit all more commmon use cases
      - Exchange Guide for FEP+EP selection driven by your use case
  - Collaborative ITS Services
    - Base methods to support coordination mechanism for collaborative traffic management among centres
    - Simple CIS ➔ one shot
    - Stateful CIS ➔ session management workflow

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

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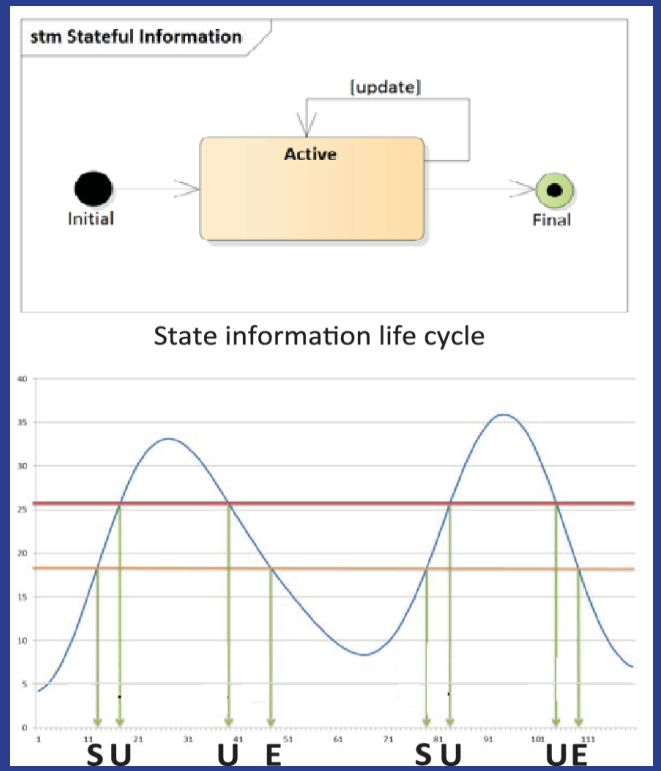
Lifecycle information pattern

- 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
- Thus triggering status update among supplier and client

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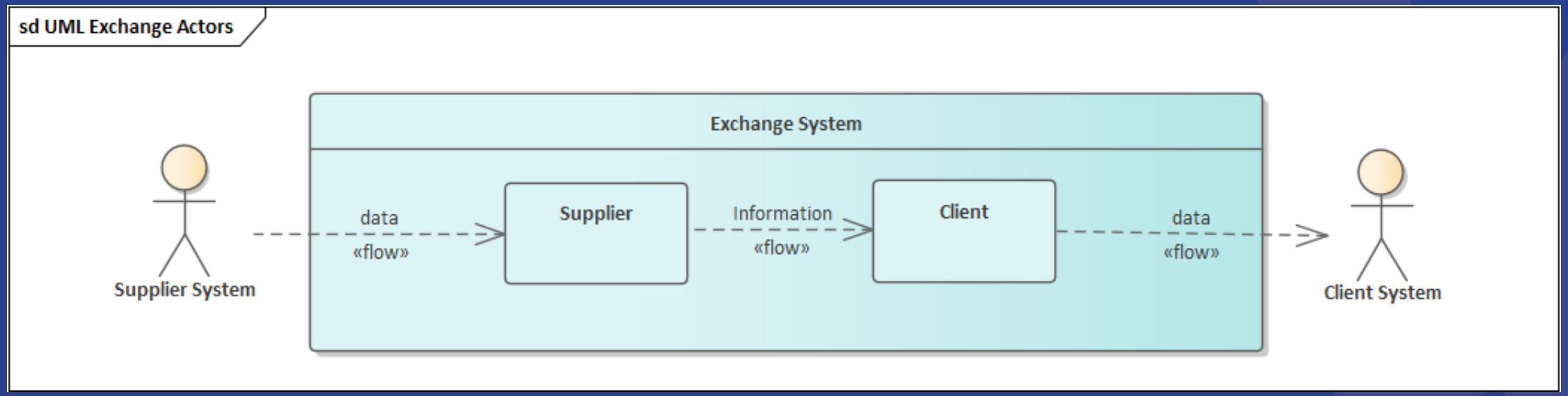
Exchange actors



Gathers information

Want to be synchonised with updated information

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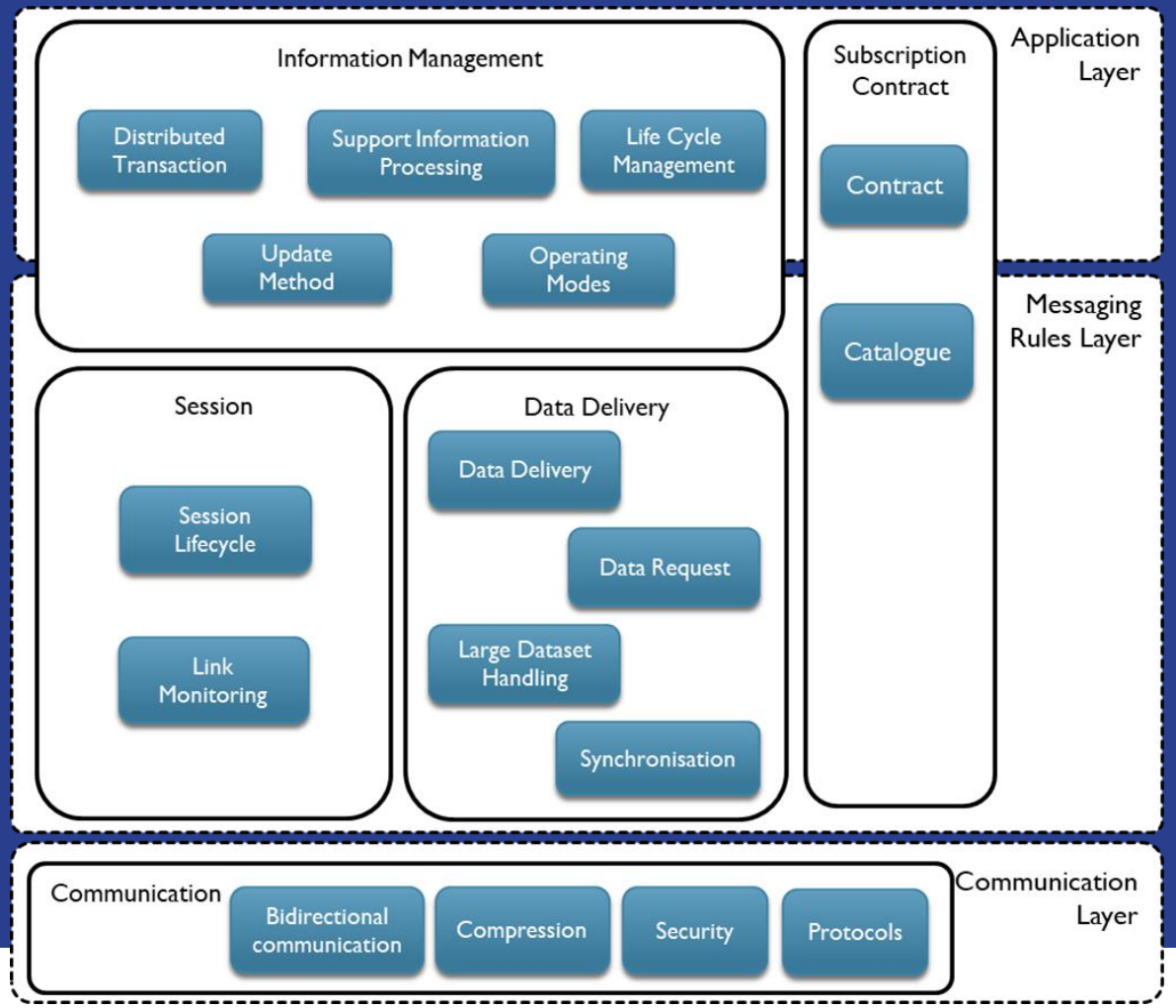
Contex diagram and features



Exchange 2020

- deals with exchange features implemented to support Information Exchange and Collaborative ITS Services
- relies on Communication layer for their relevant features

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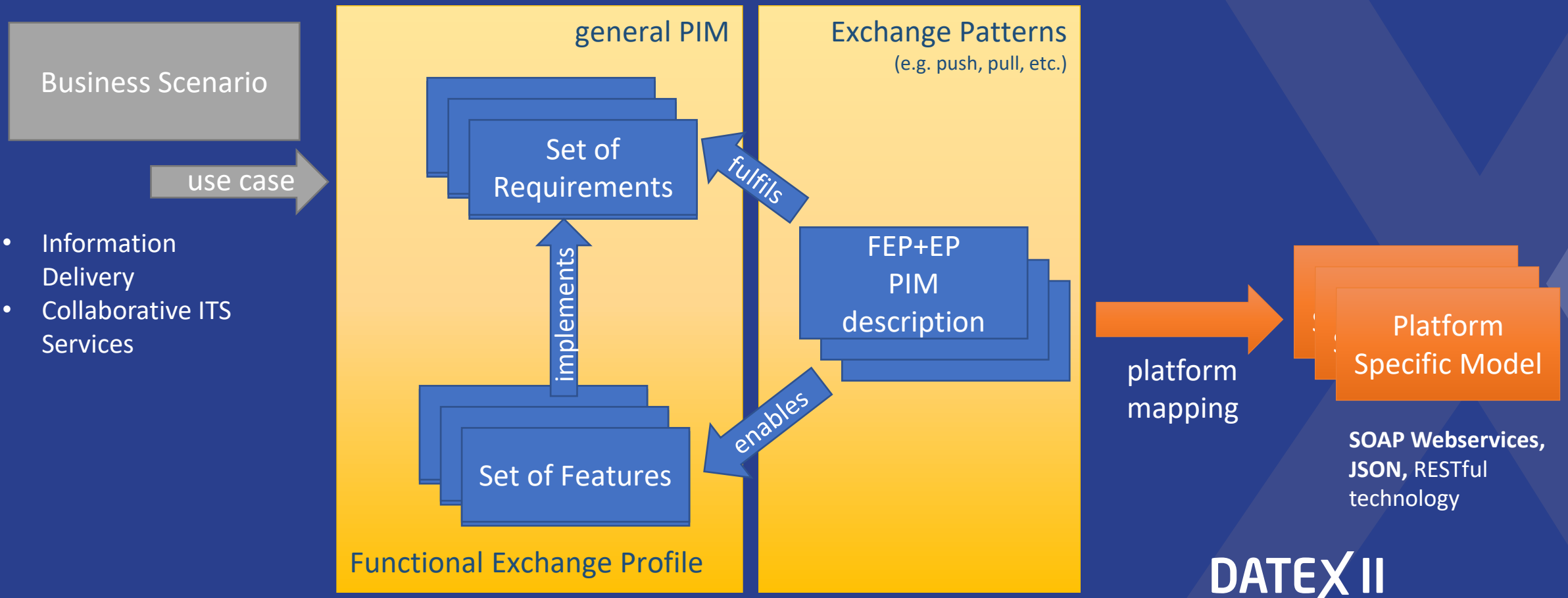
Model Driven Approach



- Information Delivery
- Collaborative ITS Services

SOAP Webservices, JSON, RESTful technology

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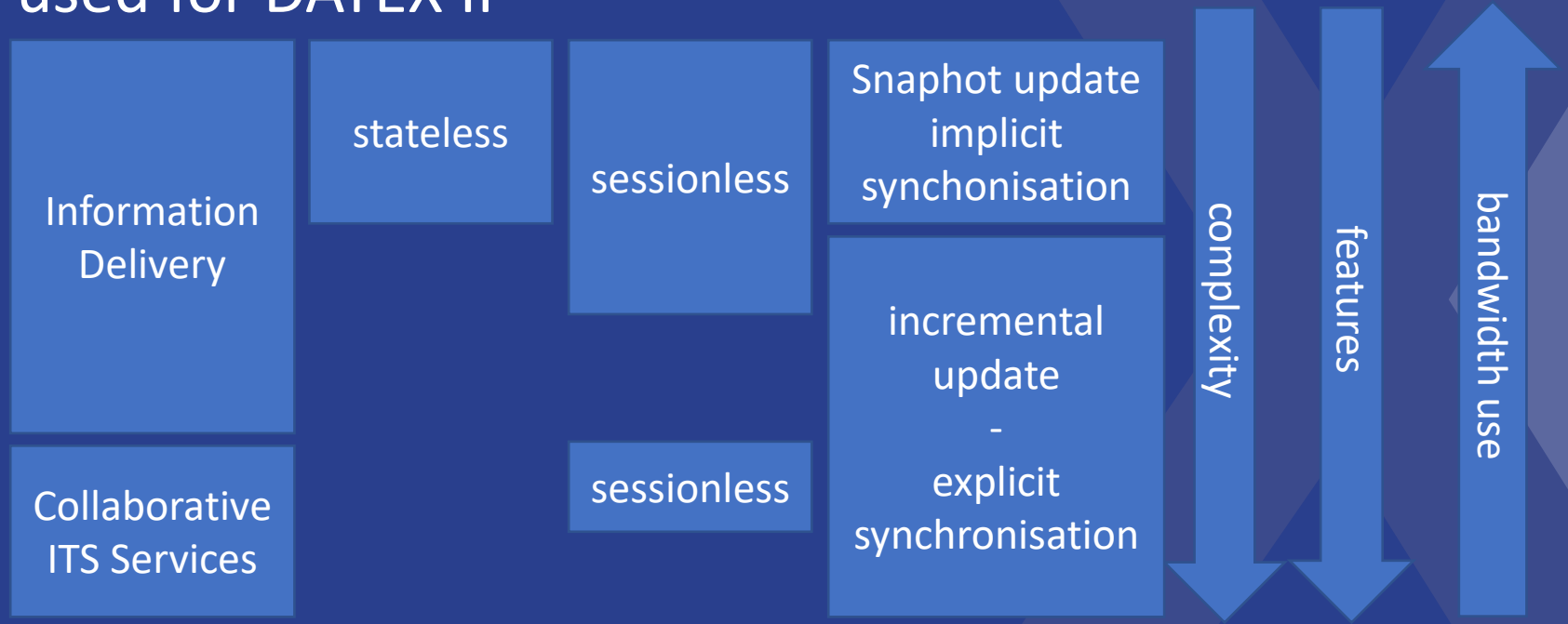
Exchange Patterns and Functional Exchange Profiles

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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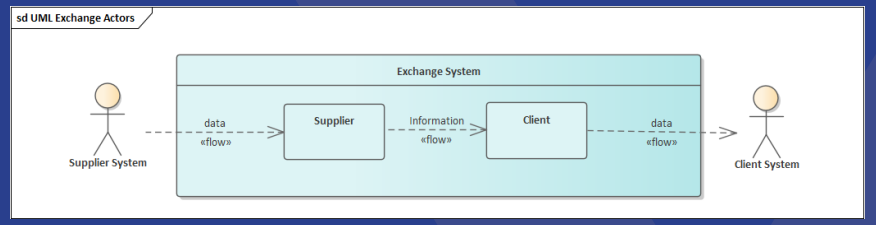
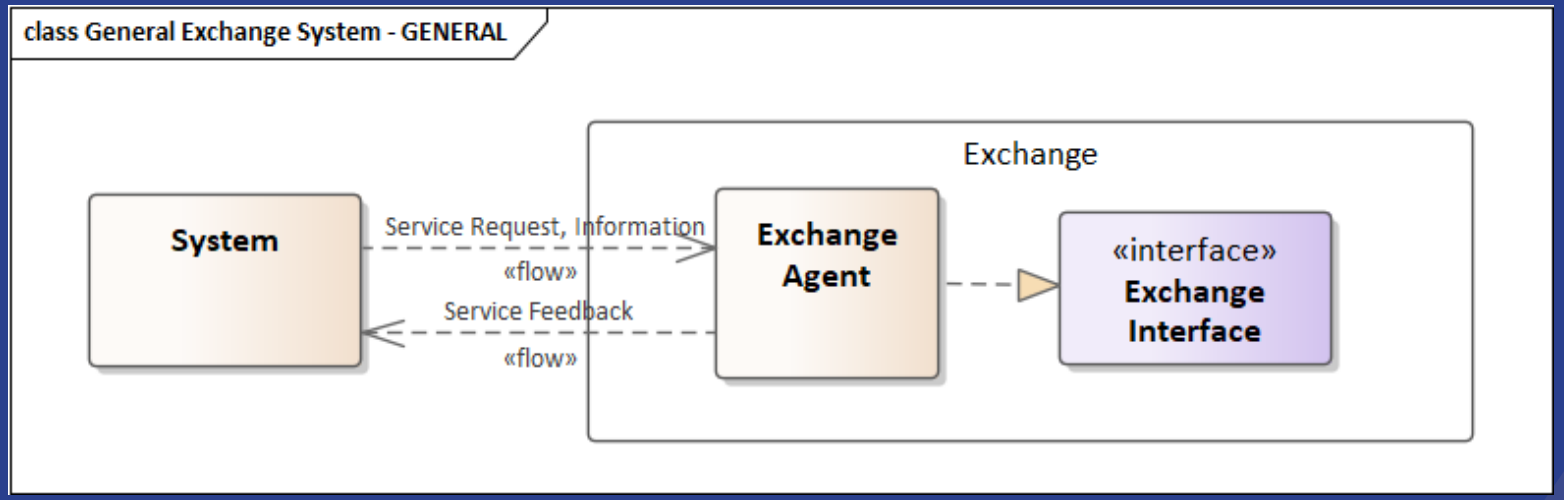
Exchange Pattern description via UML Interface Diagram





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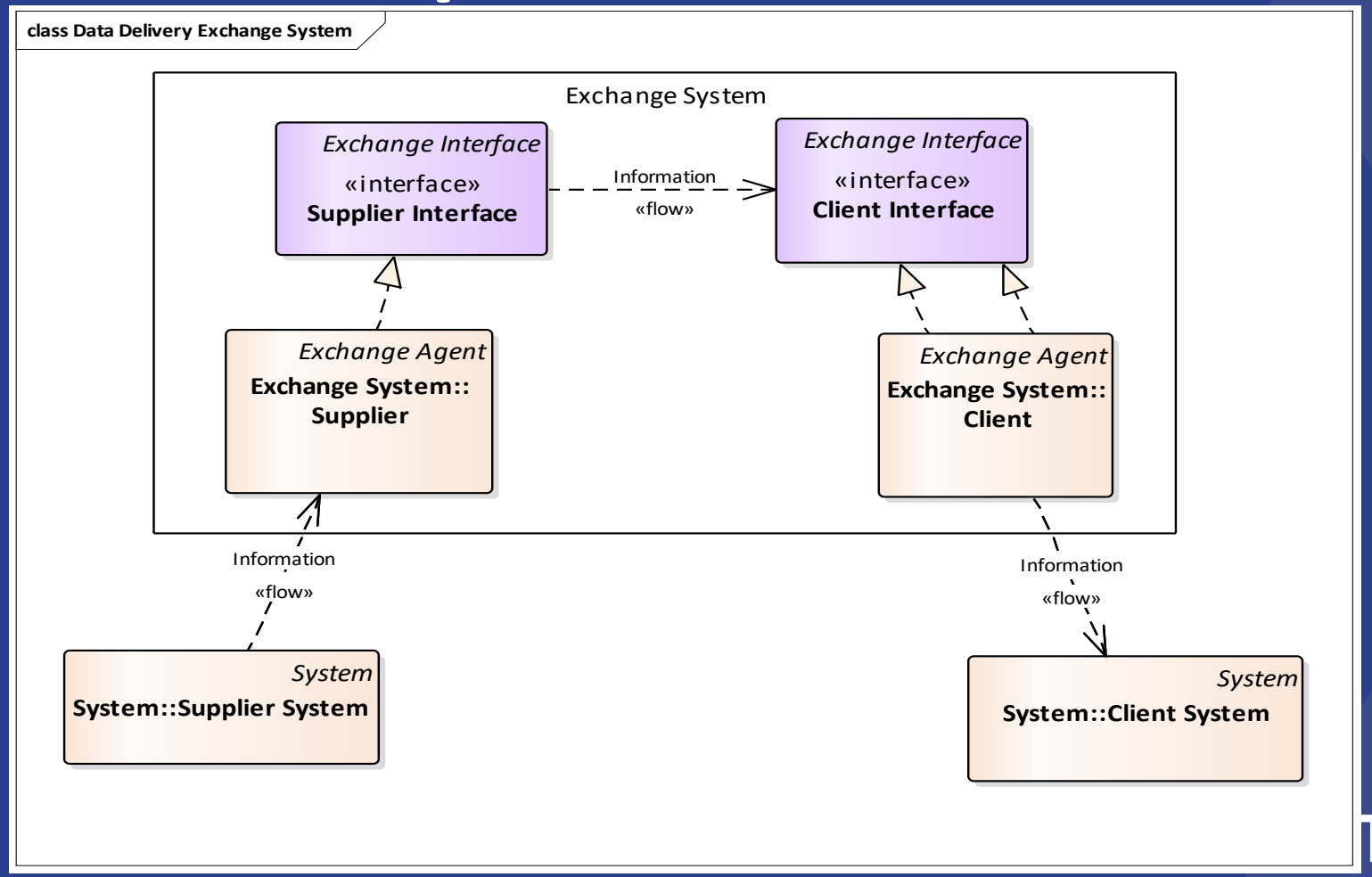
Interface Description Information Delivery



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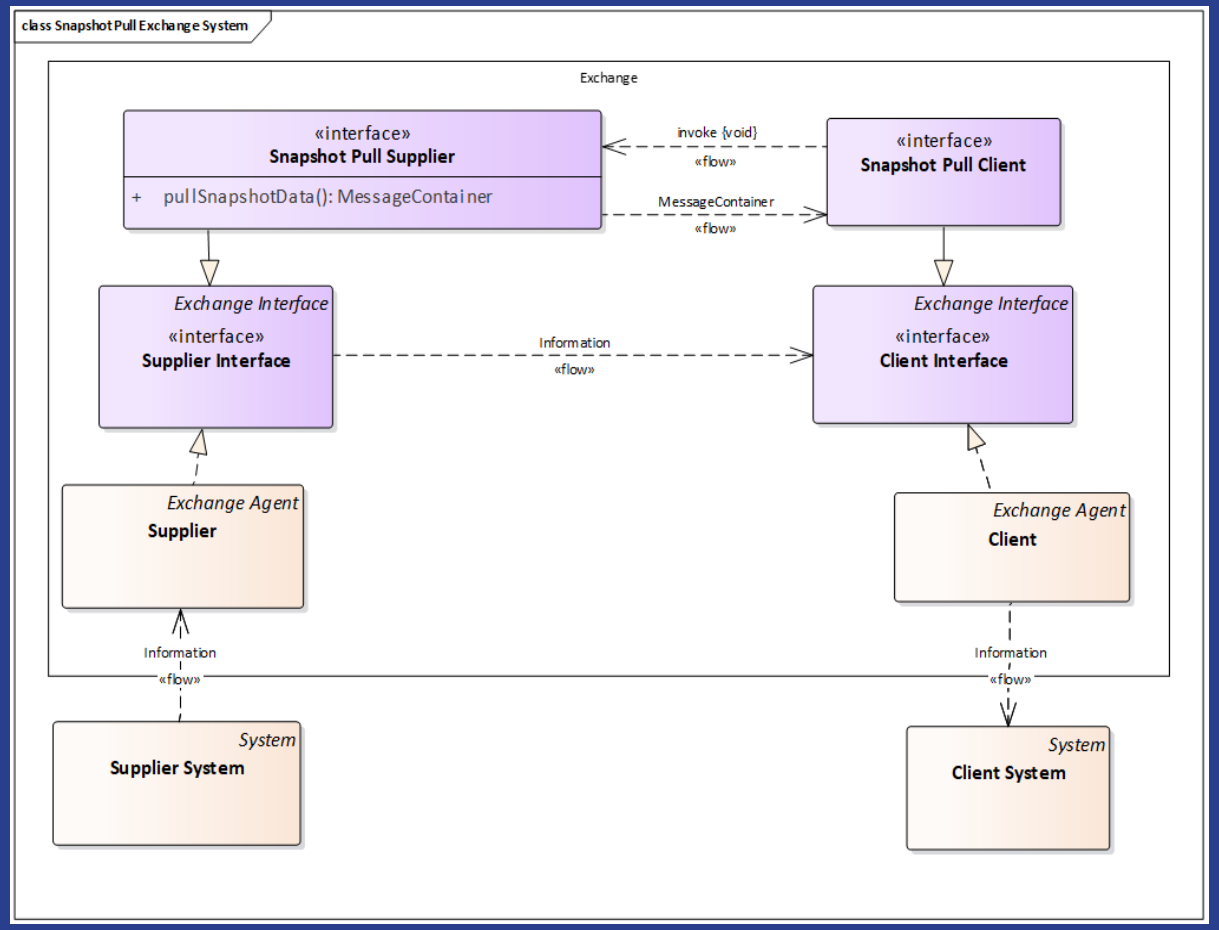
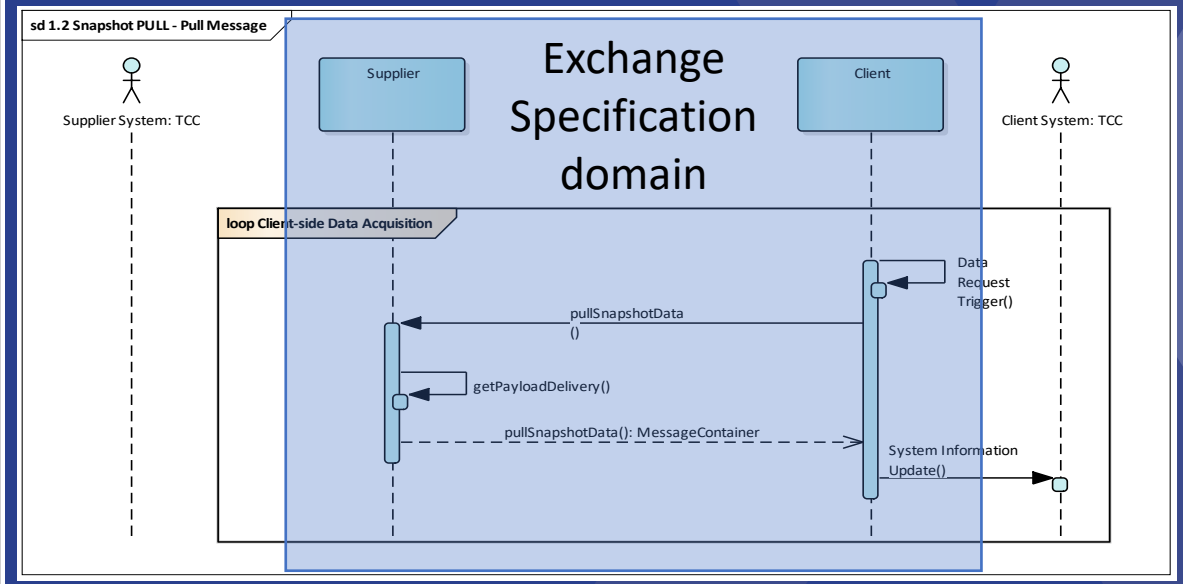
Snapshot Pull specialised Interface description



Client retrieves a snapshot of information, implicit synchronisation

1 simple method, void input

- pullSnapshotData



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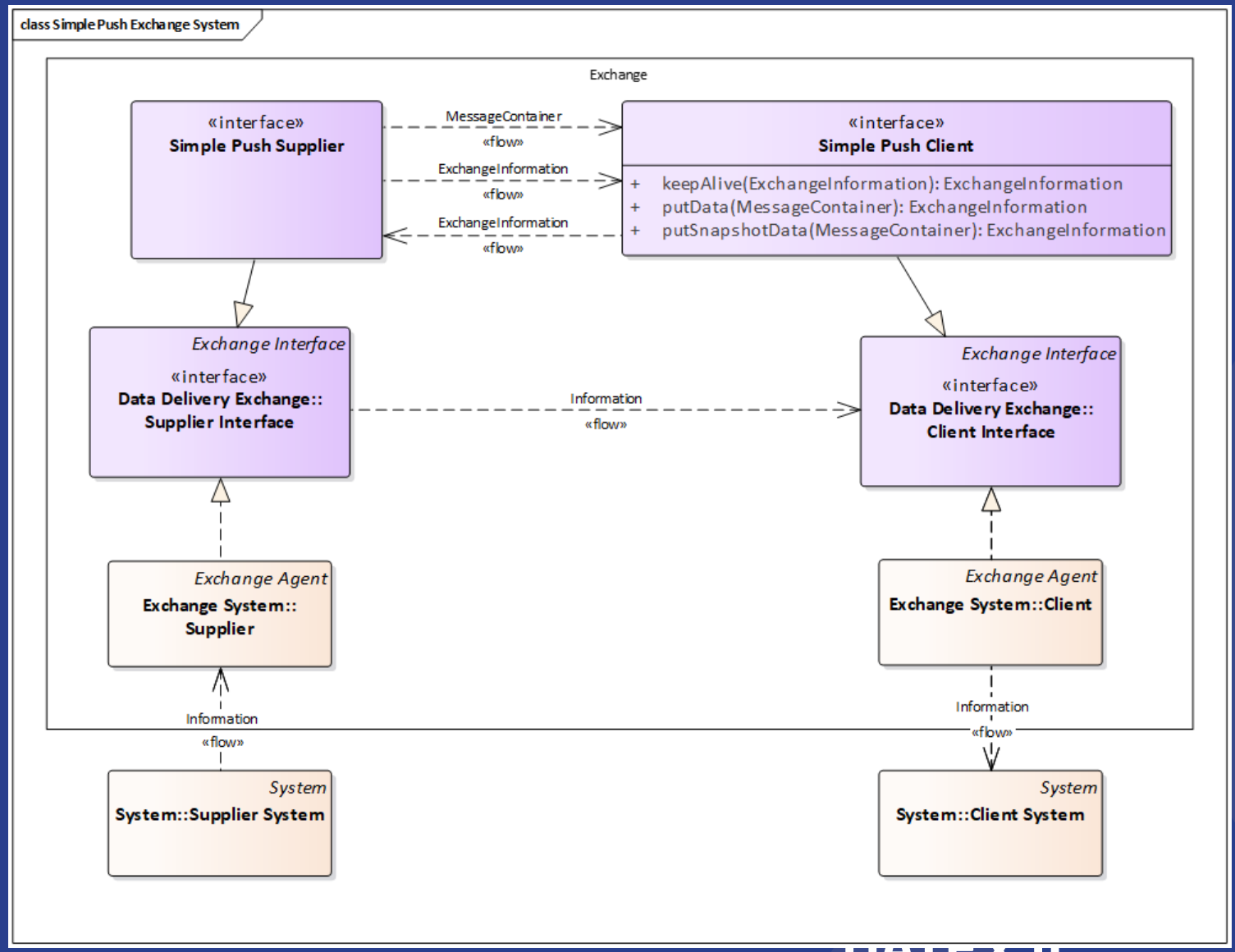
Simple Push Interface Description

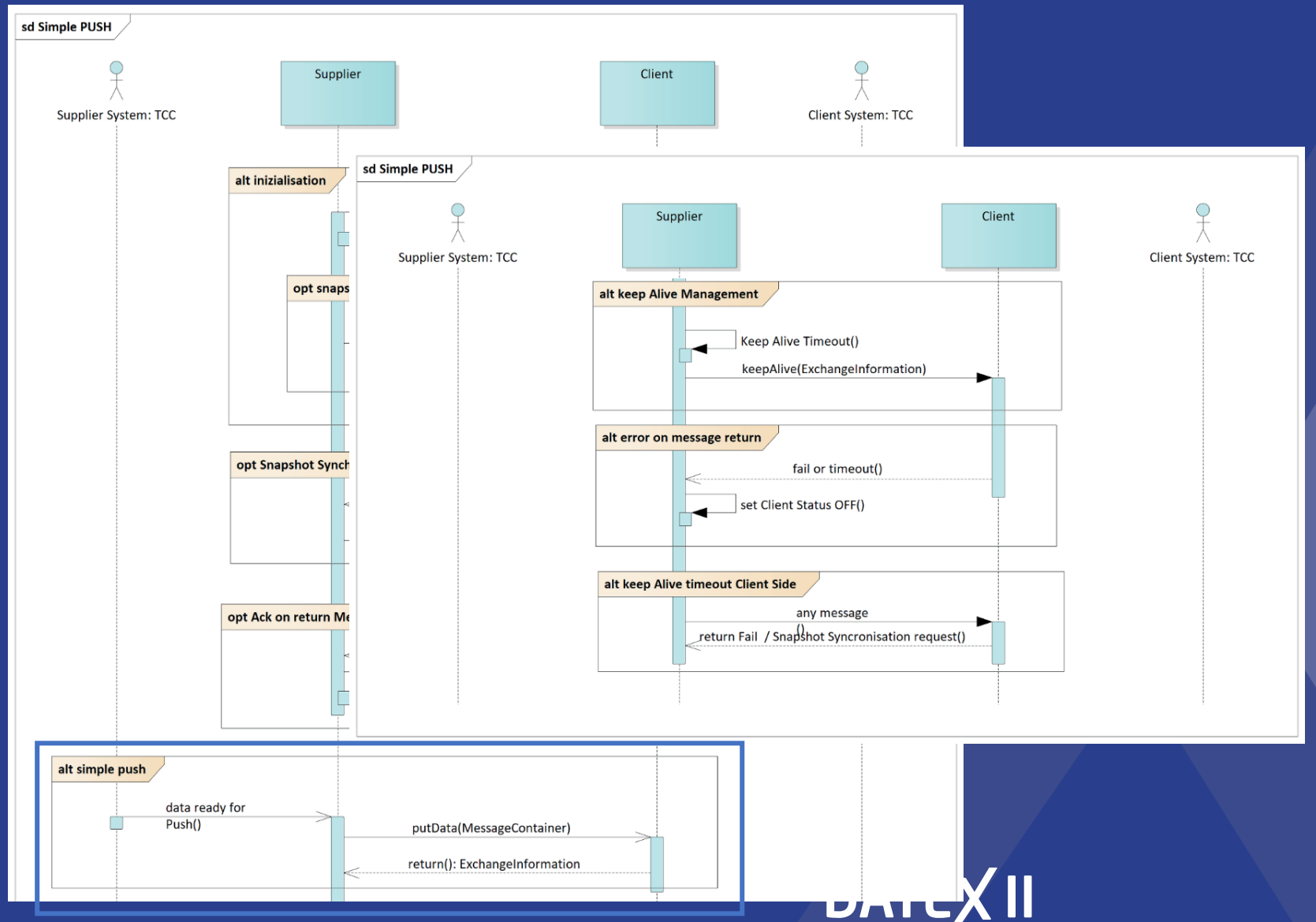
3 methods

- **putSnapshotData**
  - **Explicit synchonisation** vs implicit synchonisation in **Snapshot Exchange Pattern**
- **putData**
  - Depending on use case
    - All updated information, e.g. Measured data, Travel times
    - Single updated elements, e.g. situation, VMS Status, **etc.**
- **keepAlive**



Simple Push Sequence Diagrams

Supports the features implementation description



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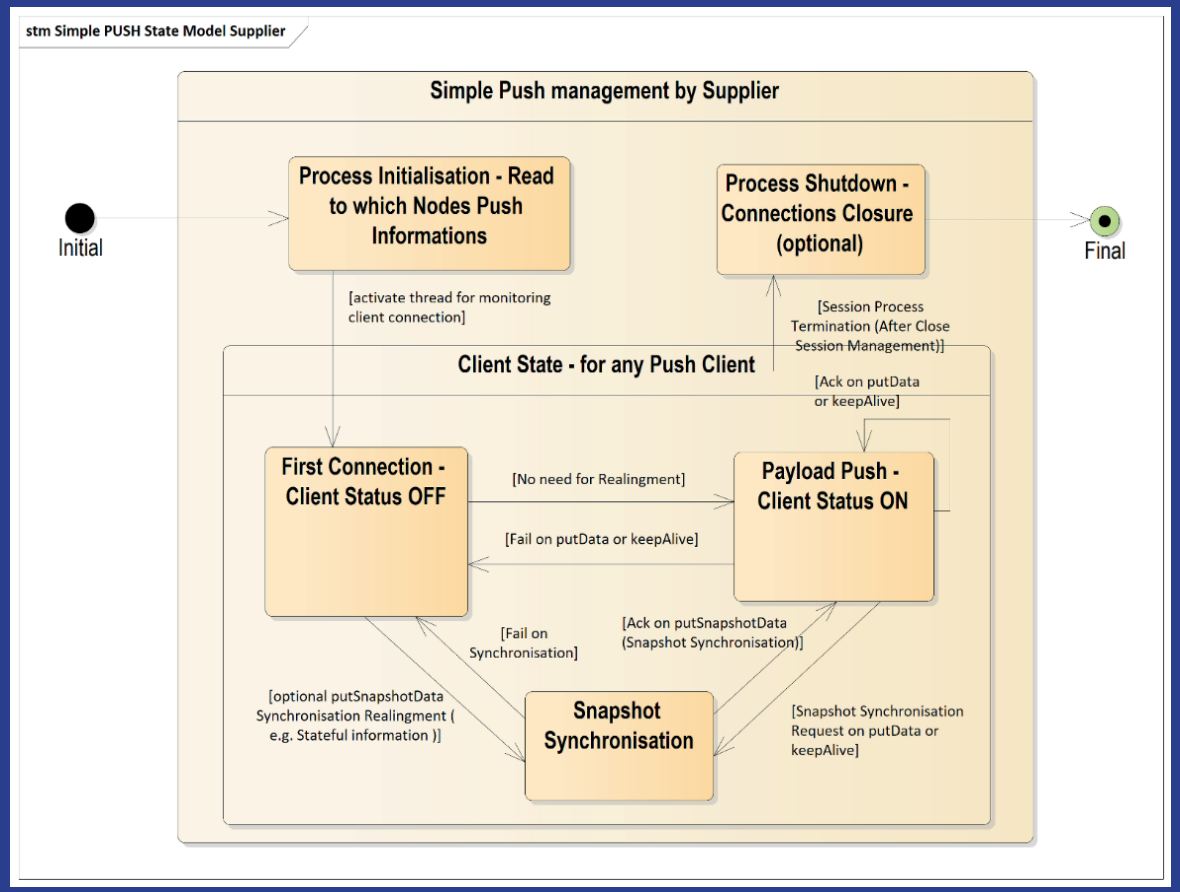
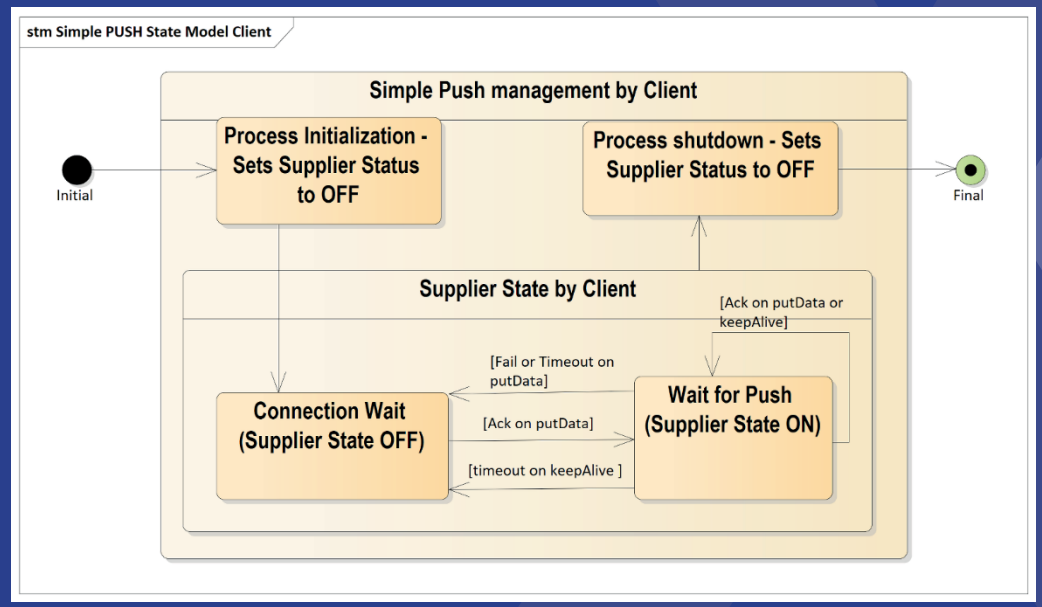
Simple Push State Diagrams



Supports the features implementation description



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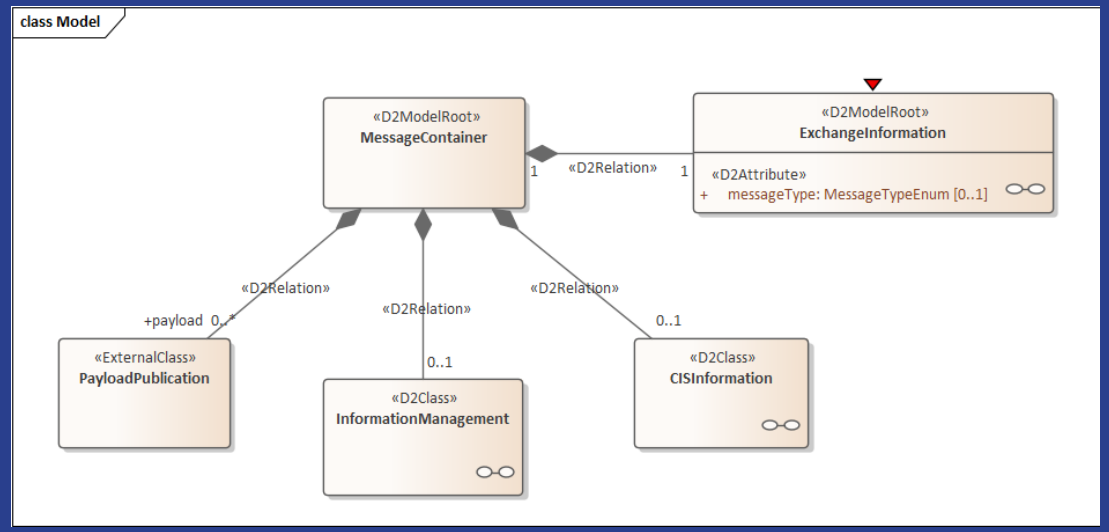
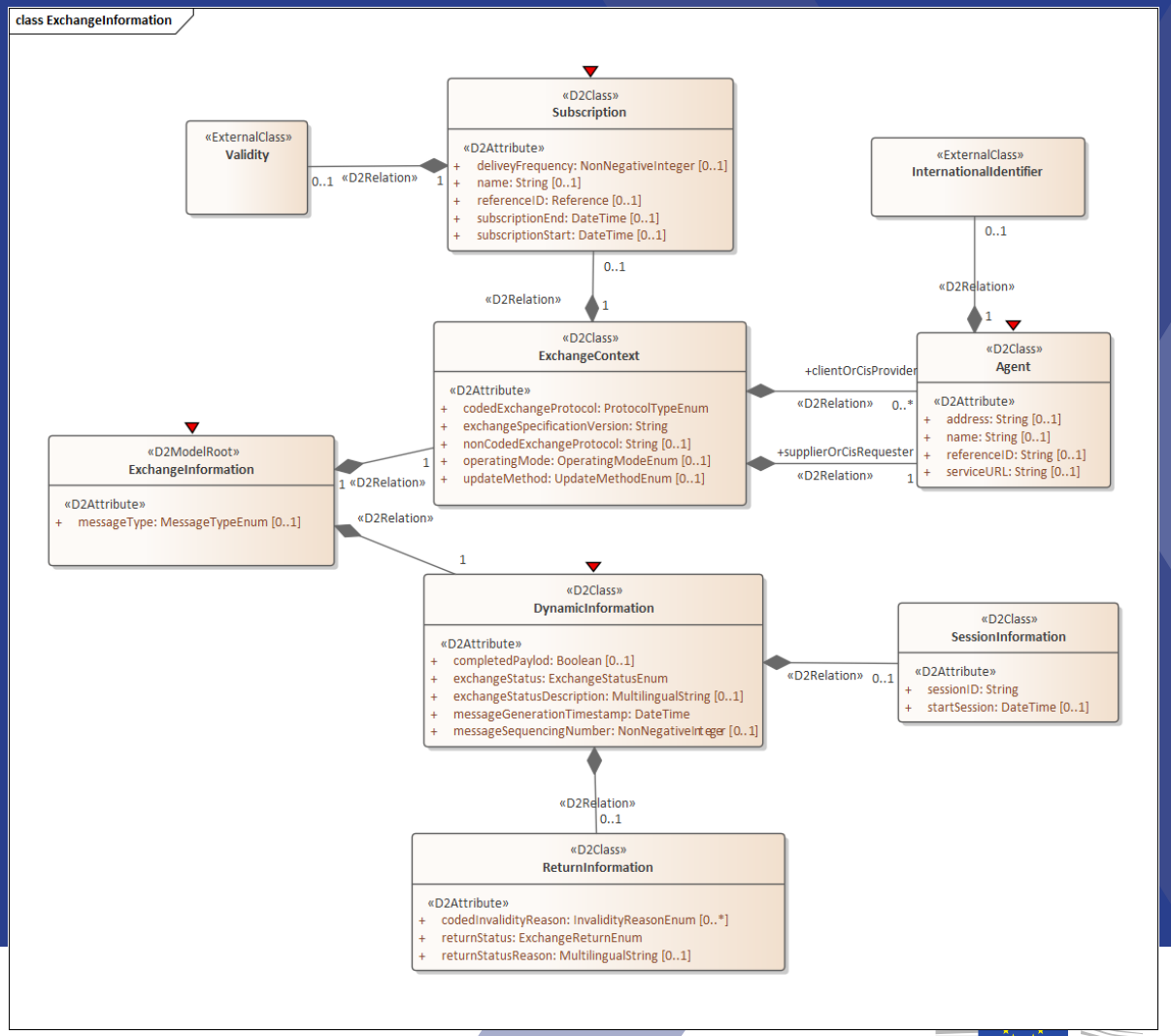
Basic Exchange Data Model



- Exchange Information supports features implementation
  - Exchange Context static
  - Dynamic Information



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PSM mapping

SOAP WSDL Implementation described at W3C.org

Web Services PSM mapping of FEP+EP PIMs

Platform Specific Model (PIM) specification to implement FEP+EP PIM based on WS SOAP technology is **mapping the abstract UML messages (invocation methods and data types) defined at FEP+EP PIM level as UML collaboration and sequence diagrams to the corresponding SOAP WSDL methods and data structure.**

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Let’s start through

- Exchange 2020 docs https://docs.datex2.eu/exchange/2020/
- Information delivery https://docs.datex2.eu/exchange/2020/information-delivery/
  - Snapshot Pull
  - Snapshot Push
  - Simple Push
  - Stateful Push
- Collaborative ITS Services https://docs.datex2.eu/exchange/2020/cis/index.html
  - Simple CIS
  - Statefule CIS

Giving the floor to Simone Ghiggi

DATEX II Act. 5

https://datex2.eu/activity-5

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26th May 2020

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