

MARKET4.0

CONNECT & PRODUCE

A Multi-Sided Business Platform for Plug and Produce Industrial Product Service Systems

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MOTIVATION (...as is situation)

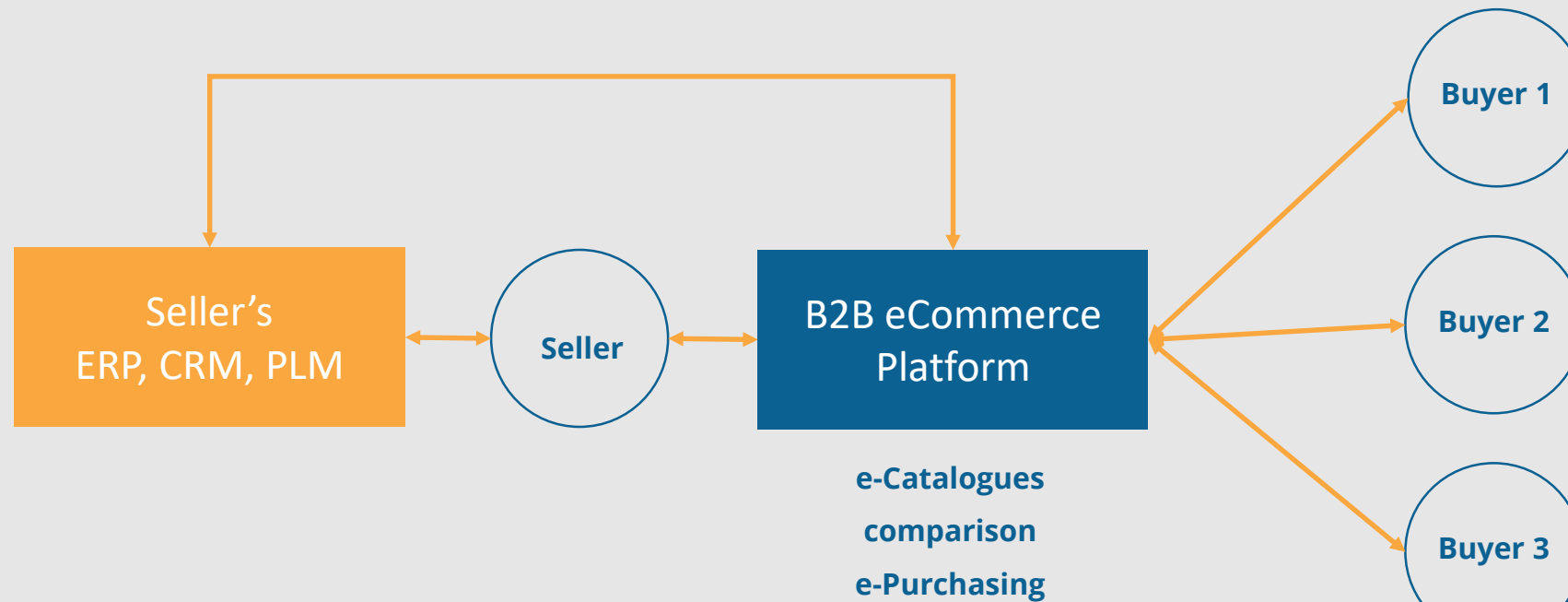
On-line Procurement of Production Equipment and Services



Problems/Shortcomings

- ❖ Hard to maintain *catalogue-based web portals*
- ❖ *Vendor lock-in* solutions e.g. from ERP providers
- ❖ *Friction* for ecosystem building (e.g. difficult to integrate service providers)
- ❖ No possibility to *virtually test or simulate*

B2B eCommerce platforms



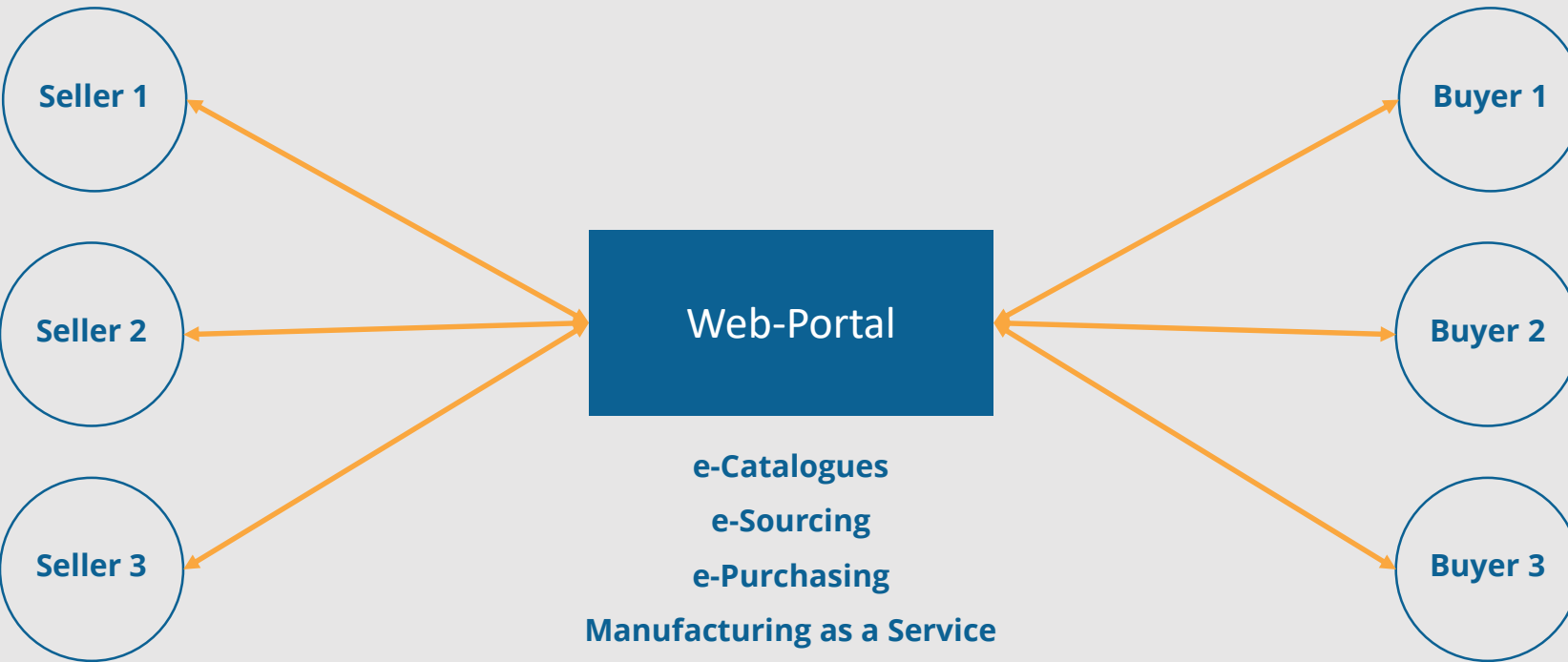
STRENGTHS

- ✓ Integration capabilities with ERP, CRM, PLM
- ✓ Suitable for mid-caps or large companies
- ✓ Improved digital experience and personalization (B2C like)
- ✓ Detailed control over buying, selling, and purchasing workflows
- ✓ Some solutions offer App Store

WEAKNESSES

- No ecosystem building
- Limited support of e-Sourcing
- Less suitable for SMEs
- Vendor lock-in
- Third parties difficult join
- No focus/specialization in manufacturing services
- No simulation capabilities

B2B e-Marketplaces



STRENGTHS

- ✓ Suitable for mid-caps, large companies and SMEs
- ✓ Improved digital experience and personalization (B2C like)
- ✓ Ecosystem building
- ✓ Focus/specialization in manufacturing services.

WEAKNESSES

- Limited control over buying, selling, and purchasing workflows
- No capability to build supply networks.
- No simulation capabilities.
- No App Store
- No direct, peer-to-peer communication. All transactions are based on the portal.

Opportunities

➤ Industry4.0 technologies

- Digital Twin/Simulation data are generated in the various phases of the lifecycle
- Digital Factory technology provides the capability to virtually validate and test manufacturing equipment.
- Industrial IoT technology provides the capability for networked production equipment.

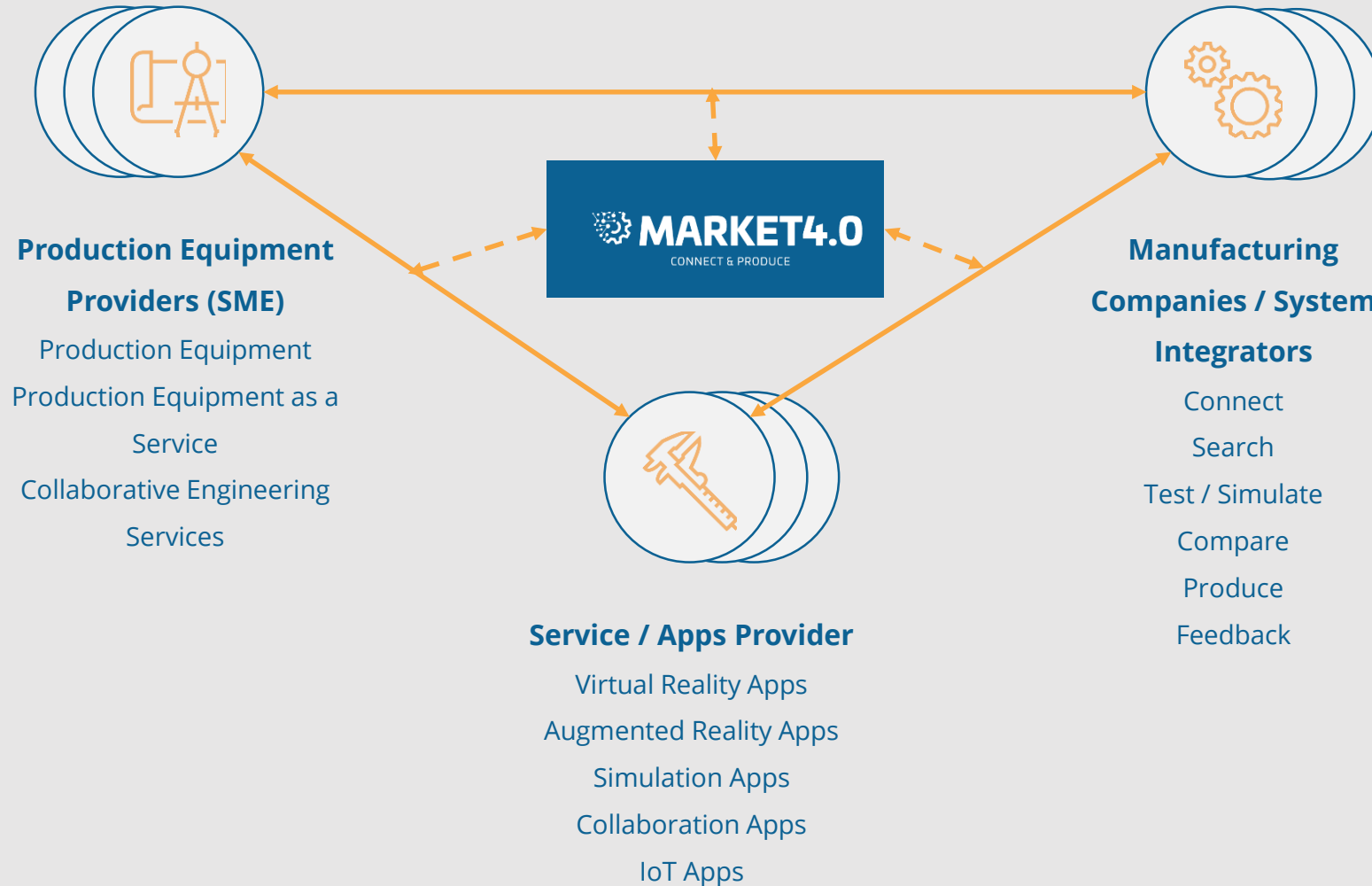
Opportunities

- **Industrial Data Space (IDS)** technology provides the opportunity to share data in a trusted ecosystem (data sovereignty).
- European companies are not making the most of all the opportunities digital has to offer. For example highly digitalized is
 - 56% of computing companies versus only 6% of metal products companies
 - 58% of large enterprises versus only 20% of SMEs

VISION

MARKET4.0 develops an **open multi-sided digital platform** for enabling **production equipment** and **service providers** to connect and work together with **manufacturing companies**.
Creates **technical** and **financial trust** in manufacturing B2B collaboration.

CONCEPT

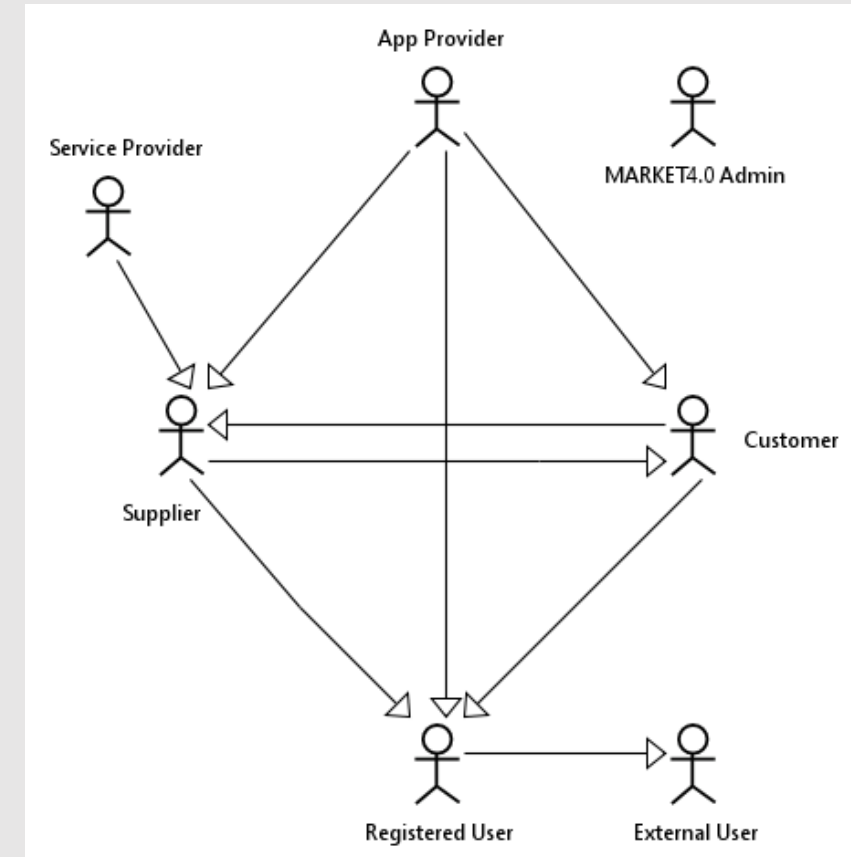


Peer-to-peer marketplace services

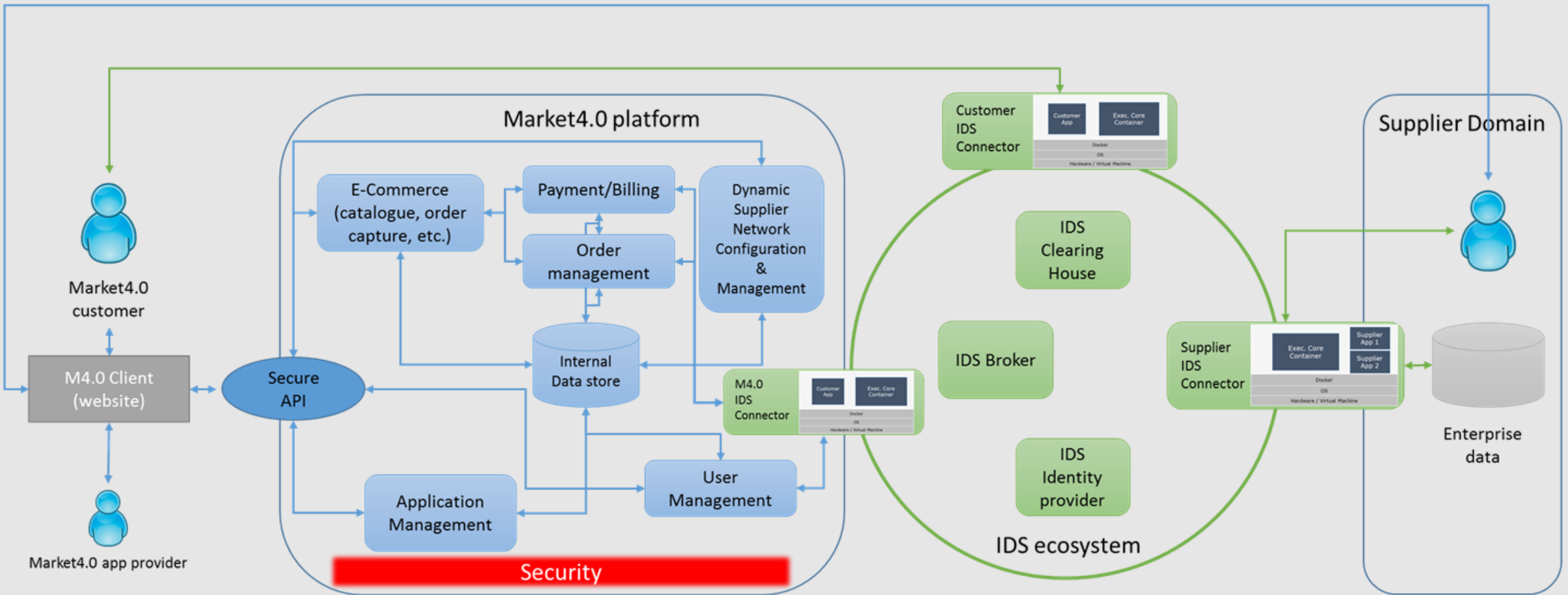
- ✓ Frictionless entry to the ecosystem
- ✓ Product capabilities publication
- ✓ Dynamic Supplier Network Configuration and Management
- ✓ Anonymized feedback
- ✓ Simulation before purchase

MARKET4.0 Actors

Role Name	Role Description
External User	This is any user that has access to public information of MARKET4.0. This user does not need to register to the platform. However, he has limited access to platform's functionality.
Registered User	This is any user that has registered to the platform. There may be several types of users.
App provider	This is a registered user. The main role is to provide and maintain MARKET4.0 Apps
Supplier	This is a registered user. The main role is to sell products and services through the platform.
Customer	This is a registered user. He seeks to buy products or services through the platform.
Service Provider	A registered user that provides some service to facilitate the interaction between supplier and customer

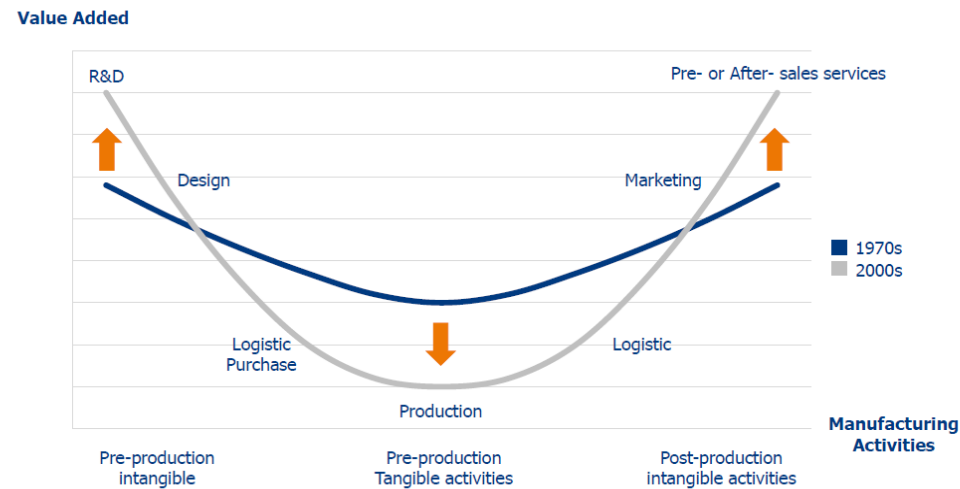


System Architecture Overview



USP-1 Product-Service Marketplace

The "SMILE" challenge: European businesses must focus on high value added activities



- Value creation in Manufacturing is progressively shifting **towards pre-production** (R&D and Design) and **post production** (marketing and Pre-or-After sales service) activities

Source: The European House - Ambrosetti re-elaboration on Bruegel data, 2014



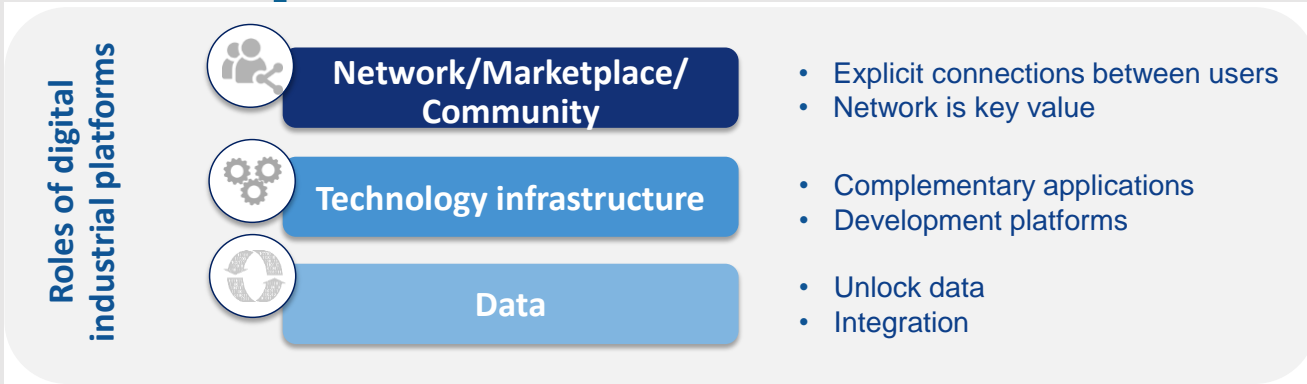
Problems/Shortcomings

- ❖ EU Equipment Manufacturer cannot globally compete just on Products any longer
- ❖ Small positive % improvements in Production Quality / Efficiency cannot alone fill the price gap with low wages Countries

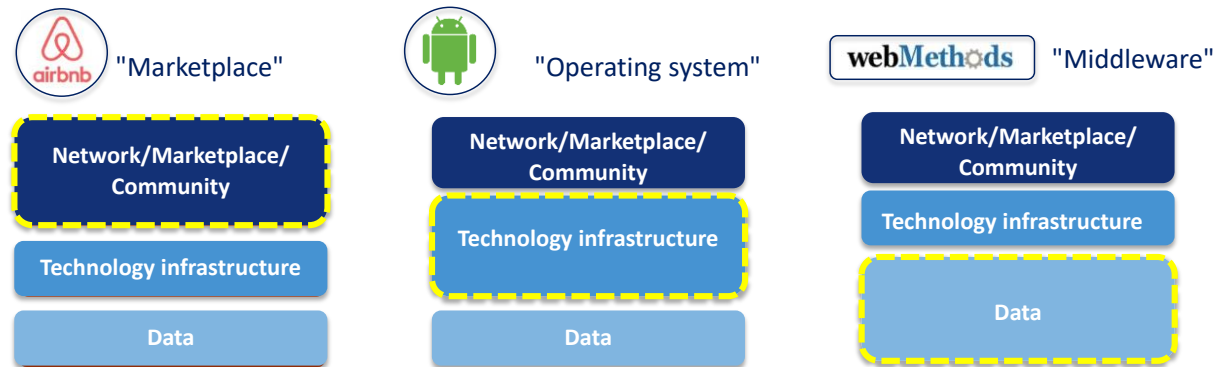
MARKET4.0 Value Proposition

- ❖ Pre-sales services shorten the time-to-contract and reduce the risk of re-work owing to sub-optimal equipment configuration and deployment
- ❖ Post-sales services guarantee highly qualified support along the whole lifecycle of the equipment including refurbishment, re-manufacturing and recycling phases (Circular Economy)

USP-2 Secure, low-Investment and Dynamic Marketplace



Examples of how different platforms fill in roles in different ways and to varying degrees



Adapted from <http://platformed.info/platform-stack/>

Problems/Shortcomings

- ❖ One-stop-shop Digital Marketplaces usually implement expensive cloud-HPC centralized architectures difficult to build and maintain
- ❖ Peer-to-Peer Digital Middleware platforms guarantee background security and scalability but usually operate on stable value chains led by Large Companies

MARKET4.0 Value Proposition

- ❖ Interoperability between a cloud Digital Marketplace and a P2P Middleware for ad-hoc Value Chains creation and occasional B2B data exchanges (virtual IDS Connector)
- ❖ Low-investment integrated solution for SMEs and personalization of Human Interaction by intelligent and adaptive Customer Journeys workflows

From a Product-Service Marketplace to a Data Marketplace for Product-Service

- **MARKET4.0** makes it possible to **share data in a trusted B2B ecosystem** for the purpose of trading Product-Service-Systems.
- **MARKET4.0** utilizes the Smart Connected Supplier Network (SCSN) **ontology** for supporting the transactions in the ecosystem.
- **MARKET4.0** has been design and it is being developed as a **generic data platform**
- **Additional agreed ontologies** along with their metadata can be supported by the platform for creating data marketplaces, for example, data supplied and consumed from Product-Service-System.

USP-3 Data Marketplace



Problems/Shortcomings

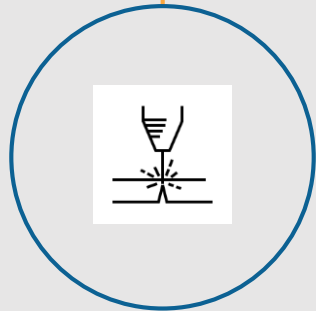
- ❖ Data Economy is deeply transforming our society from a technical-business-social and ethical perspective
- ❖ Insufficient availability of reliable, high quality datasets from Manufacturing Industry is hampering the development of extensive added value ecosystems of innovators and open Digital Innovation Hubs

MARKET4.0 Value Proposition

- ❖ Open Manufacturing Equipment Data Models (metadata) to support the development of Digital Twins and other advanced applications
- ❖ B2B Data Exchange reference architecture based on the EU GDPR and Data Sovereignty

PRODUCTION EQUIPMENT DOMAINS

2 Open
Calls
3,3 Mio. €



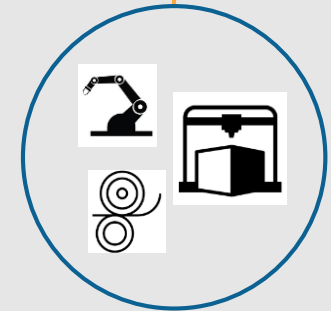
Metal Processing



**Plastics and
Composites**



**High-Tech
Production
Equipment**



**More through
open calls**

Robotics
Additive
Forming

...

TIMELINE HIGHLIGHTS for open call -1



MARKET4.0 eCommerce portal

MARKET4.0
CONNECT & PRODUCE

Apps ▾ Search Search

Browse ▾ Appstore Match making

Kosmas

Recently added items

No image available

Test

this is a test for new product creation

[View](#)



Punch Genius™

★★★★★

A modern turret punch press uses numerically controlled, servo-electric axes, which provides outstanding energy efficiency, low maintenance requirement and a high speed of operation. The cornerstones of its productivity include large tool capacity, the wide range of tools available and easy and fast set-up change. Forming and other auxiliary work stages, and ease of use are further factors reducing the manufacturing cost per component thus making the turret punch press a productive and competitive manufacturing solution.

[View](#)



New bending machine

★★★★☆

A sample description

MARKET4.0
CONNECT & PRODUCE

Products ▾ Search Search

Browse ▾ Appstore Match making

Kosmas



Punch Genius™

★★★★★

By Prima

Process: Punching, Milling, **Cost:** € 1000

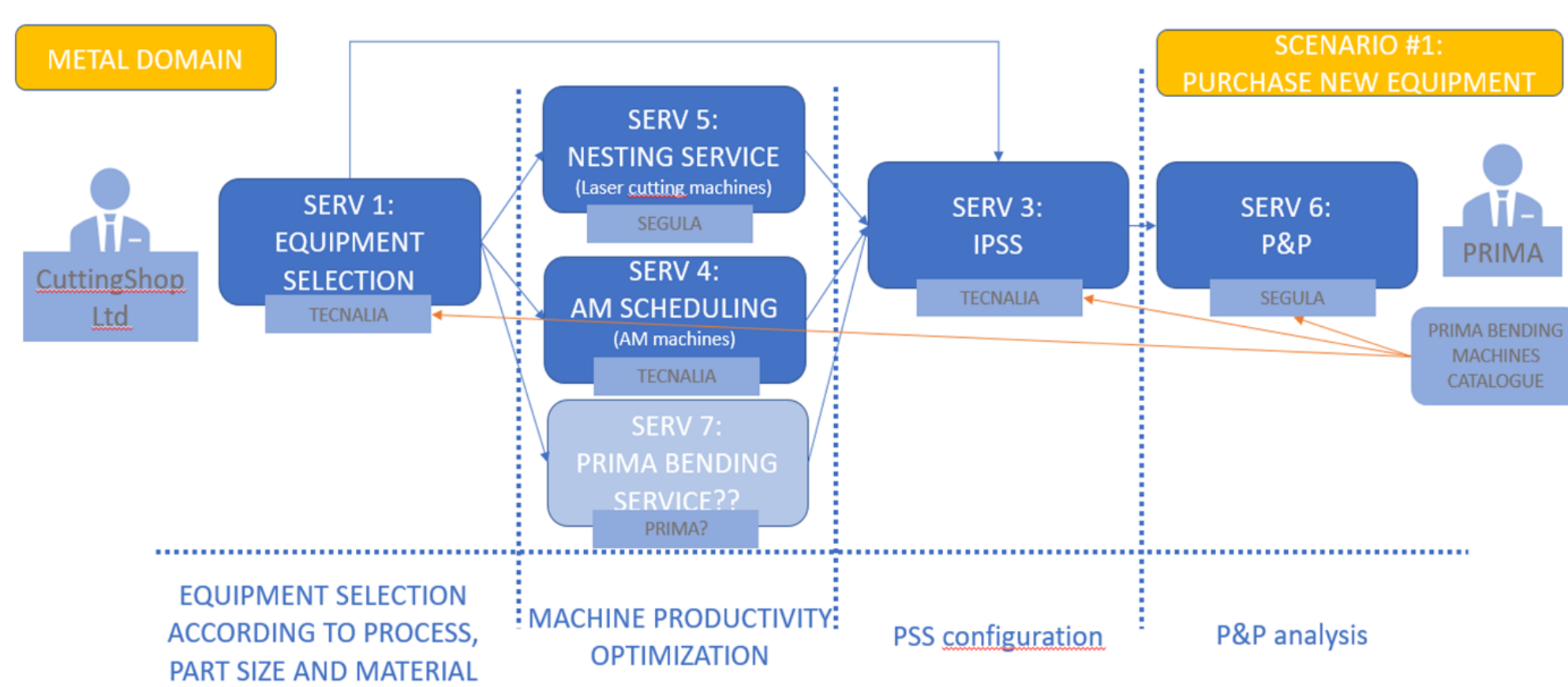
A modern turret punch press uses numerically controlled, servo-electric axes, which provides outstanding energy efficiency, low maintenance requirement and a high speed of operation. The cornerstones of its productivity include large tool capacity, the wide range of tools available and easy and fast set-up change. Forming and other auxiliary work stages, and ease of use are further factors reducing the manufacturing cost per component thus making the turret punch press a productive and competitive manufacturing solution.

[Start order](#)

Compatible apps:

app 1
description 1...
[View](#)

Metal-Processing Domain Main Workflow



Metal-Processing Domain Services and Apps

Equipment Selection Service

The screenshot shows the 'EQUIPMENT SELECTION SERVICE' interface. At the top, there are logos for MARKET 4.0 and tecnia. Below the logos are language selection buttons for 'ENGLISH' and 'ESPAÑOL'. The main heading is 'EQUIPMENT SELECTION SERVICE'. Underneath, it says 'SEARCH MACHINES FOR YOUR PRODUCTS'. There are three input fields for 'Eje X(mm.)', 'Eje Y(mm.)', and 'Eje Z(mm.)', each with a placeholder value of 'ej., 400'. A 'SEARCH' button is located to the right of these fields. Below the search fields, there is a 'Process' dropdown menu with 'Mecanizado > Fresado' selected, and a 'Material: one selection per provider' dropdown menu.

Supplier Selection Service

The screenshot shows the 'SUPPLIER SELECTION SERVICE' interface. At the top, there are logos for MARKET 4.0 and tecnia. Below the logos are language selection buttons for 'ENGLISH' and 'ESPAÑOL'. The main heading is 'SUPPLIER SELECTION SERVICE'. Underneath, it says 'FIND PROVIDER FOR YOUR PROCESSES, MATERIALS AND CERTIFICATIONS'. There are three input fields for 'Eje X(mm.)', 'Eje Y(mm.)', and 'Eje Z(mm.)', each with a placeholder value of 'ej., 400'. An 'Add process' button is located to the right of these fields. Below the search fields, there is a 'Process' dropdown menu with 'Mecanizado > Fresado' selected, and a 'Material: one selection per provider' dropdown menu. There are also two additional dropdown menus for 'Certification: select as many as needed' and 'Other processes: select as many as needed'. A 'Delete process' button is located to the right of the 'Other processes' dropdown. A 'SEARCH' button is located at the bottom center.

Additive Manufacturing OPTIMIZATION

ADDITIVE MANUFACTURING TRAJECTORY OPTIMIZATION SERVICE FORM

LMD

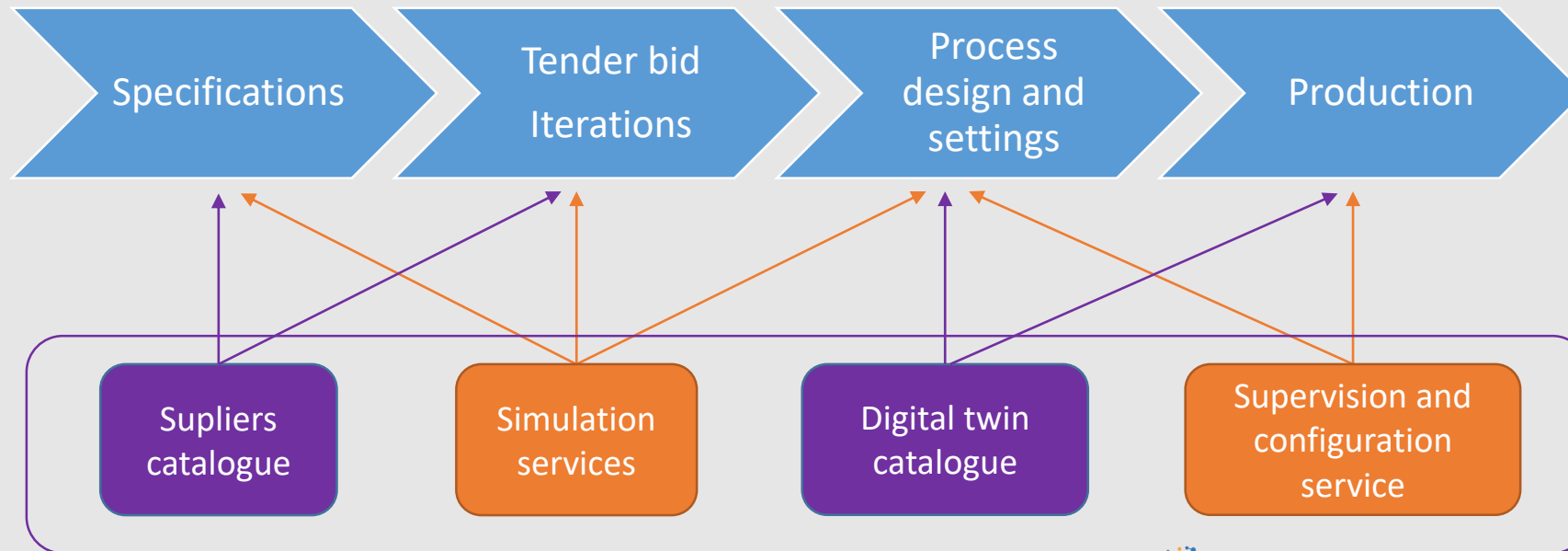
WAAM

SLM

Plastics Processing Domain Main Workflow

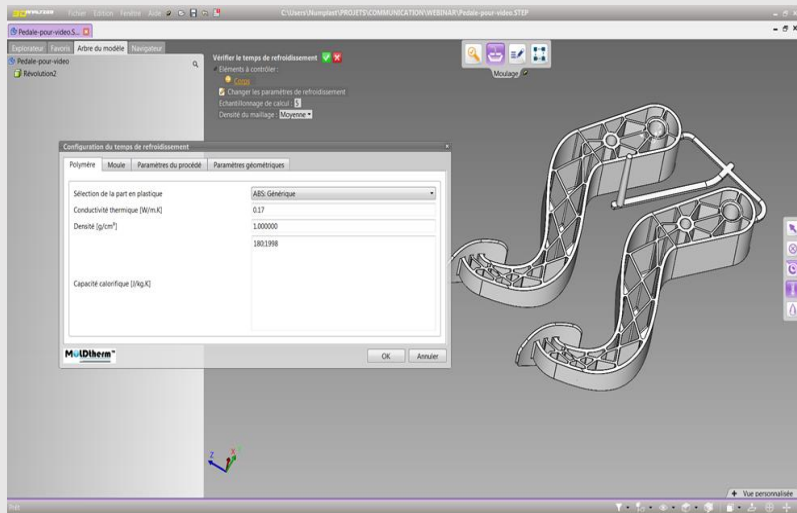
Goal: Reduce the time to market by improving flows

- Tender bid on platform (for mold or plastic part)
- Digital twin and simulation services.

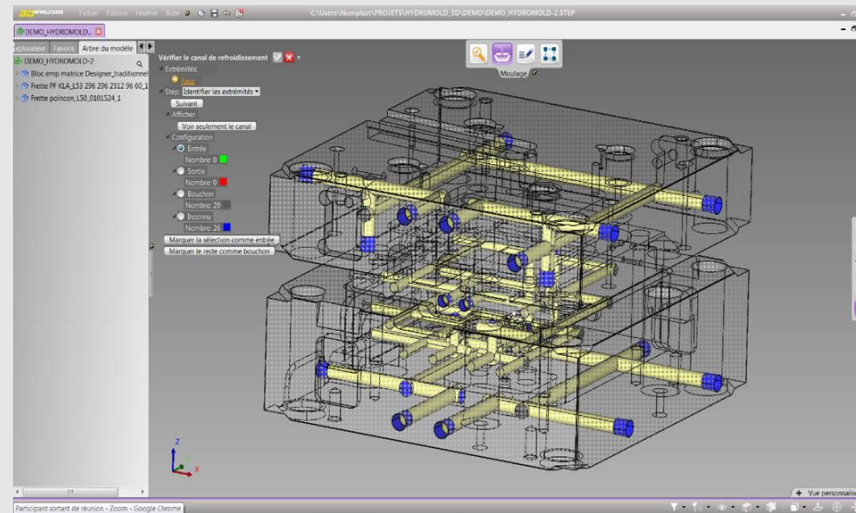


Plastics-Processing Domain Simulation Services

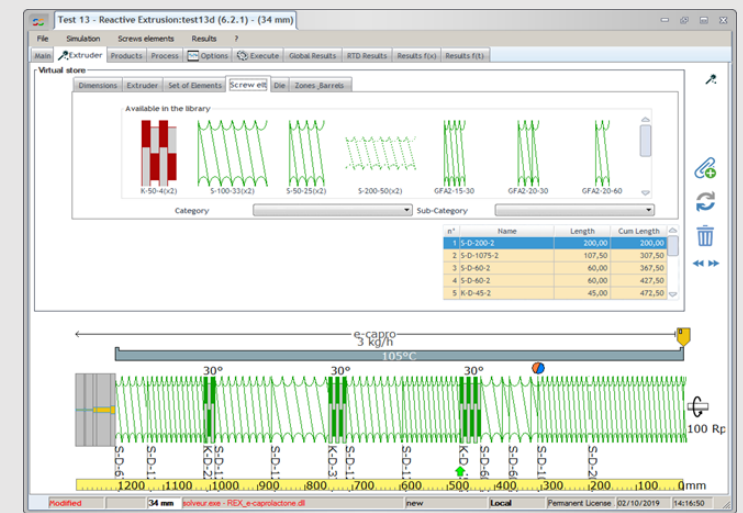
Moldtherm



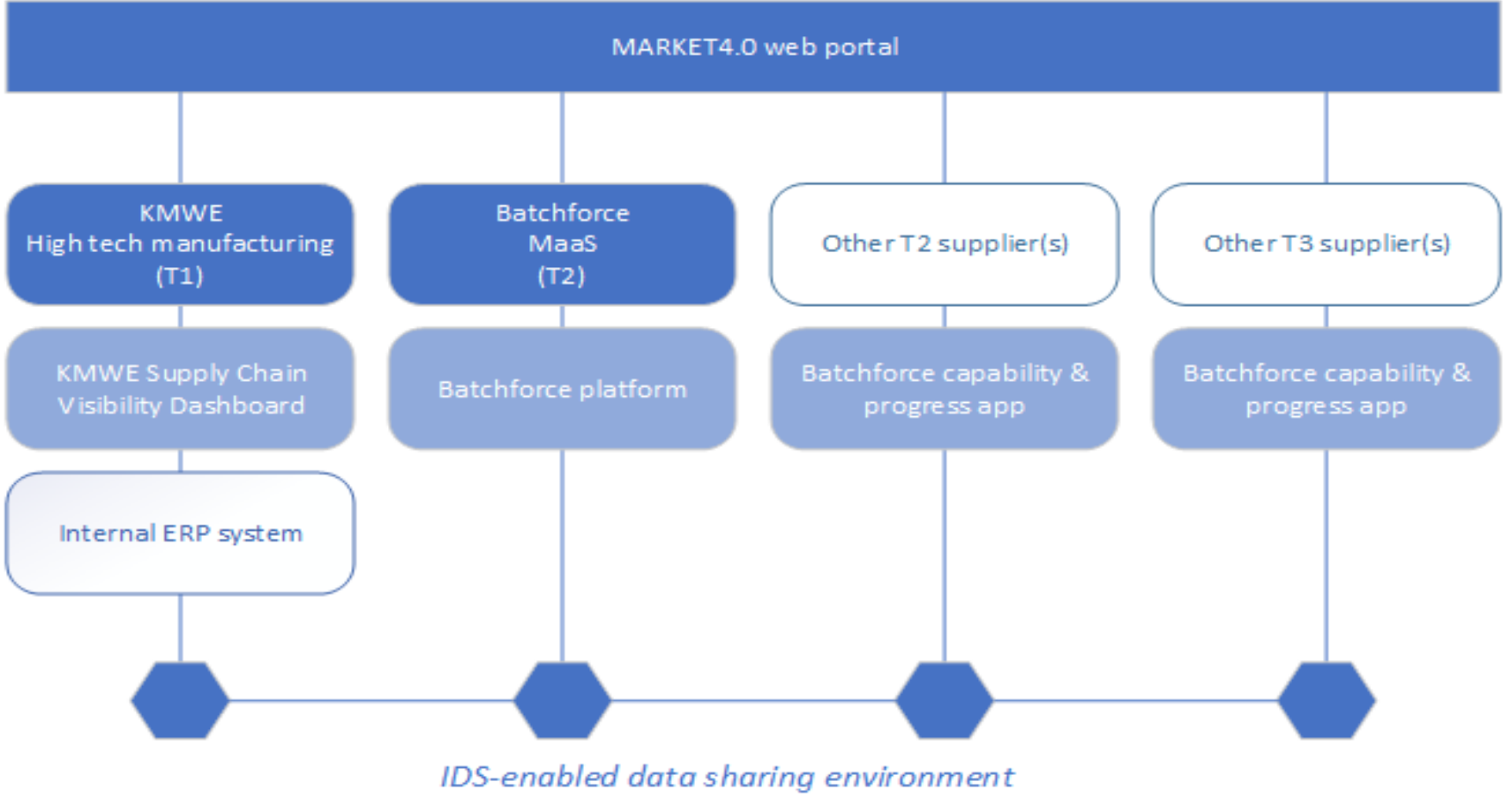
Hydromold



LUDOVIC



High-Tech Domain Services and Apps



High-Tech Domain Services and Apps

Batchforce capability and progress

Batchforce

Received Jobs

BOP - 19113
Enquiry ID 422

Current Status:

Requested Date: Starting Date:
Expected Date: Days of Delay:

ID	Model	Material	Features	Finishing	Amount	In Preparation	In Production	Quality Check	In Transit	Delay
BOP-19113	Document	Document	Aluminium 5052 (3.3523)	Anodizing Standard - Clear	1					
BOP-19114	Document	Document	Aluminium 5052 (3.3523)	Anodizing Standard - Clear	1					
BOP-19115	Document	Document	Aluminium 5052 (3.3523)	Anodizing Standard - Clear	1					

Supply chain visibility

Grid Definition - SP_PO_GRID

Grid Details

Grid Name: SP_PO_GRID Description: PO GRID
Title: PO Export File Profile: PO
Chart Title: PO Menu Link:
Show Grand Totals:

Business View Name: PO_HDR Show Fields:

Available Fields:

- ACK
- AP_CON
- APPROVAL_LEVEL
- APPROVAL_TYPE
- APPROVED_FLAG
- BLANKET_RELEASE_NUM
- SO_NUM
- TOT_OPEN_AHT
- BUYER
- CANC_DATE
- CANC_RESN
- CARRIER
- CARRIER_OVERRIDE
- CCR
- CLOSED_DATE

Selected Grid Fields:

- BUYER
- CCON
- PO_NUM
- PUB_CON
- PUB_LOC
- HAS_LOC
- TOT_OPEN_AHT
- APPROVAL_LEVEL

Field Properties

Field Name:
Business View Name:
Data Type:
Width:
Heading:
Apply Format:
Computed Field Value:
 Show Group Totals
 Group on this field
 Prefix field
 Hide this field

TNO innovation
for life

Batchforce

KMWE

THANK YOU



Project Coordinator: **INTRASOFT International SA**



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