TASK FORCE 2
DATA-POWERED BUSINESS ECOSYSTEM BUILDING

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Area 4: Multilateral DVC Business Continuity Index

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Area 4: Multilateral DVC Business Continuity Index
Building on existing knowledge

- Industry agreements in Digital Value Chains (DVC)

  Challenges and solutions for greater DVC interoperability;

  Templates and framework to develop interoperability, exchangeability and quality of data;

  Collaborative effort: CARSA (leader); VDI-VDE, KU Leuven, Ecorys

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BUSINESS CONTINUITY FRAMEWORK

1. Scenarios and situations for interoperability assessment and gap analysis

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Objectives

- Assessment framework for multilateral Digital Value Chain comparison.

- Developing a methodology to assess digital and business proximity for collaboration feasibility.
  
  → New approach with application at both the company and the sectorial level
  
  → Replicability and comparability for different use cases
Building scenarios for gap analysis and continuity assessment

Three multilateral DVC situations for data exchange and interoperability assessment

Concrete situations for m-DVC collaboration

1. Value Chain specific Data Exchange

2. Multilateral Data Exchange – Using a common Data Exchange Framework / Data Space

3. Cross Sectorial Interaction – Data Exchange between companies in two different Data Exchange Frameworks / Data Spaces
Implementation Concept

1. Value Chain Specific Data Exchange - Direct Between Several Companies
Implementation Concept

2. Multilateral Data Exchange in Industries in a common Data Exchange Framework/ Data Space

- **Machine supplier**
- **2. Tier supplier**
- **Factory operator**

**Data Set:** z.B. life time information, temperature data, CO2-Footprint

**Data Business Policy:** Properties of Data Set like access rights, access purpose, access duration or access price

**Economic Dimension**

**Technical Dimension**

**Legal Dimension**
Implementation Concept
3. Cross Sectorial Interaction based on Data Frameworks/ Data Spaces

**Data Space A e.g. Industry 4.0**
- **Economic Dimension A**
- **Technical Dimension A**
- **Legal Dimension A**

- **Data Set:** e.g. life time information, temperature data, CO2-Footprint
- **Data Business Policy:** Properties of Data Set like access rights, access purpose, access duration or access price

**Data Space B e.g. Logistics**
- **Economic Dimension B**
- **Technical Dimension B**
- **Legal Dimension B**

- **Data Set:** e.g. availabilities of transport services, GPS-Information, current transport duration, prices, CO2-Footprint
- **Data Business Policy:** Properties of Data Set like access rights, access purpose, access duration or access price

**Need for Inter-operability**
Implementation Concept

3. Cross Sectorial Interaction (Participation of one company to several DVC and Data Spaces)

Data Space A
  e.g. Industry 4.0

Data Space B
  e.g. Logistics

Trust room
BUSINESS CONTINUITY FRAMEWORK

2. Criteria and key dimensions for a business continuity assessment framework

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Dimensions for interoperability and exchangeability in m-DVC

Common Vocabulary Standards (CVS)
- **Semantic**: data quality
- **Syntactic**: data format

Federated Digital Infrastructure (FDI)
- **Exchange architecture**: infrastructure and hardware
- **Platforms and interfaces**: software and systems

Relational Contractual Agreement (RCA)
- **Ecosystem and business**: norms, informal rules and sharing practices in the sector
- **Legal and governmental**: regulation, policy action and self-regulation
Five levels of maturity...

- **Siloed level**
  - Silos in internal activities and processes
  - Internal interoperability and exchanges.
  - Lack of cross-company integration.

- **Foundational level**
  - Scaling-up of interoperability and collaboration in closed environment.

- **Supply-chain integration**
  - Expansion of closed ecosystem

- **Foundational multilateral DVC**
  - Expansion of sharing alliances and group to external players.
  - Dissemination of standards and expansion of ecosystems.

- **Mature m-DVC**
  - Coexistence of bilateral ecosystems with multilateral ecosystems (data spaces).
  - Interoperability of multilateral ecosystems.
... that are not completely excluding each other’s ...

Logical succession of interoperability stages ...

... in practice, unstructured efforts

Siloed level
Silos in internal activities and processes

Internal Integration

Foundational level
Internal interoperability and exchanges.
Lack of cross-company integration.

Bilateral/closed Integration

Supply-chain integration
Scaling-up of interoperability and collaboration in closed environment.

Expansion of closed ecosystem

Expansion of closed ecosystem

Multilateral ecosystems

Foundational multilateral DVC
Expansion of sharing alliances and group to external players.
Dissemination of standards and expansion of ecosystems.

Interoperability of m-ecosystems

Mature m-DVC
Coexistence of bilateral ecosystems with multilateral ecosystems (data spaces).
Interoperability of multilateral ecosystems.

Low maturity
1 2 3 4 5
Fully Mature

87%

67%

47%

27%

07%
... to assess concrete situations.

But he is not ...

<table>
<thead>
<tr>
<th>Siloed level</th>
<th>Foundational level</th>
<th>supply-chain integration</th>
<th>Foundational multilateral DVC</th>
<th>Mature m-DVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Integration</td>
<td>Bilateral/closed Integration</td>
<td>Expansion of closed ecosystem</td>
<td>Multilateral ecosystems</td>
<td>Interoperability of m-ecosystems</td>
</tr>
</tbody>
</table>

Low maturity:
- 37% Siloed level
- 27% Foundational level
- 07% Supply-chain integration
- 03% Foundational multilateral DVC
- 01% Mature m-DVC

Fully Mature:
- 87% Siloed level
- 67% Foundational level
- 47% Supply-chain integration
- 27% Foundational multilateral DVC
- 07% Mature m-DVC
## Business proximity pathways: qualitative assessment...

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<tr>
<td><strong>A. CVS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Syntactic</td>
<td>Silos</td>
<td>Proprietary standards</td>
<td>Competing standards</td>
<td>Large uptake but gaps</td>
</tr>
<tr>
<td>2. Semantic</td>
<td>No quality standards</td>
<td>Basic certification</td>
<td>Quality framework (SC)</td>
<td>Quality framework (VC)</td>
</tr>
</tbody>
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| **B. FDI**   |                     |                          |                               |              |
| 1. Exchange Arch. | Lack of internal connectivity solutions | Exchange protocols | Competing single-access points and standards | Single access points repository, standardised protocols | Cross data-space connectivity |
| 2. Interfaces & platforms | Incompatibility of platforms and low use of analytics | Proprietary standards, siloed analytics | Partnerships for closed standards environment | Internal digital continuity | Cross-platforms interoperability |

| **C. RCA**   |                     |                          |                               |              |
| 1. Ecosystem and culture | Cultural resistance | Roadmaps and strategies | Best-practice | Institutionalisation of sectorial customs | Sectorial consensus and influence over other sectors |

**Transversal Dimension:**
Growing SME integration in the ecosystem
... and leads for Business Proximity Index (BPI)

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<th>A. CVS</th>
<th>1. Syntactic</th>
<th>2. Semantic</th>
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<td>B. FDI</td>
<td>1. Exchange Arch.</td>
<td>2. Interfaces &amp; platforms</td>
</tr>
<tr>
<td>C. RCA</td>
<td>1. Ecosystem and culture</td>
<td>2. Legal and govern.</td>
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Exploring Possible KPIs (Boolean and normal algebra)

... using existing indicators and data sets

Example of Eurostat:
- Cloud Computing Services Used over the internet per company size;
- Integration of internal processes;
- Artificial Intelligence use per company size;
- Staff awareness, ICT training, skills, etc..

... feasibility of new indicators
- Quality Framework adopters (nº per sector, etc)
- Data space, Nº participants, scope

... and Boolean indicators
- Self-regulatory acts? (Y/N)
- Industry-specific monitoring body? (Y/N)

To turn into comparability metrics?

Ratios using simple indicators?
Synthetic indicators and ratios?
A coherent and comprehensive framework

1. Semantic
2. Syntactic
3. Legal and governmental
4. Ecosystem and business culture
5. Platform and interfaces
6. Exchange Architecture