IDS – DEMONSTRATION, APPLICABILITY FOR INDUSTRY AND LOGISTICS AND NEXT STEPS

TNO
CHALLENGES & OPPORTUNITIES

OLD SCHOOL MANUFACTURING & LOGISTICS

- Reactive
- Isolated optimization
- Plan, replan, never look back
- Static flow design solely at strategic level
- Sole cost focus
- Traditional inflexible systems
- Isolated use of information

NEW SCHOOL MANUFACTURING & LOGISTICS

- Proactive
- Optimization is the result of multi-level coordination & cooperation
- Plan, replan, real-time replanning & control, continuous learning
- Network design at strategic level & continuous dynamic rerouting of flows
- Balanced trade-off between low costs / high customer service / sustainability
- Flexible distributed service-based solutions & flexible integrated centralized solutions
- Intensive utilization & enrichment of information
THE GAP BETWEEN BUSINESS & TECHNOLOGY PRIORITIES IN AN ORGANIZATION

Future State
Drive growth...
by building a digital organization...
...on a transformed, modern digital platform

Current State
Revenue under pressure
Investments to "Change" challenged
Increasing run cost of legacy platform

IT modernizing legacy and
Business transforming to digital (2-speed)

...while the business is demanding agile, IT-driven transformation to meet customer needs and competitive threats

IT’s priorities are to modernize in order to reduce run costs and simplify legacy...

Source: CGI Global 1000
7 Barriers towards supply chain collaboration

1. Process/information
2. Conflicting/Shared goals
3. Sustainable Business Case
4. Integration-architecture
5. Interoperability: Semantic/technical Standards
6. Governance
7. Change Management approach
API’s & Internet-of-Things combined

Turn on your lights for dummies
DO WE LET 1000 FLOWERS BLOSSOM ....

Semantic differences.
Differences in functionality.

Legacy of the future!
THE IDSA DEFINES...

1. Reference Architecture
2. Interfaces
3. Contractual Framework
4. Sample Code

...FOR AN OPEN DATA-ECOSYSTEM.
Infrastructure connecting organizations across sectors for multi-lateral, trusted, data sharing.
Ecosystem, open for stakeholders to participate
Customer

Cardbox factory
DATA SHARING IN PRACTICE

› Creating trust
  › Identity provisioning
  › Data sovereignty (due to the data sharing agreements)

› Interoperability (Make use of multiple standards)
  › Smart Connected Supplier Network – Ordering
  › OPC Unified Architecture (OPC UA) is a machine to machine communication protocol for industrial automation
  › Open Trip Model – Logistic standard regarding shipments, trips, planning

› Security
  › All the information is encrypted and stored in an IDS container (connector)
IDS - SECURITY VERSUS TRUST

Security

Non-functional design aspect:
The implementation of an IT-system must comply to its security level requirements as defined at system design and protect against malicious or unintentional security breaches.

- Confidentiality, Integrity, Availability (CIA), …
- All ICT-systems must be secure

Trust Enablers

Functional design aspects:
- Data sovereignty
- Data sharing agreements
- Shared trust domain
- Enforcement of data sharing agreements
  - legal enforceability,
  - implementation enforceability
- Transparency
- System integrity monitoring
Data Sovereignty is Key

Being in control over your own data

- Who is allowed access to your data, for which purpose and under which conditions

Realization of data sovereignty requires a variety of enablers, i.e.:

- Technical enablers, e.g.:
  - Mechanisms for access control and for usage control
  - Enforcement of existing law, regulations, and (business) policies.
  - Security mechanisms: peer-to-peer data sharing, encryption, PKI / Key Management, …

- Procedural enablers, e.g.:
  - Making a data sharing agreement
  - Doing data sharing transactions: clearing, settlement, …
  - Logging, data provenance and reporting
Individual (technical) aspects have been shown before

So, why should it work (this time):
  - Governance, governance and governance….

<table>
<thead>
<tr>
<th><strong>Governance of development</strong></th>
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<tr>
<td><em>Design for an ecosystem:</em></td>
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<tr>
<td>- Open to users</td>
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<td>- Open to service providers and to innovation</td>
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<td>- Open to solution providers</td>
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<td><em>Interoperability for scale, scope and reach:</em></td>
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<tr>
<td>- Vertically – inter-organizational</td>
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<td>- Horizontally – cross organization/sectors</td>
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<td>- Longitudinally – supply chain</td>
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<td><em>Low barriers to participate</em></td>
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<td>- Open source availability</td>
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<td><em>Open standard design and maintenance process</em></td>
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<th><strong>Governance of deployment</strong></th>
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<td><em>Provide adequate alternative for closed communities</em></td>
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<tr>
<td><em>Create initial solution with sufficient scale</em></td>
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<td><em>Specific roles to be fulfilled by</em></td>
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<tr>
<td>- Telecommunication operators / service providers</td>
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<tr>
<td>- Early adopters: major companies, field labs</td>
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<td>- Authorities</td>
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Deutsche Telekom has announced IDS-based commercial services / products

- Based on IDS versions in development
  - Connector, Data Broker, Identity Provider
- Data Intelligence Hub

Data Sovereignty based on IDS

- For policy definition and signalling
- Extend and enforce into the DT domain, i.e.
  - The DT data lakes for AI
  - The DT AI workbench/tools
Demonstrating viability through representative use case
- Initial focus on: connector, identity provider, clearing house
- Smart industry, logistics, cross-sector, cross-border,…

Interoperability for scale, scope and reach:
- Vertically – inter-organizational
- Horizontally – cross organization/sectors
- Longitudinally– supply chain

Elaborating the IDS Service Model
- Cross-sectoral
- In an open, distributed, infrastructure for multi-lateral data sharing

Providing open source IDS components
- Connectors: Base, Trusted, Trusted+
- Supporting solutions for: identity provider, clearing house, …
Data Logistics for Logistics Data (DL4LD) project

Data Logistics for Logistics Data (DL4LD) is an innovation project that aligns with the ambitions of the ‘Topsector Logistiek’ and ‘Commit2Data’.

The logistics companies will strive for an internationally leading position, amongst others as chain orchestrator, and will therefore have to share logistics data on a large scale.

To support this, a data sharing infrastructure is required as basis for essential logistics information services. The data sharing infrastructure must be secure and trusted.
THANK YOU FOR YOUR ATTENTION

Take a look:
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