PROTOTYPE: DIGITAL DATA MARKETPLACE

Enabling Data Sharing for AI Development

Leon Gommans – Science Officer
Air France KLM Group IT Technology Office
R&D department.

Prof. Data Exchange Systems
Informatics Institute
University of Amsterdam
CHALLENGE: SHARING DATA FOR AI DEVELOPMENT

SOLUTION: DIGITAL DATA MARKETPLACE GOVERNELED BY A MEMBERSHIP CONSORTIUM

- Data supplied by other organizations
- Own Organization Data
- Historic (Big) Data
- Periodic storage: raw or with enhanced quality
- Enabling access and use

Digital Data Marketplace

Algorithm Developers

- Computer science
- Data science
- Math and statistics
- Domain knowledge
- Competitive

Decision Support Systems

- Planning, Prediction, Prevention, Effectiveness, Efficiency, etc.
- (Near) Real Time Operational Data

Maintenance Organization
DIGITAL DATA MARKETPLACE GOVERNANCE
A FOUR STEP APPROACH:

COMMON BENEFIT
Define and agree common benefit no single organization can achieve on its own.

GROUP RULES
Define consortium rules considering data use, access and benefit sharing.

ORGANIZE TRUST
Organize power and trust as a means to reduce risk for participating members.

IMPLEMENT INFRASTRUCTURE
Research operationalization of Digital Data Marketplace concepts.

SAE ITC ExchangeWell

Testbed Equinix/Dell/Nokia/Ciena
MARKETPLACE JOURNEY
IMPLEMENTED IN PROTOTYPE

- Governance
- Setup
- Member Admission
- Asset Registration
- Trade Agreements
- Transactions
- Clearing & Settlement
- Auditing & Security
MEMBERS ALLOW EACH OTHER VISIBILITY

AI flow Data/Algorithm

Choose Algorithm

Choose DataSet

Execute Training, Model creation, Prediction

Log tracking, execution tracking

Dec 2018    Mar 2019    Mar 2020
ESSENTIAL INFRASTRUCTURE ARCHETYPES
MANY VARIANTS: FOCUS ON CONSORTIUM DRIVEN APPROACH TO ORGANIZE TRUST

Centralized
Bring data to the algorithm

Distributed
Bring algorithm to the data

Federated
Using trusted infrastructure

Data owners

Developer

Consortium
consolidate

Data owners

Data owners

Data owners
ESSENTIAL INFRASTRUCTURE ARCHETYPES
PROTOTYPE: CONSORTIUM DRIVING SECURITY & INFRASTRUCTURE ARCHITECTURE

Centralized
Bring data to the algorithm

Distributed
Bring algorithm to the data

Federated
Using trusted infrastructure

Data owners

Data owners

Data owners

Developer

Developer

Developer

Data owners

Consortium Datapace

Data owners

contract

consolidate
DIGITAL DATA MARKETPLACE ARCHITECTURE

RESEARCHING IMPLEMENTATION OF ESSENTIAL ELEMENTS

National Law & Regulations

Market rules

Member admission

Digital Data Marketplace Membership Organization

Data Exchange Infrastructure

Data Exchange Infrastructure

Centralized Distributed Federated

Data Science Transaction

Research Testbed

Global Digital Data Market Infrastructure

Algorithm Developer

Accounting & Auditing

Centralized Distributed Federated

Agreement

Registry

Market rules

Member admission

Exchangewell

A Program of SAE ITC

EQX

SV

UvA

KLM

Equinix

ESnet

SURF

Algorithm Developer

Airfrance KLM