Manufacturing-X

How to Make Sure Your Company is Well-Prepared - Standards Matter

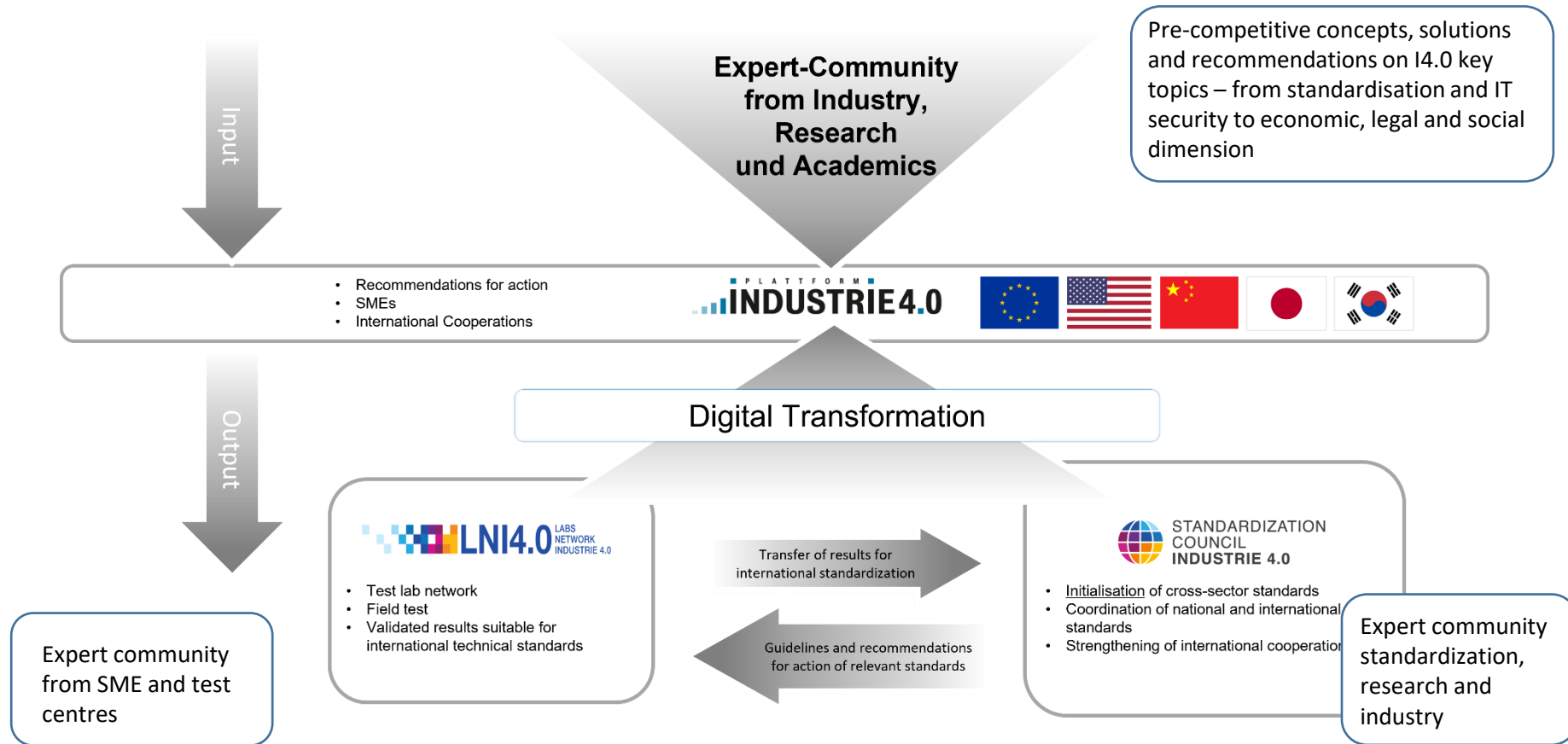Dr. Jens Gayko

SCI 4.0 – Standardization Council Industrie 4.0

Vienna, 2024-09-13

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1. Background SCI 4.0 and Standardisation

2. Digital Product Passport (DPP) as a Use Case for Data Spaces

3. Potential Way Forward for Standardisation of Industriel Data Spaces

Standardizing Industrie 4.0
3 Partners - 1 vision of shaping global digital ecomodels

STANDARDIZATION
COUNCIL
INDUSTRIE 4.0

Input

**Expert-Community
from Industry,
Research
und Academics**

Pre-competitive concepts, solutions and recommendations on I4.0 key topics – from standardisation and IT security to economic, legal and social dimension

- Recommendations for action
- SMEs
- International Cooperations

PLATTFORM
INDUSTRIE 4.0

Output

Digital Transformation

LNI4.0 LABS NETWORK INDUSTRIE 4.0

- Test lab network
- Field test
- Validated results suitable for international technical standards

Transfer of results for international standardization

Guidelines and recommendations for action of relevant standards

STANDARDIZATION
COUNCIL
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- Initialisation of cross-sector standards
- Coordination of national and international standards
- Strengthening of international cooperation

Expert community from SME and test centres

Expert community standardization, research and industry

German standardization Roadmap Industrie 4.0 ED5

- The report offers an up-to-date state of overview of the recommendations for action made therein

- A total of more than 100 recommendations for action were assessed and evaluated with the involvement of experts from the relevant national standardization committees

- A progress report based on edition 5 is will be published at Hannover fair 2025

Download report

What is Standardisation?

"document, established by consensus and ==approved by a recognized body==, that provides, for ==common and repeated use==, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context

Note 1 to entry: Standards should be ==based on the consolidated results== of science, technology and experience, and aimed at the promotion of optimum community benefits."
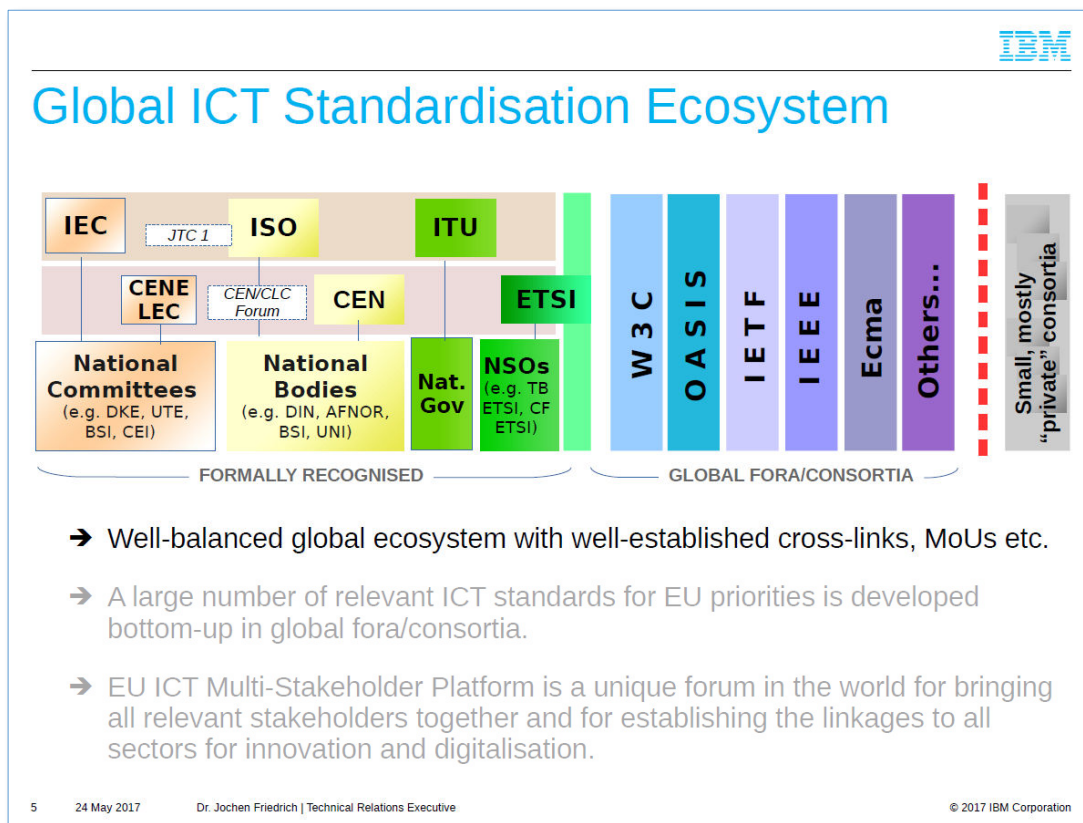
[SOURCE: ISO/IEC Guide 2:2004, 3.2]

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[SOURCE: ISO/IEC Guide 2:2004, 3.2]

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Global ICT Standardisation Ecosystem

IEC   JTC 1   ISO   ITU

CENE LEC   CEN/CLC Forum   CEN   ETSI

National Committees (e.g. DKE, UTE, BSI, CEI)   **National Bodies** (e.g. DIN, AFNOR, BSI, UNI)   **Nat. Gov**   **NSOs** (e.g. TB ETSI, CF ETSI)

W 3 C   O A S I S   I E T F   I E E E   Ecma   Others...

Small, mostly "private" consortia

FORMALLY RECOGNISED   GLOBAL FORA/CONSORTIA

➔ Well-balanced global ecosystem with well-established cross-links, MoUs etc.

➔ A large number of relevant ICT standards for EU priorities is developed bottom-up in global fora/consortia.

➔ EU ICT Multi-Stakeholder Platform is a unique forum in the world for bringing all relevant stakeholders together and for establishing the linkages to all sectors for innovation and digitalisation.

5   24 May 2017   Dr. Jochen Friedrich | Technical Relations Executive   © 2017 IBM Corporation

Contents

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1. Background SCI 4.0 and Standardisation

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13.09.2024

Digital product passport – Demanded by politicians...

European Green Deal

"[...] for example, an electronic product passport could provide information about the origin, composition, repair and disassembly options of a product, as well as its handling at the end of its service life.

- **March 2022: EC publishes legislative proposal for an Ecodesign Requirement for sustainable Products (ESPR)**

- **June 2024: Publication of ESPR as Regulation 2024/1781**

- **2027: Adoption of DPP for selected products**

March 2022:

EC publishes legislative proposal for an Ecodesign Requirement for sustainable Products

1. What is the Digital Product Passport?

- DPP is an integral part of Ecodesign for Sustainable Products Regulation; it shares:

    - The adoption timeline
    - The (future) work programme for priority products
    - The entry into force timeline for product requirements (except for batteries)

- A (growing) number of other EU policies will rely on DPP (or elements of it) to make product-related information digitally available :

    - Batteries Regulation
    - Toys regulation
    - Detergents regulation

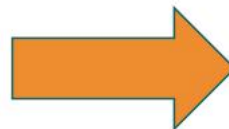   - Construction Products Regulation
    - Critical Raw Materials Act

European Commission

2. DPP main design features

DPP-system

DPP-data
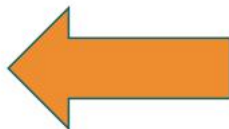
*(the "**HOW**". To be developed horizontally for all product groups and legislations)*

*(the "**WHAT**". To be developed through **product-group specific** <u>dedicated legislation</u>)*

- **The DPP registry**

- **A searchable Web Portal**

- **All standards and protocols related to IT architecture:**
  1. Unique identifiers
  2. Data carriers and links between physical product and digital representation
  3. Access rights management, information security, and business confidentiality
  4. Interoperability (technical, semantic, organisation)
  5. Data processing , data exchange protocols, and data formats
  6. Data storage, archiving, and data persistence
  7. Data authentication, reliability, integrity
 8. APIs for the DPP lifecycle management and searchability

Information to be included in the DPP will be **product-group specific** and identified in delegated act process.

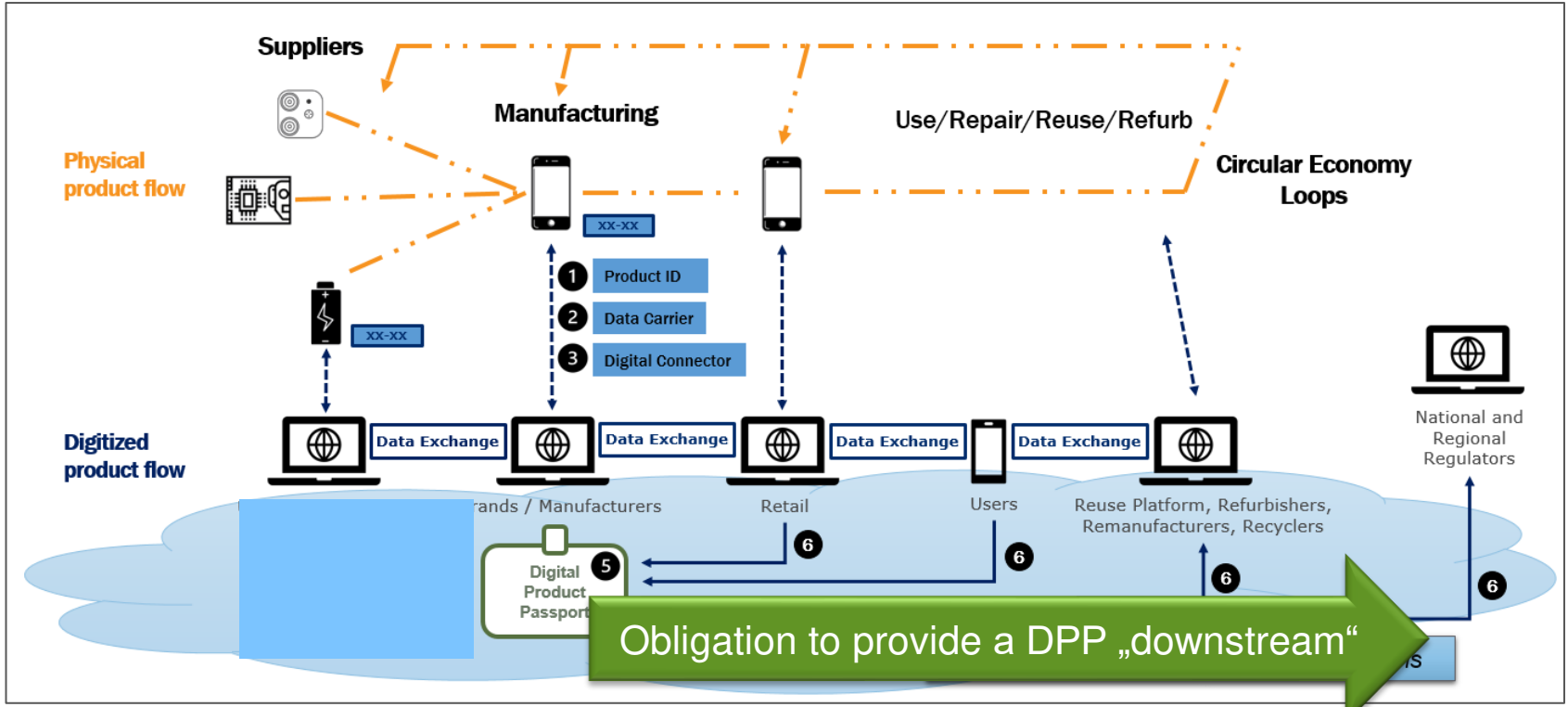It may include information/data on one or more of the following areas:

- Technical performance
- Environmental sustainability performance
- Circularity aspects (durability, repairability, etc)
- Legal compliance
- Product-related information (e.g., manuals, other labels)
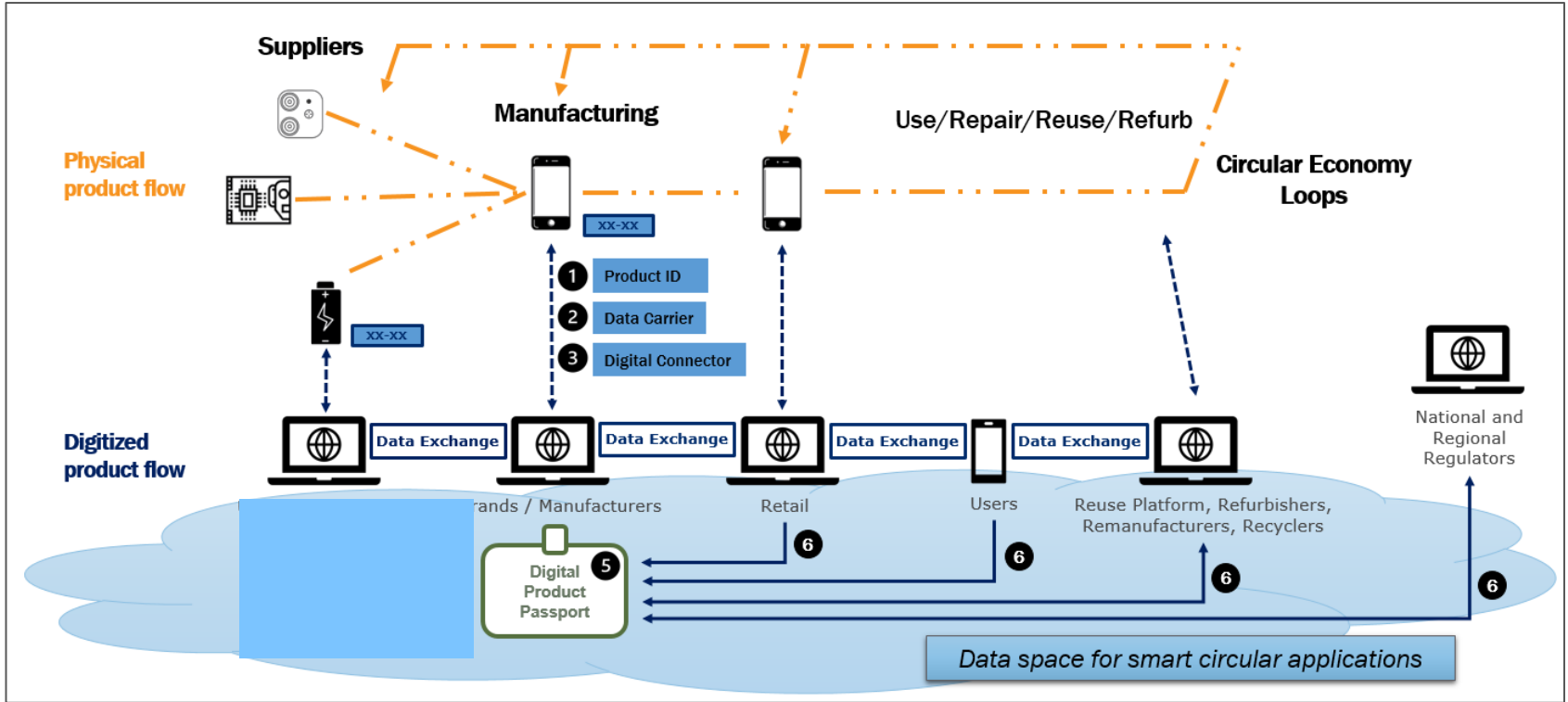
European Commission

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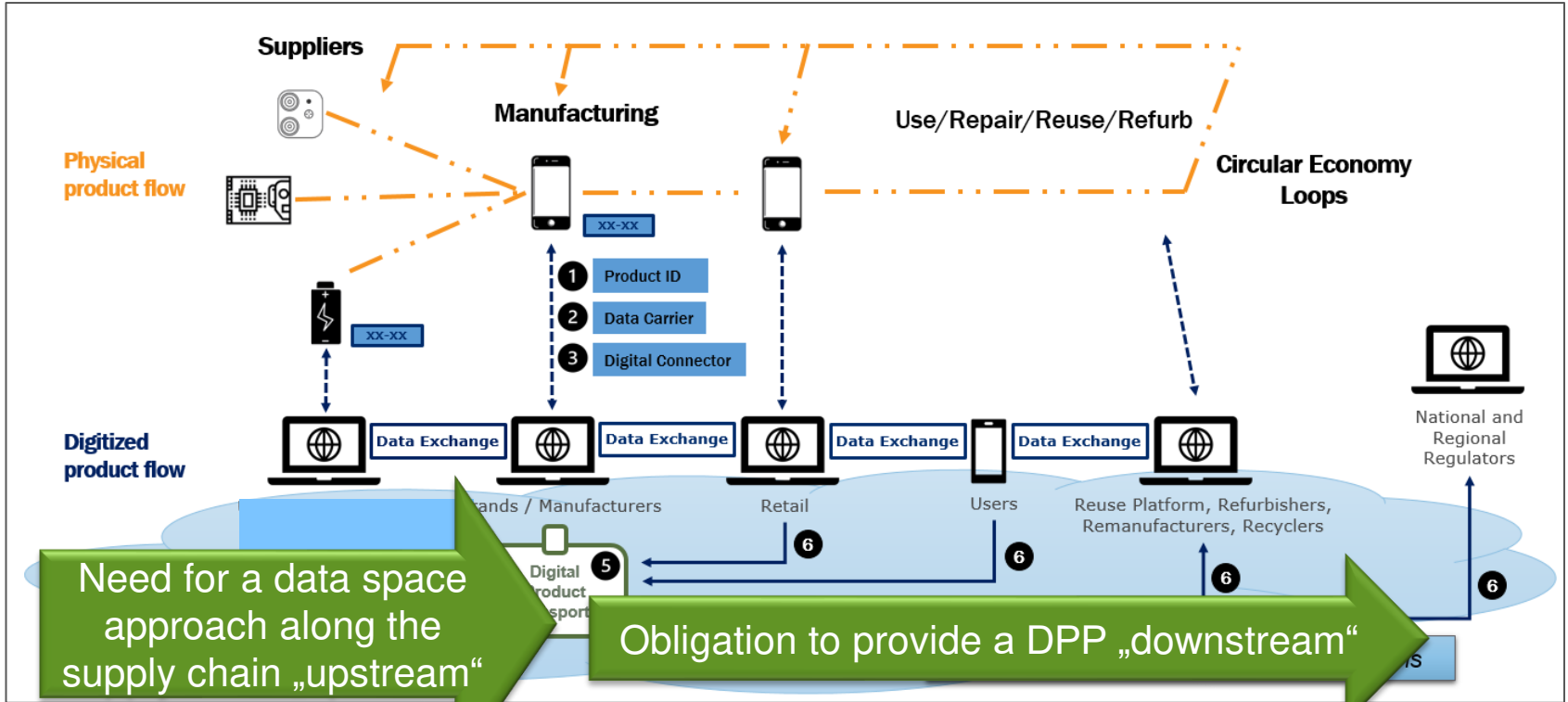# Components of the DPP system – Concept from CIRPASS

Source: CIRPASS project (modified)

Components of the DPP system – Concept from CIRPASS
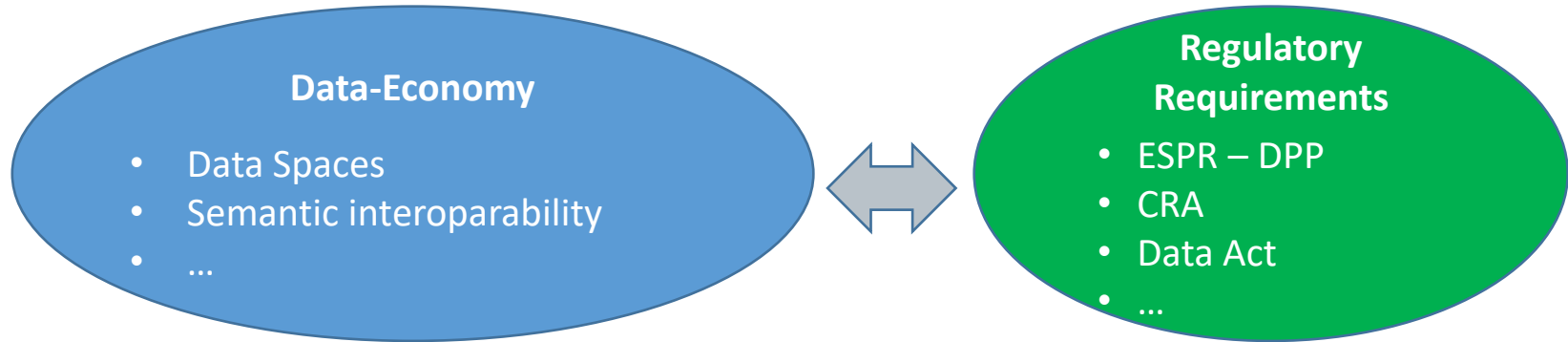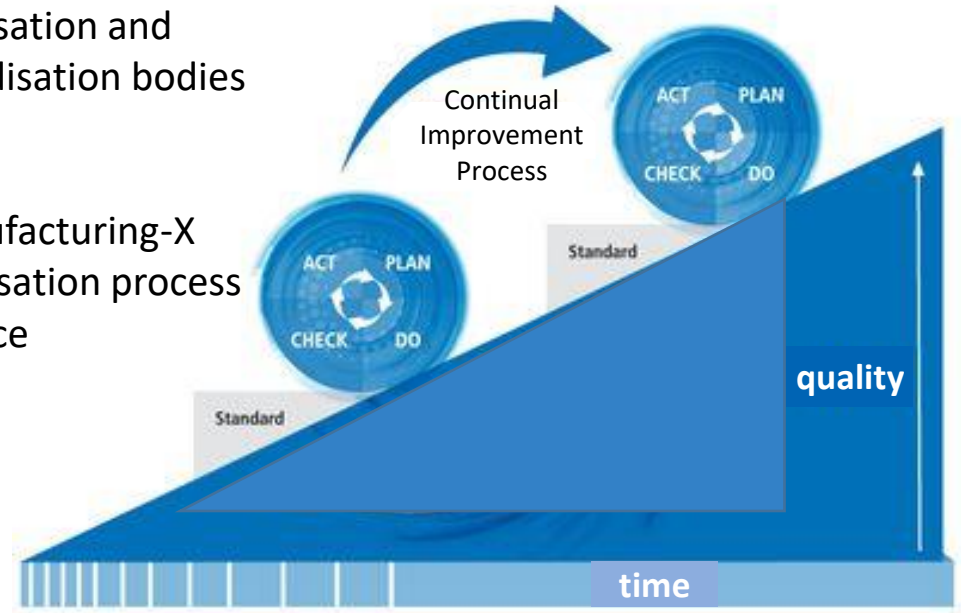

Source: CIRPASS project (modified)

Components of the DPP system – Concept from CIRPASS

Suppliers

Manufacturing

Use/Repair/Reuse/Refurb

Physical product flow

Circular Economy Loops

xx-xx

1 Product ID

2 Data Carrier

3 Digital Connector

xx-xx

Digitized product flow

Data Exchange · Data Exchange · Data Exchange · Data Exchange

...ands / Manufacturers · Retail · Users · Reuse Platform, Refurbishers, Remanufacturers, Recyclers · National and Regional Regulators

Digital Product Passport · 5

6 · 6 · 6 · 6

Need for a data space approach along the supply chain „upstream"

Obligation to provide a DPP „downstream"

Source: CIRPASS project (modified)

DKE

Challenge for Standardization of Data Spaces

Due to current EU legal acts, there is a connection of

Data-Economy

- Data Spaces
- Semantic interoparability
- …

⟷

Regulatory Requirements

- ESPR – DPP
- CRA
- Data Act
- …

- Interoperability and data standards become relevant for EU directives / regulations
- Close interaction with consortia required to achieve consistency of data standards for industrial data spaces

STANDARDIZATION COUNCIL INDUSTRIE 4.0

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3. **Potential Way Forward for Standardisation of Industriel Data Spaces**

13.09.2024

Proposed Approach for Agile Standardisation

- Establish a structured dialog between international Manufacturing-X projects and standardisation community
  - ➢ Seamless usage of consortia standardisation and standardisation at recognised standardisation bodies
  - ➢ Best use of existing standards

- Consolidate results from international Manufacturing-X projects are incorporated into the standardisation process
  - ➢ International acceptance and coherence of (regional / national) results
  - ➢ Avoidance of double work
  - ➢ Early availability of international standards to support wide adoption

[https://planer-am-bau.de/artikel/kontinuierlicher-verbesserungsprozess-kvp-fuer-planer-am-bau]

13.09.2024

Conclusion

1. **Talk to each other**

    - Establish structures for coordination of standardization work on a global level

2. **Define the roles**

    - Who is doing what and what is out of scope

3. **Do not reinvent the wheel**

    - Reuse the experiences from established structures as well as

    - Available standards

4. **Be aware of the regulator(s)**

    - Aspects of data economy are / will be regulated in some regions

Thank you

Dr. Jens Gayko

Standardization Council Industrie 4.0

Jens.Gayko@vde.com