OVERVIEW OF THE INDUSTRIAL DATA SPACE

Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
October 2015
CONTENTS

- Driver of innovation and the role of data
- Key aspects of the Industrial Data Space
- Industrial Data Space research project
- Industrial Data Space association
- Role of use cases
- Contact partner
**Digitalization is both a driver and an enabler of innovative business models**

<table>
<thead>
<tr>
<th>Pharma</th>
<th>Automotive</th>
<th>Trade</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics:</strong></td>
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<td>- Real-life evidence</td>
<td>- Traffic management 2.0</td>
<td>- Autonomous transparency in supply chains</td>
<td>- Smart concepts for small batch production</td>
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<td>- More effective &amp; efficient treatment</td>
<td>- Dynamic route calculation</td>
<td>- Consumer-centric supply chain</td>
<td>- Autonomous production</td>
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<td>- Personalized medicine</td>
<td>- Connected drive services</td>
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<td><strong>Product innovation</strong></td>
<td><strong>Service innovation</strong></td>
<td><strong>Process innovation</strong></td>
<td><strong>Organizational innovation</strong></td>
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*Picture sources: Microsoft, BMW, Databirds, SmartFace.*
A key component for business model innovation is the ability to combine data in an ecosystem.
Data becomes a strategic resource
Industrial Data Space can be a link between digital production/logistics and smart services.

Legend:
- Information flow
- Flow of goods
Industrial Data Space facilitates a network of trusted data

- Decentralized Federal architecture
- Sovereignty over data and services
- Security Data exchange
- Governance Shared rules
- Openness Neutral and user-driven
- Certified participants
- Safeguarding of trust
- Scaling Network effects
- Network Platforms and services
Industrial Data Space focuses on the architecture of data and data services

<table>
<thead>
<tr>
<th>Architecture levels</th>
<th>Automakers</th>
<th>Electronics and IT</th>
<th>Services</th>
<th>Logistics</th>
<th>Machinery &amp; plant engineering</th>
<th>Pharma &amp; medical supplies</th>
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<tbody>
<tr>
<td>Smart service scenarios</td>
<td>Service and product innovation</td>
<td>Smart data services (alerts, monitoring, data quality, etc.)</td>
<td>Basic data services (information fusion, mapping, aggregation, etc.)</td>
<td>Internet of Things · Broadband infrastructure · 5G</td>
<td>Real time · Sensors, actuators, devices</td>
<td></td>
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Key characteristics of the Industrial Data Space

- Secure data supply chain
- Flexible usage scenarios for software components
  - Company IT environment
  - Cloud
  - Hardware device (e.g. machine tools, industrial trucks, etc.)
- Lightweight semantics
- Simple combination of various data categories (public, private, club goods, etc.)
- Domain-specific governance models and data evaluation concepts
- Configurable reference architecture model
- Standardized collaboration processes for data
- Open, participative development process
The Industrial Data Space initiative is becoming institutionalized as a research project and non-profit association.

End of Q3/2014

Oct. 1, 2015

Start of Q1/2016

Initiative

Association

Research project

Twelve participating Fraunhofer institutes:
AISEC, FIT, FKIE, FOKUS, IAIS, IAO IESE, IML, IOSB, IPA, ISST, SIT
The funding project was launched on October 1, 2015, and has two main objectives

1. **Reference architecture model**
   - Governance architecture
   - Business functional software architecture for data services
   - Security architecture
   - Technical architecture for piloting

2. **Piloting in use cases**
   - Logistics and supply chain management
   - Automobility
   - Production
The tasks in the funding project have been divided up into nine work packages and will run for three years.

<table>
<thead>
<tr>
<th>WP</th>
<th>Description</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>1</td>
<td>Reference architecture model</td>
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<td>2</td>
<td>Software piloting</td>
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<td>3</td>
<td>Use cases</td>
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<td>4</td>
<td>Standardization contributions</td>
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<td>5</td>
<td>Certification concept</td>
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<td>6</td>
<td>Business model innovation</td>
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<td>7</td>
<td>Recommendations for action</td>
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<td>8</td>
<td>Institutionalization</td>
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<td>9</td>
<td>Project management</td>
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The association actively recognizes the interests of Industrial Data Space users

Purpose of the association

- Organizing activities
- Pooling user interests
- Handling communication and PR
- Collaborating and sharing information with similar initiatives
- Liaising with the funding project

Founding members

- Atos IT Solutions and Services GmbH
- Bayer HealthCare AG
- Boehringer Ingelheim Pharma GmbH & Co.KG
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
- KOMSA Kommunikation Sachsen AG
- PricewaterhouseCoopers AG
- REWE Systems GmbH
- Robert Bosch GmbH
- Salzgitter AG
- SICK AG
- ThyssenKrupp AG
- TÜV Nord AG
- Volkswagen AG
- German Electrical and Electronic Manufacturers' Association (ZVEI)

Currently there are over 65 use case candidates from a variety of sectors

<table>
<thead>
<tr>
<th>Purpose of use cases</th>
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<tbody>
<tr>
<td>- Identifying and pooling user requirements</td>
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<tr>
<td>- “Trialing” reference architecture model by users</td>
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<td>- <strong>Demonstrating</strong> innovations based on Industrial Data Space</td>
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<td>- Demonstrating and integrating existing <strong>standardization projects</strong></td>
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<td>- Developing a <strong>prototype reference</strong> for the participating companies</td>
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<td>- Forming the potential <strong>core of an ecosystem</strong> by integrating further partners</td>
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<td>(including from other domains)</td>
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<tr>
<th>Use case characteristics</th>
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<tr>
<td>- Linking of data from <strong>several data sources</strong></td>
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<td>- Integration of <strong>various data types</strong> (e.g. master data and status data from</td>
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<tr>
<td>manufacturing)</td>
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<tr>
<td>- Combination of <strong>various data categories</strong> (private data, public data, club goods)</td>
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<td>- Participation of <strong>at least two companies</strong></td>
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<td>- Integration of <strong>more than two company architecture levels</strong></td>
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<td>(e.g. shop floor and office floor)</td>
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<td>- Basis for the provision of <strong>smart services</strong></td>
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The work on Industrial Data Space complements that of Plattform Industrie 4.0

- **Industry 4.0**
  - Focus on manufacturing industry
  - Manufacturing industry
  - Smart services
  - Data
  - Transmission, networks
  - Real-time systems

- **Industrial Data Space**
  - Focus on data
  - Data

- **Other Industry 4.0 Focus Areas**
  - Insurance 4.0
  - Trade 4.0
  - Banking 4.0
  - ...
Your contact partner will be happy to answer any questions you may have

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