Training AI/ML models using Digital Data Marketplaces
Creating value and competition by enabling access to additional big data owned by multiple organizations in a trusted, fair and economic way

The more data - the better: an aircraft maintenance use-case

- AI/ML algorithm based Decision Support Systems create business value by supporting real-time complex decision taking such as predicting the need for aircraft maintenance.
- Algorithm quality increases with the availability of aircraft data.
- Multiple airlines operate the same type of aircraft.
- **Research Question**: “How can AI/ML algorithm developers be enabled to access additional data from multiple airlines?”
- **Approach**: Applying Digital Data Marketplace concepts to facilitate trusted big data sharing for a particular purpose.

Digital Data Marketplace enabling data sharing and competition

A **Digital Data Marketplace** is a membership organization supporting a common goal: e.g. enable data sharing to increase value and competitiveness of AI/ML algorithms.

Membership organization is institutionalized to create, implement and enforce membership rules organizing trust.

Market members arrange **digital agreements** to exchange data for a particular purpose under specific conditions.

Agreements subsequently drive data science transactions creating processing infrastructures using infrastructure patterns offered by a Data Exchange as **Exchange Patterns**.

Researching Exchange Patterns to support Digital Data Marketplaces

- **Data Science Platform Layer**
- **Data Science Development Platforms**
- **Public Cloud**
- **Digital Data Marketplace Infrastructure** provided by Data Exchange
- **Data Transfer & Processing Nodes**
- **Data Owner Layer**
- **KLM Amsterdam**
- **Airline B**
- **Silicon Valley**

**Trust Modelling**: What is the optimal infrastructure architecture, incentivizing storage and processing locations and their relationships, which best suit member requirements when considering cost?

**Processing Models**: What are the implications of distributing deep learning across membership organization owned infrastructures in terms of achievable model accuracy and processing performance using federated/distributed models or centralized models?

**Marketplace Reference Architecture**: What constitutes a marketplace? Researching needed functions, personas, flows, datasets, contracts & roles, conflict resolution, and much more.

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