Data Logistics for Logistics Data – DL4Ld

Logistics business integration by trustworthy data sharing
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.
THE DL4LD PROJECT

PROJECT STRUCTURE: WORK PACKAGES AND ROLES

Duration: 5 Years (Q1 – Q20)

Two Phases:
- Project Phase 1: Q1 – Q10:
  - WP2, WP3 and WP4
  - TNO and UvA
- Project Phase 2: Q2 – Q20:
  - WP2 and WP3 (Update Arch. Blueprint)
  - Mainly UvA

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NWO, COMMIT2DATA AND TKI DINALOG STIMULATE THE REALIZATION OF AN
OPEN INFRASTRUCTURE FOR TRUSTED, MULTI-LATERAL DATA SHARING
WITH THE PROJECT
DATA LOGISTICS FOR LOGISTICS DATA (DL4LD)

Sharing Sensitive Data
Enforcing Data Sharing Agreements
Application of Law
Dispute Settling
THE DL4LD PROJECT ADDRESSES THE NEED FOR IMPROVED DATA SHARING IN THE SUPPLY CHAIN

Market Dynamics are changing
- This requires sharing trustworthy data in the supply chain.

Digital business ecosystems and supply chains with logistics

Sharing of data between (potentially) distrusting parties

Open infrastructure for sharing trustworthy data

- Logistics Applications & Processes
- Other Sectors Applications & Processes
  - Data Control, Access & Usage
  - Open Infrastructure for Trusted Data Sharing
  - Connectivity
  - Internet

TKI DINALOG Commit 2 Data Thales BIZZdesign Ciena EVOFENEDEX Gemeente Amsterdam
AIRFRANCE KLM TRANSFIDES ORACLE
DL4LD ENABLES THE
TRUSTWORTHY SHARING OF SENSITIVE DATA
ACROSS ORGANIZATIONS AND SECTORS

THE DL4LD PROJECT

Reference architecture:
• To share (logistics) data on a large scale
• That supports trust and is secure

Forward looking research aimed at:
• Enforcement of laws
• Rapid construction
DL4LD enables the trustworthy sharing of sensitive data across organizations and sectors.

**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 aspect:
- Data sovereignty
- Data sharing agreements
- Shared trust domain
- Enforcement of data sharing agreements
  - legal enforceability,
  - implementation enforceability
- Transparency
- System integrity monitoring
THE DL4LD PROJECT DEMONSTRATES
THE CONCEPTS FOR TRUSTED DATA SHARING
IN AN OPEN INFRASTRUCTURE

Towards a reference architecture for sharing trustworthy data
- Trust enabling functions are implemented on an open infrastructure

Must have trust enabling functions
- Terms of Use, Legal and Commercial Conditions
- Access & Usage Policies
- Clearing, Settlement & Billing
- Monitoring, Logging, Auditing

An open infrastructure for trustworthy data sharing
- Realized by
  - Enforced Data Sharing Agreements
  - Open through Standardization of Connectors
  - Certification and Attestation
- Defined in
  - Data and Processing at the Source

Ecosystem, open to participate and supported by (trusted) roles
The realization will be based upon

THE INTERNATIONAL DATASPACE INITIATIVE (IDS)

The DL4LD project builds upon IDS concepts:

- It demonstrates how the IDS trust enabling concepts support an open infrastructure for trustworthy data sharing.
- It assesses its applicability and interoperability across sectors and organizations.
- Supported by TKI Dinalog, the Dutch Institute for Advanced Logistics.

See: www.internationaldataspaces.org
IDS CONSISTS OF
A REFERENCE ARCHITECTURE AND
IMPLEMENTATION SUPPORTED BY A STRONG COMMUNITY

DL4LD co-operates with organizations that develop, promote and deploy IDS
- DL4LD disseminates the IDS data-sharing concepts to logistic business ecosystems

IDS Association (IDSA)
- Governance of a reference architecture
- Develop the standards for the IDS
- Initiate national hubs, e.g. The Netherlands (TNO)

The IDS reference architecture
- Blueprint for the data space
- Trust through data sovereignty
- Data at the source Peer-to-peer, no data lake

A reference architecture
International Data Space (IDS)

www.internationaldataspaces.org

International Data Spaces Association
TNO innovation for life
Fraunhofer

TKI DIALOG
Connectors for Scientific Research
Commit 2 Data
Thales
Airfrance
KLM
TRANSFIDES
Oracle
Universiteit van Amsterdam
TNQ innovation for life
AND OF COURSE

TECHNOLOGY

Connectors
- Standard
- Trusted
- Trusted+

REST

Connectors
- Core Containers
- Custom Containers

Attribute-based Access Control (XACML)

Message Queues

MQTT

X.509

Label-based Usage Control (LUCON)

PXPI/PPIP/PIPMP

IDS Communication Protocol (IDSCP)
DIN 27070 norm
IN ADDITION, DL4LD’S FORWARD LOOKING RESEARCH EXPLORES:

EFFECTIVE DEPLOYMENT OF
DIGITAL BUSINESS ECOSYSTEMS

Simplified creation of business ecosystem via governed Digital Market Places
- Data sharing agreements with the market place instead of with every member
- Enforcing legal compliance

Governed business ecosystems Require Governance imposed by automatic enforcing of digital contracts

Resulting in

- Trusted organizations and governance
  - to settle disputes
  - to ensure legality of transactions
  - to determine trustworthiness of organization
  - to allow access to digital ecosystem

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- to ensure legality of transactions
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TKI DINALOG
Commit 2 Data

THALES   Bizdesign
ciena   evofenedex

Gemeente Amsterdam

Universiteit van Amsterdam
TNO
THE DL4LD REFERENCE ARCHITECTURE (WP3)
STATUS AND NEXT STEPS

Status:
- DL4LD Reference Architecture based on IDS
- Basic and trusted (IDS) connectors:
  - Initial implementations available
  - Interoperability tests have been done

Next steps:
- Develop Intermediary Roles
  - Providing Trust Enabling Functions
  - Interfacing in Federated Architecture
- Service Architecture for Large Scale deployment
- Commit2Data;
  - Informing data hubs
  - Presentation at ICT-Open
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