THTH view in the EU Arrowhead fPVN project

THTH Autumn webinar 2025
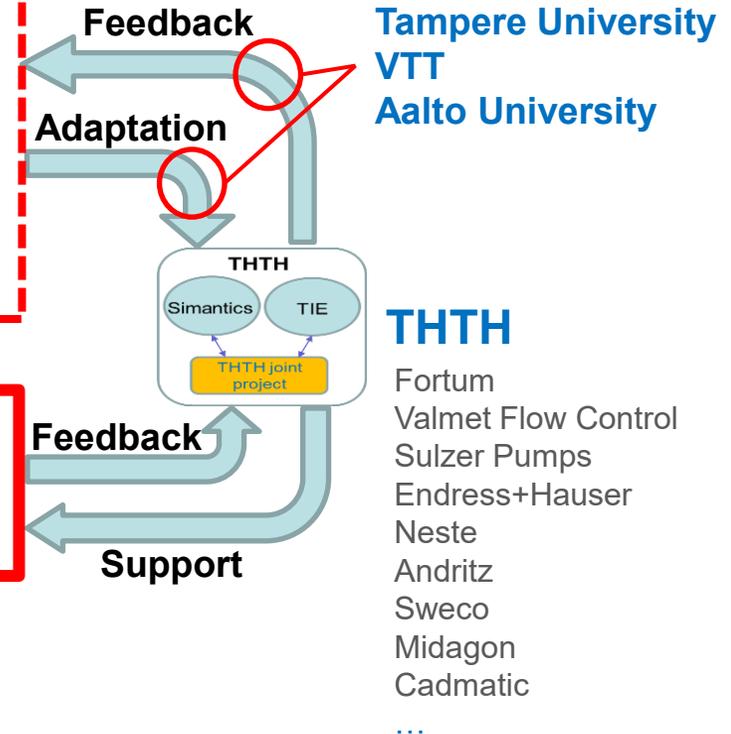
Arto Marttinen

Arrowhead fPVN development tasks

Common tasks

Micro-services (integration, API) (WP2)
Major digital languages (standards) (WP3)
Translations (mapping between standards) (WP4)
Exploitation and digital transformation management (WP10)
Dissemination and standardization (WP11)

Feedback

Adaptation

Tampere University
VTT
Aalto University

THTH

Simantics   TIE

THTH joint project

THTH
Fortum
Valmet Flow Control
Sulzer Pumps
Endress+Hauser
Neste
Andritz
Sweco
Midagon
Cadmatic
…

Process industry pilots (WP9)
Stora Enso, Afry, Semantum from Finland

Feedback

Support

Automotive pilots (batteries)

Aerospace pilots

Arrowhead fPVN pilot use-cases in WP9

- Three main pilot use-cases – Finnish focus on WP9.3 and partly on WP9.2

- WP9.2 (Sweden) focuses in industrial Digital Twin

- WP9.3 (Finland) focuses on several different use-cases
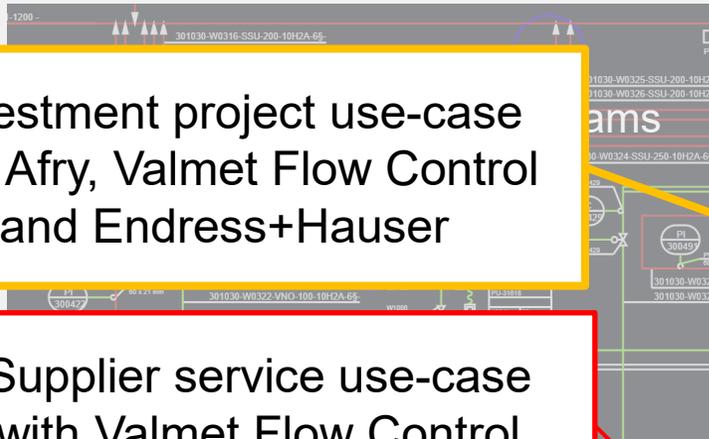
  [Digital Data Chain Consortium as a partner](#)

  - Technical information exchange in process industry investment projects and service operations in digital value chains
    - For managing engineering & design information, information for procurement and information for O&M
    - The exchange of technical information takes place through a collaboration platform (IEP*) and is integrated with commercial information exchange processes (Peppol) – two currently separate manual processes are combined into one automated "Purchase-to-Pay" process.
    - Common standardization infrastructure (PCA Library Service) to serve different industries – complementing standards with pulp and paper industry requirements

  - Dependability data management in engineering and O&M

  - Sustainability data

- Collaboration with the Norwegian DISC project

*IEP – Information Exchange Platform
Sharecat is applied in the pilot

THTH focus on Arrowhead fPVN use-cases

3D engineering
Process Flow Diagrams

Investment project use-case with Afry, Valmet Flow Control and Endress+Hauser

Supplier service use-case with Valmet Flow Control

Process hierarchies
Functional requirements
Equipment information
Documentation
O&M information
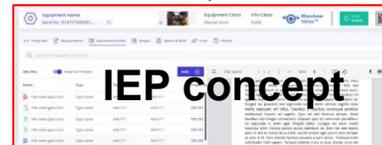Dependability, sustainability, condition monitoring, performance, …
Commercial information

Pre-engineering

Functional requirements

Detailed engineering

Request for quotations and tendering

Catalogues

IEP concept

Procurement/sales

Delivery and commissioning

Invoicing and payment

Equipment information

Steady-state simulation, VTT
Dynamical simulation, Semantum
Intelligent P&I diagrams, Semantum
Engineering & design, AFRY

ModelBroker
AutoCAD
…

Functional requirements, Stora Enso, AFRY

Catalogues, Stora Enso, AFRY, suppliers

Pre-award

Digital data sharing platforms

Sharecat™

Purchase requisition, Stora Enso, AFRY

Ordering and delivery, Stora Enso, suppliers

Post-award

EU digitalization Acts

EU Digitalization Acts and Directives

DPP Digital Product Passport
DSA Digital Services Act
DMA Digital Market Act
DGA Data Governance Act
AIA Artificial Intelligence Act
DA Data Act - DataskäldÖ
NIS2 New NIS Directive for European Cyber-security
ESPR Ecodesign for Sustainable Products Regulation (this includes Digital Product Passport)
GSRD Corporate Sustainability Reporting Directive (CSRD) - see EU corporate sustainability reporting
eFTI electronic Freight Transport Information Regulation in European Digital Transport and Logistics Forum (DTLF)

THTH ry 2025

Association of Decentralized Information Management for Industry THTH ry
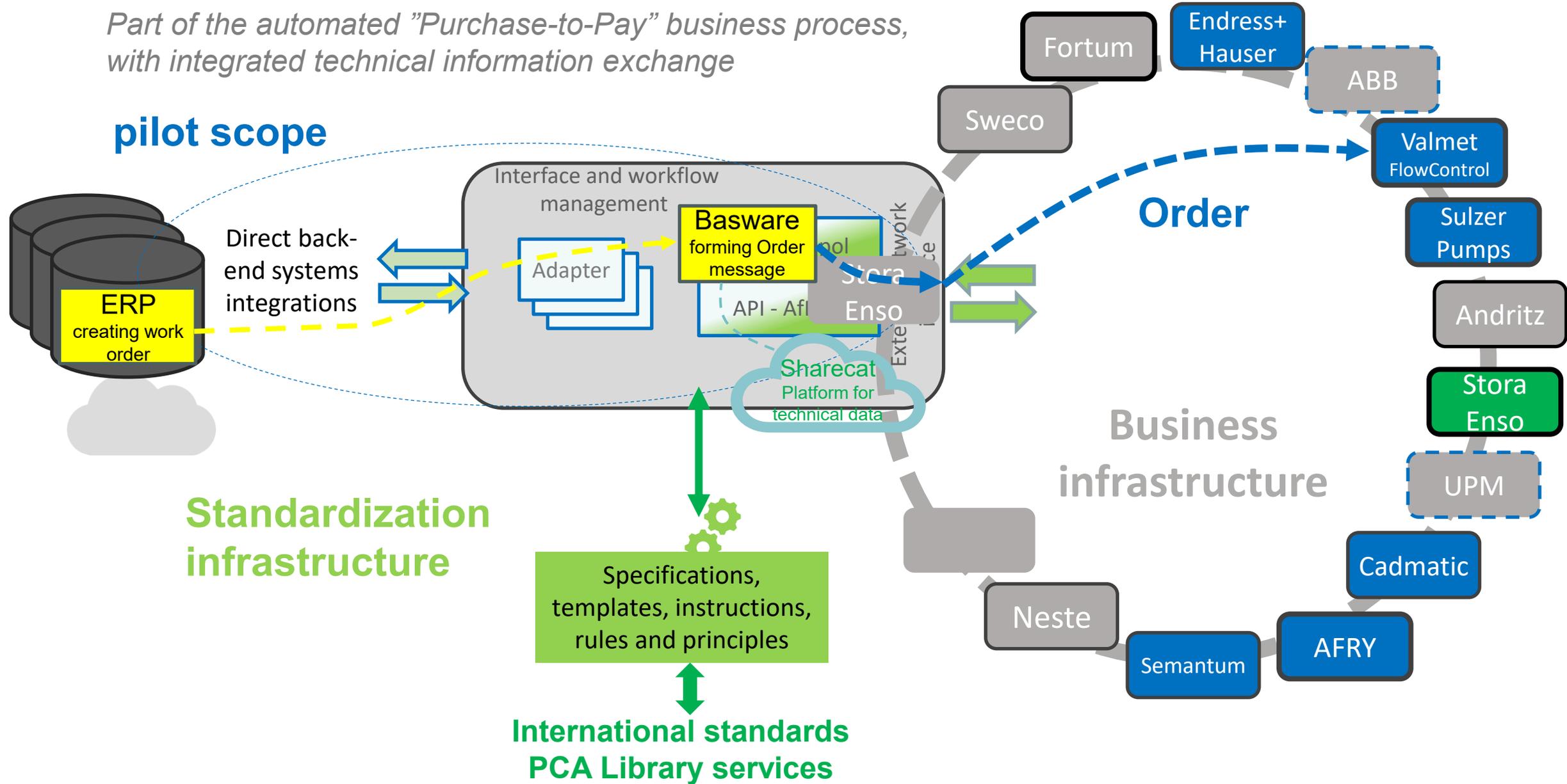
Digital transformation in business networks

- Digitalization changes intercompany business processes
    - E.g. use-case Purchase-to-Pay business process automation with technical information exchange
    - Information has its own business value

- Digitalization requires new skills and capabilities for
    - Individuals, companies and business networks

- Ever-increasing amount of information changes value-creation opportunities in business networks
    - More information means more business value and new business opportunities
    - External regulation (EU) is constantly emerging → companies should be involved and influence!
    - How to utilize best skills in business networks?

- Business networks needs rules and principles
    - The parties must always agree on standards and technologies and how they will be applied → Dictated by technology supplier vs. jointly agreed upon a supplier-neutral architecture?
    - The ever-increasing amount of information also raises questions about IPR, liability, …
      → more intercompany legal issues to agree!
    - How should European companies cope with regulation to improve their competitiveness?
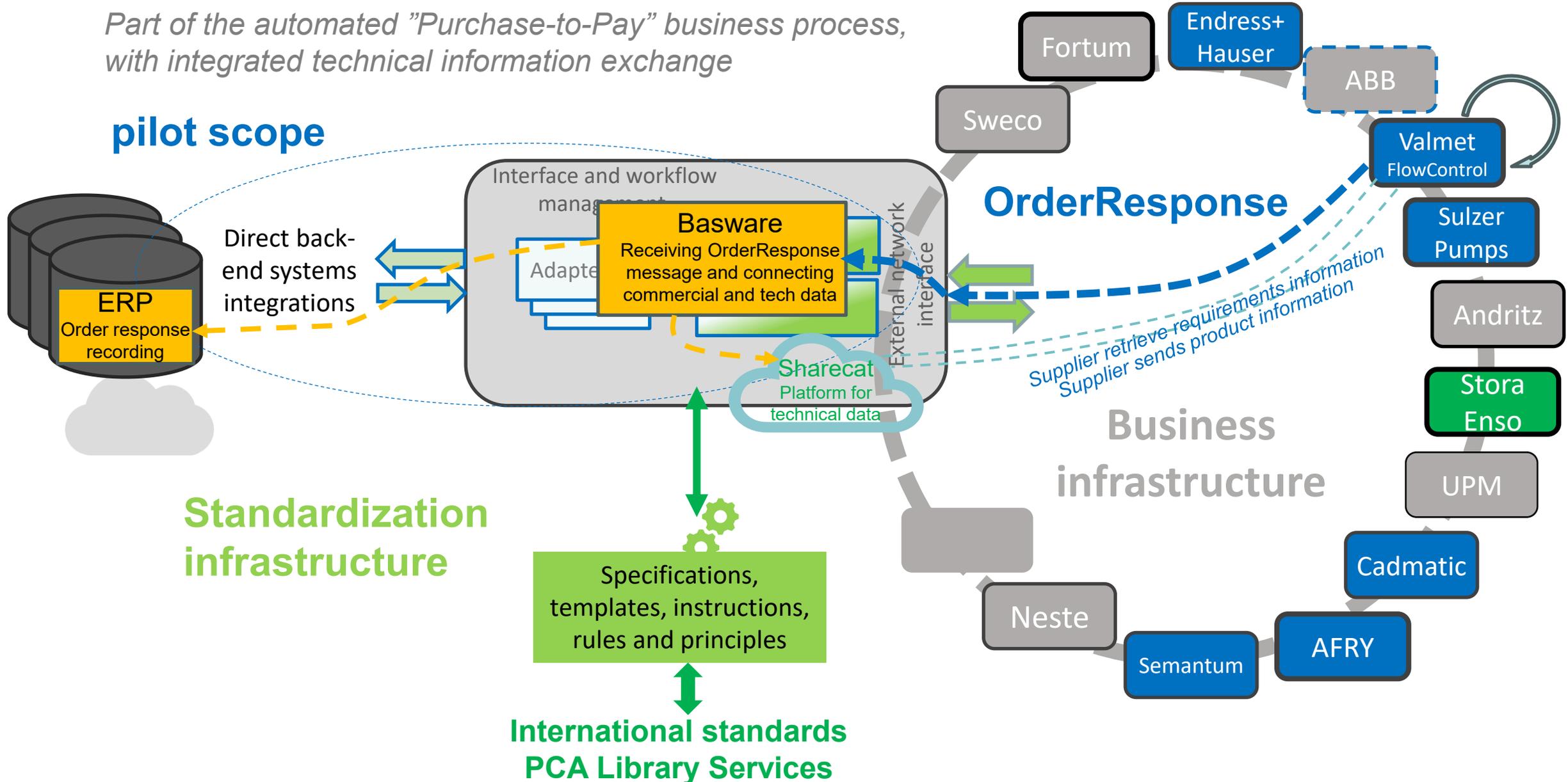
Use-case example – Order

Part of the automated "Purchase-to-Pay" business process, with integrated technical information exchange

pilot scope

Interface and workflow management

ERP creating work order

Direct back-end systems integrations

Adapter

Basware forming Order message

API - Afl...

Stora Enso

Sharecat Platform for technical data

Order

Standardization infrastructure

Specifications, templates, instructions, rules and principles

International standards PCA Library services

Business infrastructure

Fortum

Sweco

Endress+ Hauser

ABB

Valmet FlowControl

Sulzer Pumps

Andritz

Stora Enso

UPM

Cadmatic

AFRY

Semantum

Neste

Use-case example – OrderResponse

Part of the automated "Purchase-to-Pay" business process, with integrated technical information exchange

pilot scope

OrderResponse

Business infrastructure

Standardization infrastructure

International standards PCA Library Services

Direct back-end systems integrations

ERP
Order response recording

Interface and workflow management

Basware
Receiving OrderResponse message and connecting commercial and tech data

Adapter

External network interface

Sharecat
Platform for technical data

Specifications, templates, instructions, rules and principles

Supplier retrieve requirements information
Supplier sends product information

Fortum

Endress+ Hauser

ABB

Sweco

Valmet FlowControl

Sulzer Pumps

Andritz

Stora Enso

UPM

Cadmatic

AFRY

Semantum

Neste

Summary

- THTH goals in Arrowhead fPVN to pilot and demonstrate
  - digitalized transactional business processes with collaborative information exchange platforms – not only for procurement, but also for engineering and logistics
  - common standardization infrastructure
    - PCA library service, international standards harmonized and supplemented for different industry needs
  - common standardized integration interface specifications for application vendors
  - shared ecosystem rules and principles for all above
- Strong Nordic development cooperation as EU regulation evolves
- THTH connects the interests of national companies with the international common interests of the Arrowhead fPVN and DISC projects and other industry groups.
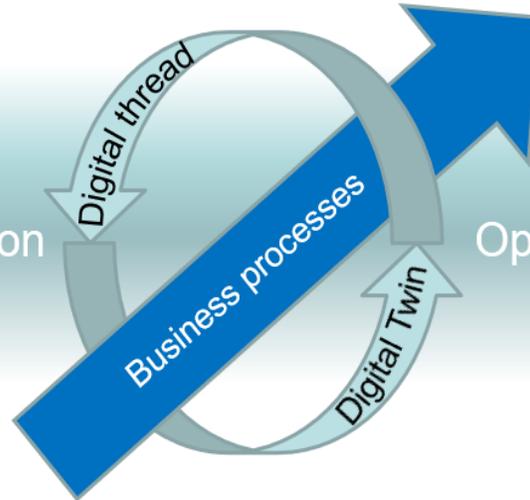
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THTH

THANKS

THTH vision

Commercial information

Digital thread

TIE division
Technical information

Business processes

Digital Twin

SIMANTICS division
Operational information

Business information Digital Thread Digital Twin processes

Simantics

International standardization
and collaboration

THTH ry 2025

EU Digitalization Acts and Directives

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