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COMPET

WORKING PAPER

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MEETING DOCUMENT

From: General Secretariat of the Council
To: Working Party on Competitiveness and Growth (Industry)
Subject: Digital transformation of industrial companies and data excellence - Powerpoint presentation by DIMECC (Compcro WP 14.10.2019)
DIMECC

Digital transformation of industrial companies and data excellence

Brussels
14.10.2019

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DIMECC Overview

DIMECC

Leading industry-led co-creation platform for boosting digital transformation and disruption in Finland & EU.

THE CO-CREATION PLATFORM BASED ON PUBLIC PRIVATE PARTNERSHIP (PPP)

SERVICES:
• Open innovation projects, programs and ecosystems
• Co-creation services boost new business creation
• Networks to open up new markets and businesses

NUMBERS:
• 11 employees
• 3 offices: Helsinki, Tampere, Turku
• 68 shareholders (45 companies & 23 research institutes)
• 300+ customers
• 2 000+ persons involved in DIMECC activities
In the digital era, competitive edge comes from co-operation and partnerships.

OUR OPERATIVE ECOSYSTEMS:

Intelligent Industry Ecosystem

Turning Digital Into Practical!

Vision: In 2028, Finland is a global leader in intelligent industrial systems and related business ecosystems.

One Sea

The objective of One Sea is to create the world’s first autonomous maritime system by 2025.

One Sea seeks new partners to join the leading ecosystem.

www.oneseaecosystem.net
Digitalization and the digital revolution are currently shaping the value chains of industrial companies. They will become company wise shorter, but more integrated with other players in the value chain.

THE CHALLENGE FOR COMPANIES IS THAT ALL OF THIS HAPPENS SIMULTANEOUSLY!
Only a Fraction of the Value of Data Has Been Captured in Manufacturing Sector

At the moment 99% manufacturing data value is lost:

- 15% able to connect IOT data with ERP system
- 15% use Big Data Solutions
- 3% of data is tagged and analyzed

- The focus of current data activities are mainly on how a company can leverage its own data, individual data sets and single data sources.
- The biggest value opportunities lie in merging multiple datasets driving new insights

Source: McKinsey Global Institute analysis
Data Sharing Is Not Only a Technical Challenge – Holistic Approach Is Needed

- **Technical 25%**
  - Interoperability barriers, safety and security requirements, curation & infrastructure costs

- **Data ownership, 19%**
  - Incertainty about ownership rights

- **Monitoring 15%**
  - Difficulties to control usage of data by others

- **Licensing 7%**
  - Difficulty to find the suitable means to license data

- **Reputation 7%**
  - Fear of reputational costs (data inaccuracy or misuse)

- **Legal 9%**
  - Data localization restrictions in place, legal feasibility of using data

- **Skills 13%**
  - Lack of skilled data workers

- **Liability 5%**
  - Uncertainty about liability costs

Source: European Commission 2017
What’s happening in EU?

- European companies may have lost consumers’ data sharing game to US and Chinese operators.

  → BUT data sharing game is unresolved within B2B and the EU has a good chance to create a dominant platform solution.

- Many EU countries have launched Industrie 4.0 initiatives.

- DG CNECT is currently bringing together European Manufacturing Industry to create data sharing practices, templates, regulatory proposals and business platforms.

- DIMECC has launched the InDEx program focusing on data sharing and creation of an industrial data community.

- Technology Industries of Finland has prepared, together with its member companies and the law firm Krogerus, model terms and conditions for data sharing.

- Could the Finnish cases and practices serve more widely for European industrial data sharing purposes?
Intelligent Industry ecosystem has worked on these issues in Finland since 2017
Intelligent Industry Ecosystem

Turning Digital Into Practical!

Vision: In 2028, Finland is global leader in intelligent industrial systems and related business ecosystems
<table>
<thead>
<tr>
<th>THEMATIC FOCUS AREAS</th>
<th>CORE ACTIVITIES</th>
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<tbody>
<tr>
<td><strong>HUMAN FACTOR</strong></td>
<td>R&amp;D &amp; I programs &amp; projects</td>
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<tr>
<td>Human collaboration will be combined with smart machines and artificial intelligence. This co-creation performed by humans and machines will transform and enrich society and industries. Topics, like usability, ethics, safety and societal acceptance are important.</td>
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<tr>
<td><strong>VALUE CO-CREATION IN ECOSYSTEMS</strong></td>
<td>Pilots, PoCs</td>
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<tr>
<td>In the era of intelligent industry value networks are built around customer needs and competitiveness is based on the power of ecosystems and ability to harvest the resources of ecosystems to deliver customized solutions. Such value co-creation requires novel ways to create value as well as new business and revenue sharing models.</td>
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<tr>
<td><strong>AUTONOMOUS SYSTEMS</strong></td>
<td>Standards &amp; regulation</td>
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<tr>
<td>Autonomous systems integrating computational and physical resources are at the center of the transition into the intelligent industry. Future systems will continue to improve in terms of adaptability, autonomy, functionality, reliability, safety and usability.</td>
<td></td>
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<tr>
<td><strong>DATA &amp; ADVANCED ANALYTICS</strong></td>
<td>Competence development</td>
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<tr>
<td>Data forms the basis of the intelligence industry. Novel solutions facilitating exchange, connection, analysis and utilization of data between organizations are needed to unlock the value of data and to enhance development of value integrated value ecosystems.</td>
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Our roadmap towards Intelligent Industry

Digital transformation – Autonomy - Sustainability
Program start in September 2019 and duration is 2 years.

11 Industrial Partners

7 Research Institutions

40+ SME companies via subcontracting
InDEx Paves the Way Towards Data Economy in the Finnish Industry and beyond

Towards Data Economy

**Point-to-Point Communication**
- Custom made solutions for data sharing with selected partners
- Data & information sharing done mainly manually (emails, excels, phone calls, etc.)
- Data shared for specific case & purpose
- Companies mainly utilizing their own data

**Common Data Space**
- Tested & verified rules for data sharing amongst participants
- Leveraging existing & emerging standards and technologies, as well as accepted governance models
- Data sharing done automatically
- Metadata about existing data & conditions
- Ability to start data sharing with “plug’n’play” principle, ad-hoc data sharing
- Companies utilizing several data sources

**Industrial Data Community**
- Network of actors operating according to common rules
- Several data sources merged
- Information about data openly shared among participants → requests for data sharing
- Closed system
- Automated actions based on data & analytics → increased efficiency
- New data-intensive services launched

**Data Market**
- Common platform for general data sharing involving various partners
- Data operator orchestrating data sharing
- Companies playing various roles: data producer, data aggregator, insight provider, data presenter
- Application enablement, integration for business apps
- Open system
- Third parties offering data-intensive services

**DIMECC InDEx focus**
Two application domain areas to data sharing in industry context

**Strategic Targets**

1. **FINNISH INDUSTRIAL DATA COMMUNITY**
   Common Data Space drives the establishment of Finnish Industrial Data Community, a network of actors utilizing Common Data Space.

2. **NOVEL VALUE CREATION**
   Common Data Space forms the basis for novel data ecosystems opening new value creation possibilities for all the value chain partners.

3. **INTERNATIONAL STANDARDS**
   Common Data Space will leverage existing and emerging standards and technologies and drive international standards for data sharing.

**Smart Chain:**
A highly interconnected network of enterprises that integrate data seamlessly to advance production and distribution.

**Smart Factory:**
A completely connected entity of machines, materials, operators, manufacturing management systems and products that relies on a constant flow of data from connected operations and production systems.
DIMECC InDEx Takes Comprehensive Approach to Data Sharing – Program Structure

<table>
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<th>Smart Factory</th>
<th>Smart Chain</th>
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<td>A completely connected entity of machines, materials, operators, manufacturing management systems that relies on a constant flow of data</td>
<td>A highly interconnected network of enterprises that integrate data seamlessly to advance production and distribution.</td>
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**WP1: Novel connectivity solutions & technologies for collecting and delivering data**
- Novel solutions for data sharing between value networks partners considering interoperability and technical issues and defining common data governance rules.

**WP2: Advanced analytics methods for processing data**
- Common tool sets for optimization, visualization, and machine learning algorithms as well as adequate User Interfaces, while taking into consideration relevant ethical issues to enable intelligent use of data.

**WP3: Ecosystem business models for creating data-intensive solutions in ecosystem**
- Shared understanding on rules, roles and responsibilities of differing parties, as well as fair sharing of costs and benefits.
Material information flow in value chain
- Increase the visibility to material usage and information flow of material and its properties throughout the lifecycle and value network.

AI-assisted demand-order-delivery process
- Solutions for online order placing, automated order flow and capacity planning as well as to build a smart network providing a proactive approach for matching demand supply between relevant parties and real-time flexible response to any changes in the value chain.

Manufacturing logistics
- Develop intelligent data-sharing platform for manufacturing logistics process. The aim is to offer the integration of not only IoT and ERP but also any relevant third-party data into a data-sharing platform.

Smart Factory Connectivity
- Novel capabilities to connect machines to factory systems, share data between systems and other machines.

Prescriptive Maintenance
- Novel reliability-based maintenance approaches that are able to provide the required levels of availability, maintainability, quality while at the same time considering the manufacturing system as a whole.

Manufacturing process excellence with AI
- The aim is to create simulation tool in which machine learning algorithm simulates the overall production process with different parameters and select the best parameters for certain situation automatically to ensure both the required quality and sufficiently high productivity while guaranteeing cost-efficiency.

WP1: Novel connectivity solutions & technologies for collecting and delivering data
WP2: Advanced analytics methods for processing data
WP3: Ecosystem business models for creating data-intensive solutions in ecosystem
PPP model (in its different forms) is the most impactful way of working as it mobilises private money, connects companies (ecosystems, value chains) and ensures that research creates growth and jobs directly.

Public funds need to be available for companies, but only on the top of private investment, to the best companies and preferably for being interconnected, i.e. large company funding flows to SMEs and researchers as well.

Do not mix innovation policy and its instruments to regional policy. Majority of innovations take place in large cities, due to the heterogenous population base and proximity to universities.

The HE industrial pillar 2 should be as large as possible. Now there seems to be a risk, that fundamental research (e.g. ERC) and financing of start-up companies (e.g. EIC) take the attention in EU and the gap between these two (= why pillar 2 exists) grows too large.
Where leaders and winners meet - DIMECC

https://www.dimecc.com/