A Trusted Data Market

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AMdEX
THE DATA HYPERMARKET

Amsterdam Data Exchange
Do we have a data economy?

- New opportunities by sharing, selling, combining, and processing data.
- However, this is not yet normal practice.
- Data trade is currently done by taking over companies -> negative effects.

Undesirable data accumulation & capital accumulation
Data sharing = Data trade

- Equal playing field in a trusted market

- Keep control of your data, and on how to share data with selected partners.
- How can we move to such an open market: transparent and trusted?
What is the problem?

- Organizations that normally compete have to bring data together in order to achieve a common goal.

- The shared data may be used for that goal but not for any other one.

- Data may have to be processed in untrusted data centers.

- How to enforce your conditions? (using modern Cyber Infrastructure)
- How to organize trusted alliances?
- How to translate from strategic via tactical to operational level?
- What are the different fundamental data infrastructure models to consider?
The Amsterdam Metropolitan Region wants to cooperate in Europe for a data-driven economy.
AMSTERDAM SCIENCE PARK

EXCELLENT CONNECTIVITY

Amsterdam-Internet Exchange

80% of Europe reached in 50 milliseconds
A real data economy

Promote trusted and secure market opportunities with data sovereignty.
Collaborative agreements are based on your decisions.
Which data to share, with whom, and under what conditions.
Generic models of data agreements (rules) should serve to accommodate different data sharing requirements. These legal models are by design built in supporting software for securing trust and audit.
Data Exchange Facilities Market provide neutral (infrastructure and rules) mechanisms in the background for controlled, trusted and secure data transactions. Participants accepting the market rules benefit from the exchange mechanisms and shape together an open market for data.
Different way of using and sharing data

Individual self-resourcing

How most organisations do it

Market, sharing and exchange

Social networks
Data platforms create monopolies

Create an equal playing field

Sound Market principles

Landscape with providers of data and data products

- Market providers control their offers (data and data products)
- Users may compare products and explore how others use products.
- Cooperation to create joint opportunities that otherwise would not become reality.
- Requires infrastructure and rules.
- Open = transparent. Organise trust via market rules, with digital monitoring and enforcement.
Enterprise Data Exchange Model Trends

- **Peer to Peer**
  - Trusted Partners
  - Data Quality is known
  - Data Providers assume buyers do not re-sell data
  - Data is moved to buyer

- **Buy/Sell to Aggregators**
  - Data SLA enforcement is buyer’s responsibility/reputation-based
  - Usually No control over data once it is with Aggregator/Broker
  - Buyers get data from Broker
  - Broker has his own marketplace

- **Participate In Decentralized Marketplaces**
  - Consortium determines rules of its trusted model
  - Providers have control over their data
  - Buyers interact compute with data, but have privacy over their code execution
  - Consortium operator or 3rd party problem remediation

Credit: EQUINIX
Provide the missing link

- **Internet of Data**: Common federated infrastructure to enable data markets
- **Internet of Things**: IoT as data producer
- **Internet**
Architecture of ‘Data Market as a Service’ (DMaaS)

Data suppliers

Agreement

Infrastructure patterns

Deployment specification

Future Internet Infrastructure:
Software definable – No bandwidth limitations – On demand / transaction based

Algorithm developers

Registry

Dispute resolution

Accounting & Auditing
Digitally enforced contracts
Digitally enforced contracts

A

B

data

algorithm

Processed data
Digitally enforced contracts

A: data

B: processed data

C: Broker/facilitator

algorithm
Functional view of a Digital Data Marketplace for sharing data
Data Market enabling trade processes using data hub services

Data producers – owners - users
Data services and products

Data products
- Attribution
- Analytics
- Visualization
- Modelling
- Search
- Optimization
- Reporting

Data services

Credits: John Hopkins University
AMDEX is facilitating a neutral and trusted Digital Data Market allowing participants (supply and demand) to organise their (trading) activities.

Offering infrastructure, generic services and frameworks for legal models. Reduce risk of market participants.

Operating for interested communities willing to participate.

“Community driven”: participating communities and member organizations control the Data Exchange mechanism.

European regions are joining and connecting with their (emerging) Data Exchange facilities.
Industrial Data Space
Reference Architecture for Data Sovereignty
Anticipated European regional cooperation
Regions want to proceed towards a Federated European Data Market

- Support all (proprietary, open and personal) data transactions.
- Federate, integrate and make interoperable the existing solutions and platforms.
- Implement common architectures for interoperability, integration, security & trust, and standards. Attention for optimising process of data to compute, and compute to data.
- Start the processes to propose and agree on required standards.
- Develop workable business models for establishing data exchange facilities and their cooperation, benefitting from established models.
- Consider implications for any required regulatory frameworks, and contribute to European and national considerations in this respect.