Content

Concerns
- Science
- Industry

Data Exchange Approach

The Digital Data Marketplace concept

Example

'Open science must be properly arranged first, before the university can guarantee its mission of research, education and innovation'
Karen Maex, Dies Natalis speech 2019

Concerns from Science

Considering data:

Publishers that place data behind payment walls

FAIR data facing privacy, proprietary, value, risk,.. concerns

Public trust in science depends on its ability to verify

Unwanted (commercial) use of our free data collections:

- **Research products and research data in particular, are appropriated by a monopoly or oligopoly for profit, and then sold back to researchers and others**.

'Acquiring and passing on knowledge is less successful if you are dependent on others, from publishers with a bizarre high payment wall '
**Karen Maex, Dies Natalis speech 2019**

The systematic acquisition and passing on of knowledge is the core activity of a university

Concerns from Industry

Considering data

- Digital superpowers influence the flow of information and data collected, extract disproportionate value, and tip the global competitive balance.

- Access and usage of data from different organizations may achieve benefits that no single organization can obtain on its own, however:

  - Data is an asset: it represents both value and risk
  - Data "owner" must have autonomy and control.
  - Benefit must be clear
  - Everybody must benefit.
  - Benefit must outweigh risk
  - When used for AI/ML – Explain-ability & ethics are key for adoption.
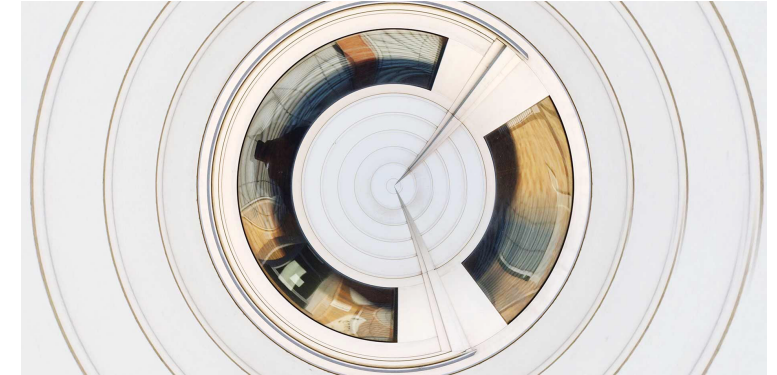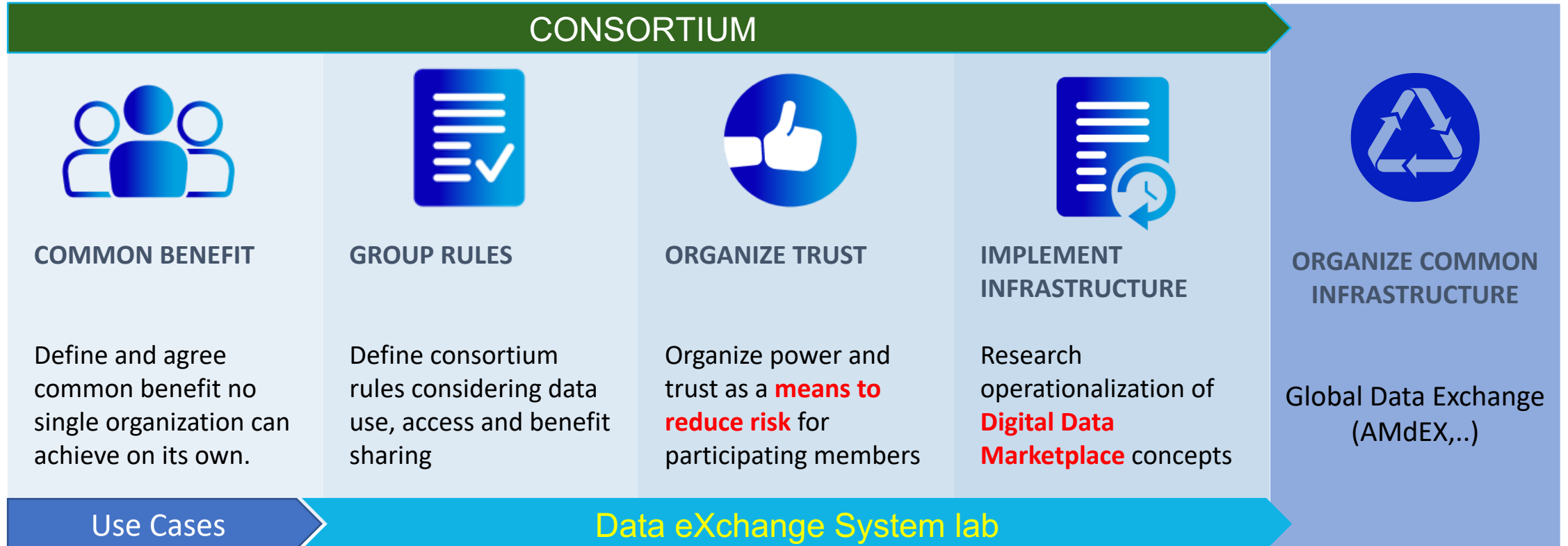

The global economy is coalescing around a few digital superpowers.
We see unmistakable evidence that a winner-take-all world is emerging in which a small number of "hub firms"—including Alibaba, Alphabet/Google, Amazon, Apple, Baidu, Facebook, Microsoft, and Tencent—occupy central positions. While creating real value for users, these companies are also capturing a disproportionate and expanding share of the value, and that's shaping our collective economic future.
*Managing our Hub Economy, HBR Sept-Oct 2017.*

HBR: Digital Superpowers are capable of tipping the global competitive balance

Data Exchange Approach addressing concerns

CONSORTIUM

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

ORGANIZE COMMON INFRASTRUCTURE

Global Data Exchange (AMdEX,..)
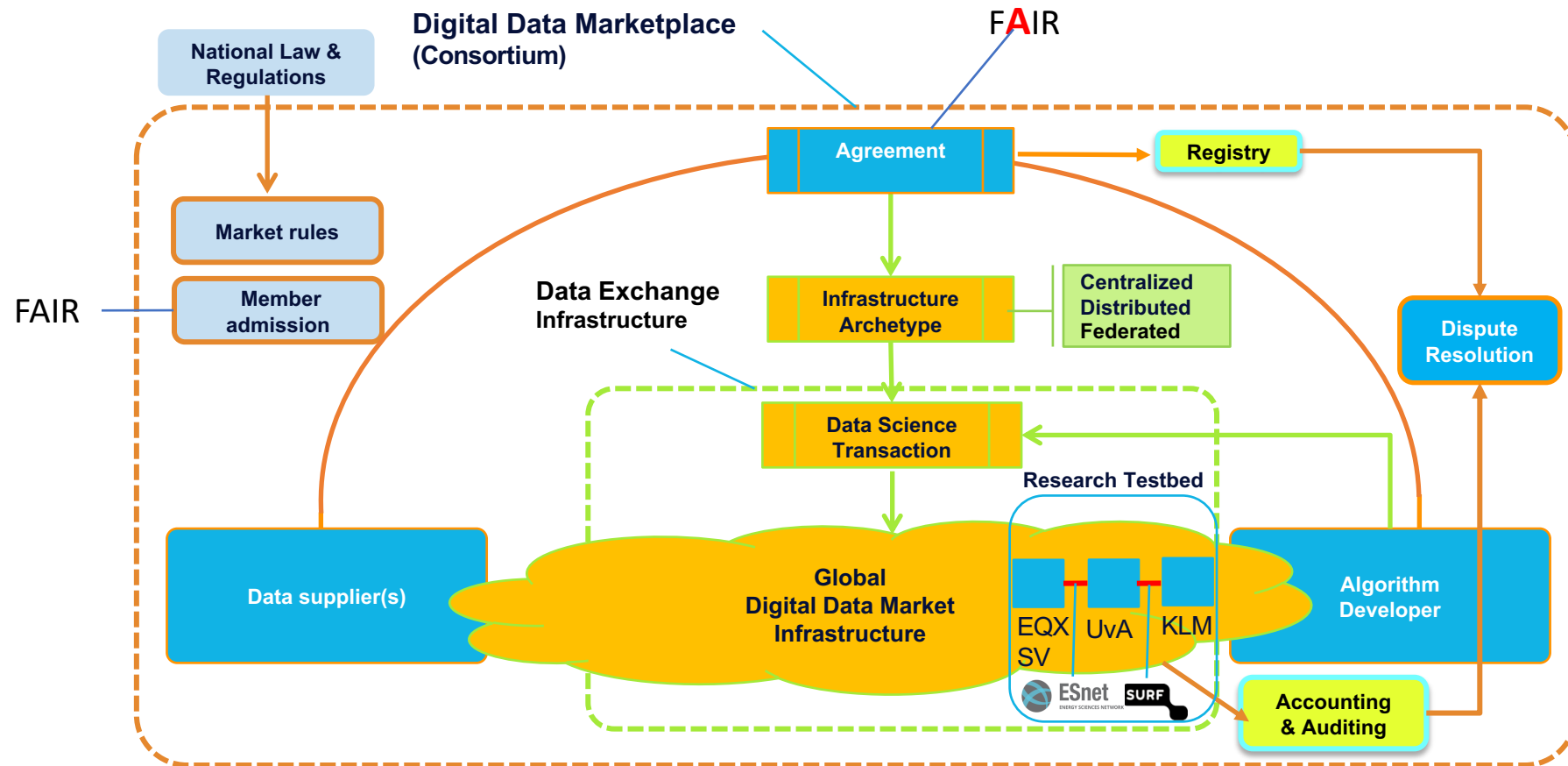
Use Cases   Data eXchange System lab

RESEARCHING DATA SHARING SOLUTIONS FOR AI DEVELOPMENT

KEY CONCERN: HOW TO ENABLE ACCESS AND USE OF MORE DATA "OWNED" BY DIFFERENT ORGANIZATIONS
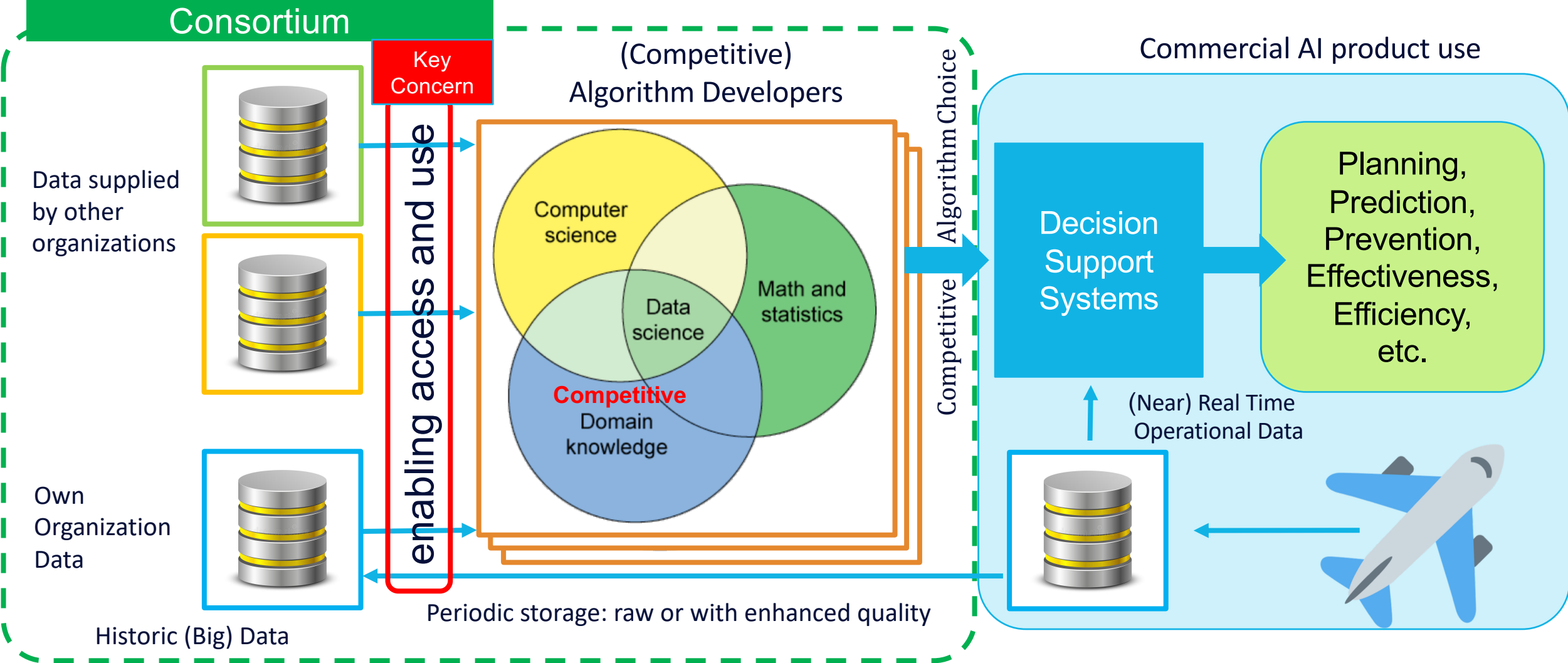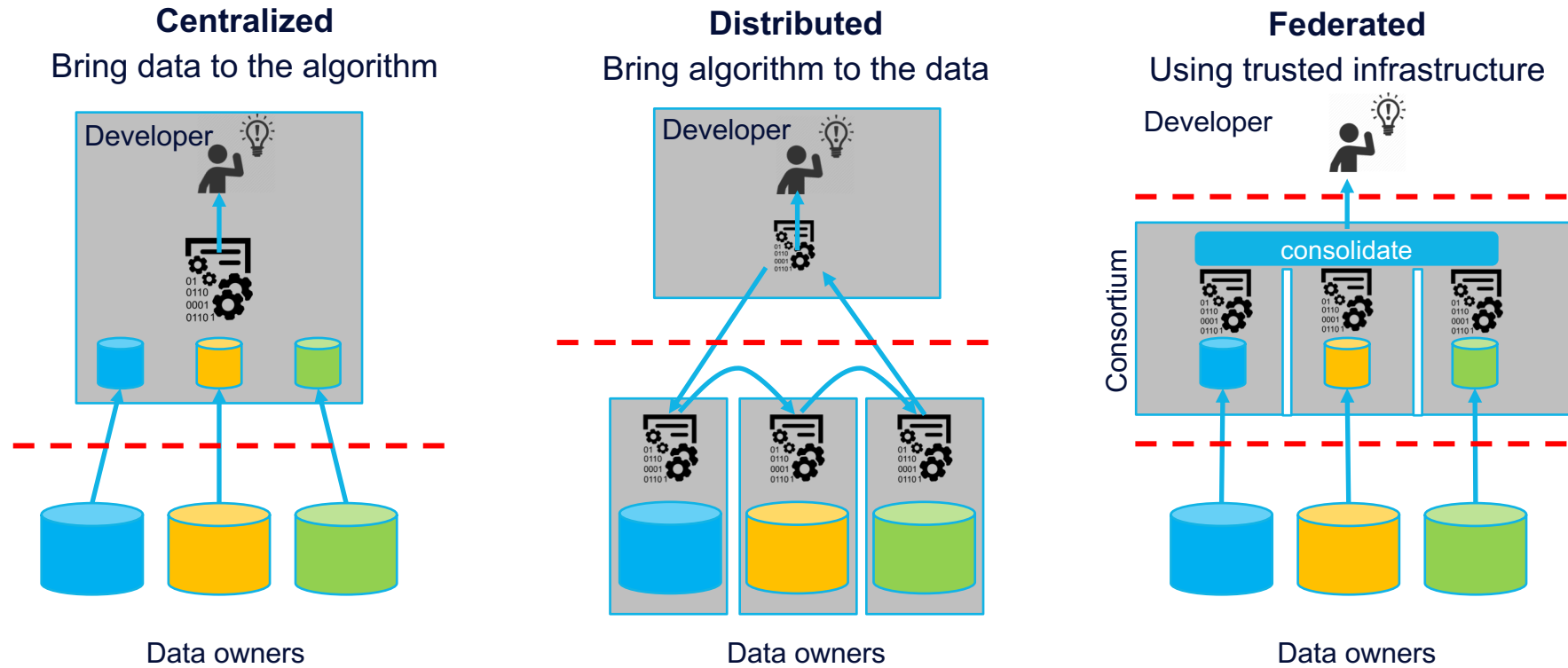
Digital Data Marketplace Architecture
Example: AI development
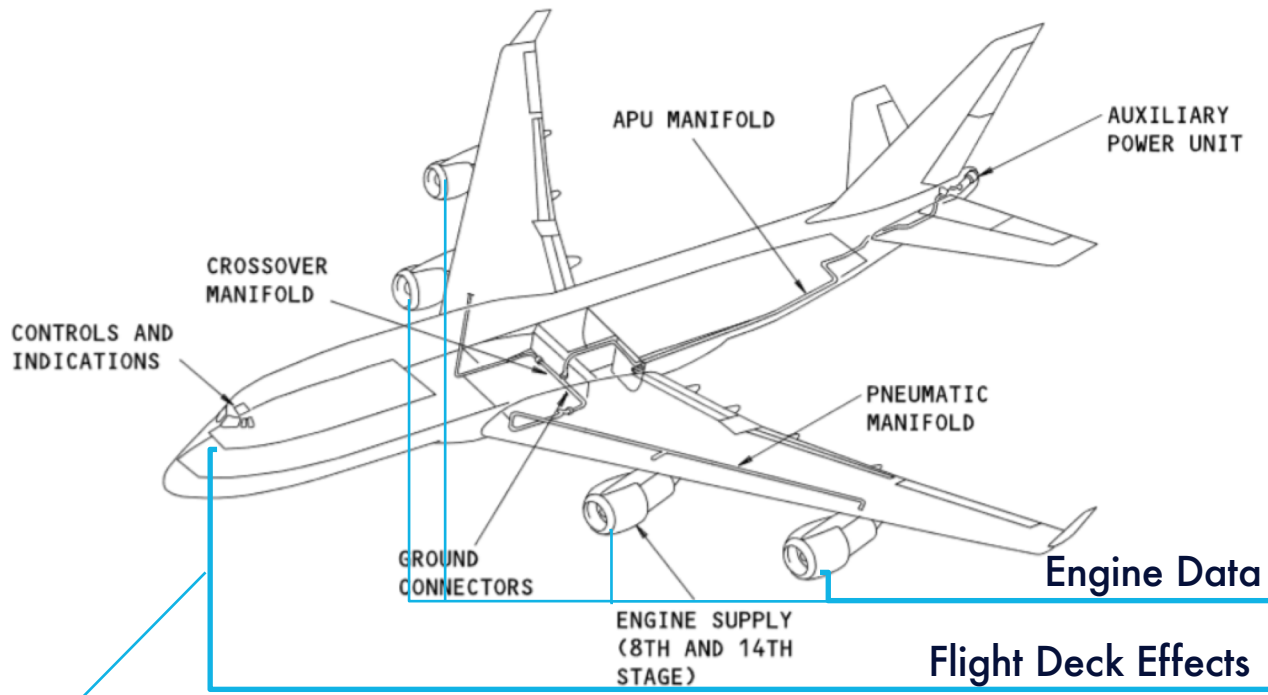
Researching Exchange Archetypes

Example: AI development

Centralized
Bring data to the algorithm

Distributed
Bring algorithm to the data

Federated
Using trusted infrastructure

Developer

Developer

Developer

consolidate

Consortium

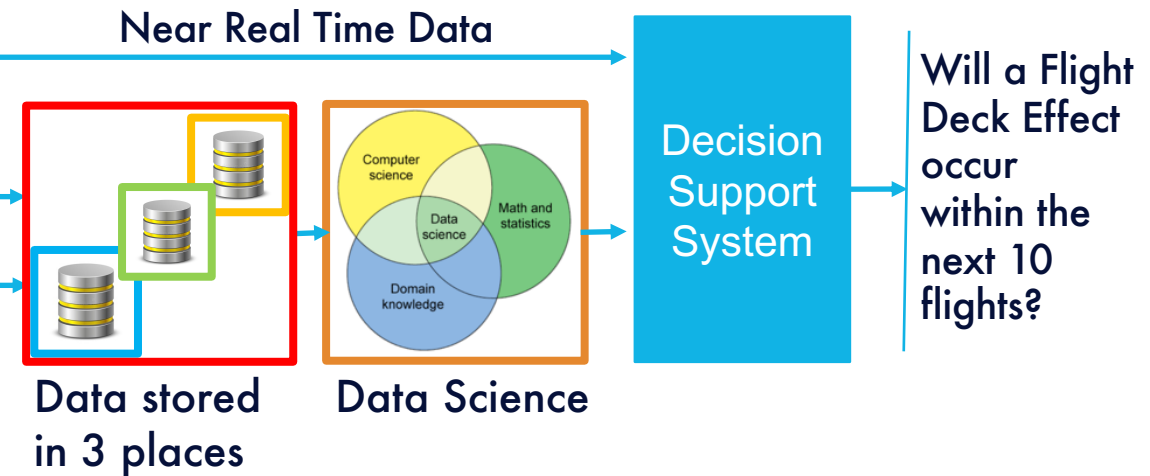Data owners

Data owners

Data owners

The Bleed Air System regulates pressure and temperature of air from a turbine engine needed by other aircraft systems taking care of:
- cabin pressure
- de-icing
- water pressure
- and more..

Flight Deck Effects indicate system functionality decreases and may trigger maintenance actions

Near Real Time Data

Engine Data

Flight Deck Effects

Data stored in 3 places

Data Science

Decision Support System

Will a Flight Deck Effect occur within the next 10 flights?

The more Flight Deck Effect occurrences are available, the more likely that a prognostic relation can be learnt

AIRFRANCE KLM

Digital Data Marketplace proces
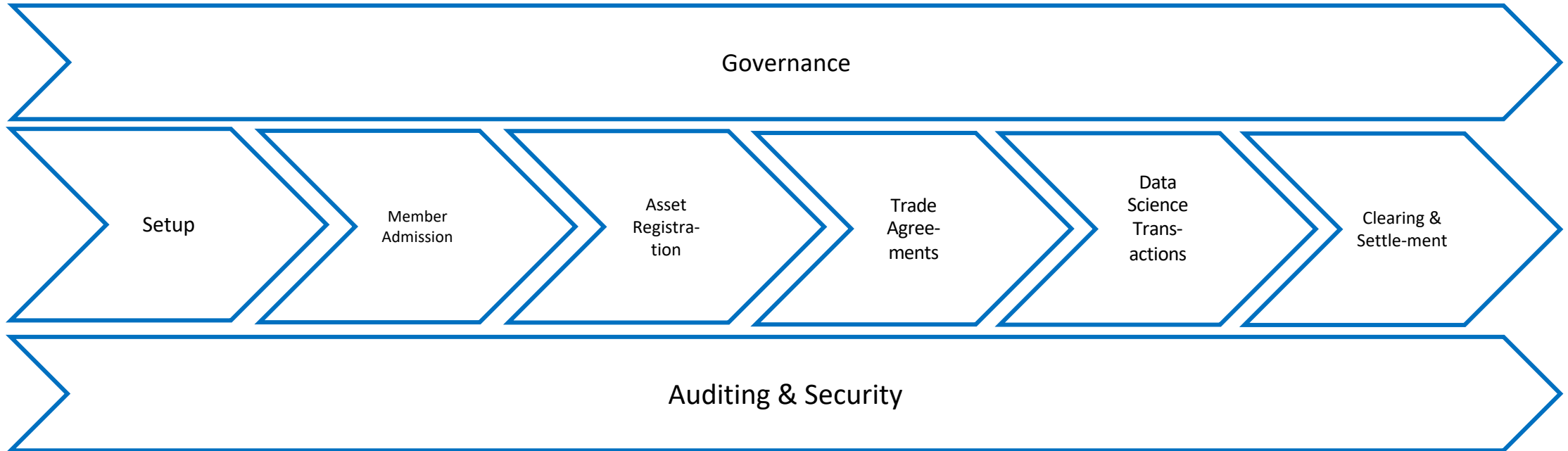
INTRODUCTION

- Organized by SAE ITC, **ExchangeWell** brings data owners and algorithm developers together in a digital data marketplace that provides the required trust for mutual engagement.

- It enables members to share their data assets in a **fair and economic way** whilst providing an adequate means to **reduce risk**.

- Sharing data enables **digital transformation of the industry** and **business value creation.**

- Supports **implementation** of SAE Standards Working Group on **Applied AI for Aviation Systems (G34)** and **(aircraft) Health Management (HM1)** work.

COMMON BENEFIT

GROUP RULES

ORGANIZE TRUST

IMPLEMENT INFRASTRUCTURE

Collaborative Innovation.
Trusted Implementation.
An SAE International Affiliate

Summary & Questions

'Open science must be properly arranged first, before the university can guarantee its mission of research, education and innovation'
Karen Maex

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More information
https://www.towardsamdex.org
https://www.amsterdameconomicboard.com/en/nieuws/amdex-trusted-data-sharing
https://dl4ld.nl

COMMON BENEFIT

GROUP RULES

ORGANIZE TRUST

IMPLEMENT INFRASTRUCTURE

AMdEX

Research Data Exchange?