THE INDUSTRIAL DATA SPACE
A PANEUROPEAN ECOSYSTEM APPROACH FOR SHARING DATA

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IOT WEEK 2018, 7TH JUNE 2018
The key focus for a data-driven economy and new business models is in linking data.
Development of existing ways of sharing Data with the regard to the enforcement of use restrictions.
UNLEASH THE VALUE OF YOUR DATA

Enable the access to yet untouched data treasures in your company while staying in control over its flow and usage.
COMPANIES WANT TO EXCHANGE DATA WITHOUT REGRET

Interoperability
Data Exchange
»Sharing Economy«
Data Centric Services

Data Ownership
Data Security
Data Value

DIGITAL SOVEREIGNTY
is the ability of a natural or legal person to exclusively and sovereignly decide concerning the usage of data as an economic asset.
OBSTACLES CONCERNING
EXTENSIVE SHARING OF DATA

Today

57% worry about revealing valuable data and business secrets.
59% fear the loss of control over their data.
55% feel inconsistent processes and systems as a (very) big obstacle.
32% fear that platforms do not reach the critical mass, so that data exchange will be interesting.

Industrial Data Space Approach

More Data Security
Improvement of Sovereignty
Optimising Processes and Cost Structures

Join us!

© PwC-Study on "Industrial Data Space"
INDUSTRIAL DATA SPACE
P2P NETWORK OF TRUSTED DATA

• All actors oblige themselves to play by the rules of Industrial Data Space
• Actors and technical components are to be certified
• We provide usage control for data and different tailor-made levels of trust
INDUSTRIAL DATA SPACE APPROACH:
SELF DETERMINED CONTROL OF DATA FLOWS

- **Endless Connectivity**
  standard for data flows between all kinds of data endpoints

- **Trust** between different security domains
  Comprehensive security functions providing a maximum level of trust

- **Governance** for the data economy
  usage control and enforcement for data flows
## TO DO LIST
### INDUSTRY 4.0 AND DATA ECONOMY

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<thead>
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<tr>
<td>1</td>
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<td>3</td>
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</table>
| • Identity management  
• User-certification | • Authentication & Authorisation  
• Usage Policies & Usage Enforcement  
• Trustworthy Communication  
• Security by Design  
• Techn. Certification | • Data source description  
• Brokering  
• Vocabulary |
| 4 | 5 | 6 |
| • Integration of existing vocabularies  
• Using different data formats  
• Connection of clouds and platforms | • Processing of Data  
• Remote Execution | • Clearing & Billing  
• Domain specific Broker and Marketplaces  
• Use Restrictions and Legal Aspects (Contract Templates, etc.) |

**Security**
- Connection of every data endpoint
- Integration of existing vocabularies
- Using different data formats
- Connection of clouds and platforms

**Standardized Connectivity**
- Data is being traded as an asset
- Clearing & Billing
- Domain specific Broker and Marketplaces
- Use Restrictions and Legal Aspects (Contract Templates, etc.)

**Data Markets**
- Being able to explain, find and understand data
- Data source description
- Brokering
- Vocabulary

**Ecosystem of Data**
- Typical tasks can be solved easier with apps
- Processing of Data
- Remote Execution

**Value Adding Apps**
- Trust is the basis of the IDS
- Identity management
- User-certification
CONNECTING ALL KINDS OF DATA ENDPOINTS

Legend:
- IDS Connector
- Data Usage Constraints
- Non-IDS Data Communication
"HOW TO" DATA ECONOMY
UNLEASH THE VALUE OF YOUR DATA

1. Make data available –
dynamic, on demand
(describe, expose)

2. Link with ecosystem
partners (connect, match,
interpolate)

3. Control the access to your
data (usage control)

4. Create value (Apps,
remote software
execution, aggregation)
A TRUSTED PEER TO PEER NETWORK FOR ALL INDUSTRIES TO SHARE DATA

- Software components enable all stakeholders (defined roles) to participate in IDS
- The quantity of all (external) IDS connectors defines the Industrial Data Space
- Internal IDS connectors are used to link data sources in the company, to transform and to improve them.
DATA ECONOMY – COMMON RULES AS BASE FOR TRUST
REFERENCE ARCHITECTURE
CONNECTOR

Execution Core Container:
Basic functionality for connectivity

App Store Container:
Environment for custom apps to extend functionality (i.e. transformation, analytics, pseudonymisation, protocol transformation)

Custom Container:
Adapter for internal systems

Configuration Manager
Environment for Configurations, e.g. process based, rules oriented
# 4 Security Profiles

## You Decide Depending on the Use Scenario

<table>
<thead>
<tr>
<th>Reference Development</th>
<th>Base Free</th>
<th>Base</th>
<th>Trust</th>
<th>(Managed)Trust+</th>
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</thead>
<tbody>
<tr>
<td>Roles</td>
<td>Open Source</td>
<td>IDS Community</td>
<td>IDS Community</td>
<td>Bound to strong SLAs</td>
</tr>
<tr>
<td>Communication Abilities</td>
<td>Own infrastructure</td>
<td>All IDS Roles supported, Billing and Clearing optional</td>
<td>All IDS Roles supported</td>
<td>All IDS Roles supported</td>
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<tr>
<td>Higher Security Classes</td>
<td>Only private IDS with self signed certificates</td>
<td>Full interoperable, reduced trust</td>
<td>Full interoperable, Free decision of communication</td>
<td>Full interoperable, Free decision of communication, Hardware anchor</td>
</tr>
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</table>
DATA USAGE CONTROL
AN EXTENSION OF ACCESS CONTROL

Fine-grained policies specify how data is handled after access has been granted.
ECOSYSTEM FOR THE DATA ECONOMY
OPEN, NEUTRAL, TRUSTWORTHY

1. Data Owners/Providers/Users
   - Seeking data control & insights
   - Sharing & monetizing data

2. Service Providers (Broker, App Store, Vocabulary Prov.)
   - Acquiring & retaining customers
   - Monetizing data services & solutions

3. Infrastructure Providers (Identity, Clearing & Billing, Certification, Technology/Connector)
   - Enabling secure data exchange
   - Monetizing data services & solutions

Industrial Data Space Association
(not for profit, altruistic)
- Safeguarding the value propositions
- Setting the rules
- Delivering trust (certification and identities)
MILESTONES REACHED AND NEXT STEPS

ARCHITECTURE
Release of the reference architecture model 2.0 on Hannover Fair

STANDARD
DIN SPEC 27070 for the IDS connector, transferred in ISO

INTERNATIONAL
Members all over the world, connecting with important initiatives, major European RTOs, intense engagement in European research activities

GO LIVE
Ecosystem potentially running, first products, enhancing global adoption
OUR GALLERY
OF IMPRESSIVE IDS USE CASES AND PROJECTS
COLLABORATIVE SUPPLY CHAIN RISK MANAGEMENT

Short Description
- Phase 1: Event based transfer of effected Supply Chain data
- Phase 2: Event based transfer of material flow data

Benefits
+ On demand Supply Chain Transparency
+ Realtime Tracking and Tracing
+ Proactive Supply Chain Risk Management

Main Technology/IDS Components
- Internal and external IDS connector
- Vocabulary
- Data Usage Control
- Bosch Tracking & Tracing

Targets
- Set of rules
- Standardized data definitions
- Harmonized data model
- Proof of concept for the data transfer

Partners/Ecosystem
- Logistics Service Provider (tbd.)
- Tier-2 Supplier (tbd.)
NEW!
It is up to you to bring the association forward. Start co-creating the Industrial Data Space and contribute to the main strategic pillars, send representatives to the working groups and teams, make your own business driven experiences with Industrial Data Space.

1. **REFERENCE ARCHITECTURE.**
   - Defines structure and functionality of IDS
   - Standardization
   - Implement IDS functionality based on different technologies

2. **FUNCTIONAL OVERVIEW.**
   - Functional requirements as core of the IDS DNA
   - Defining technology agnostic features
   - Continuous addition of requirements via use cases

3. **USE CASES & COMMUNITIES.**
   - Identify requirements for IDS architecture
   - Validate applicability
   - Showcase business relevance

4. **DEVELOPERS COMMUNITY.**
   - Implementing IDS components
   - Match architecture with existing technologies
   - Challenge IDS architecture

5. **OPERATING CONCEPT.**
   - Establishing the infrastructure and foundations for the IDS ecosystem to work

6. **GROWTH & ADOPTION.**
   - Non-linear member growth
   - Adoption of IDS technology and components
   - Global liaisons and proliferation