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A CONSORTIUM GOVERNED DIGITAL DATA MARKETPLACE

Applied research into a trusted, fair and economic way to share (big) data assets in AI context to unlock value for our industry

IATA ADS AI Lab
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Research: Universiteit van Amsterdam, SURF, ESnet

IT Industry: Equinix, Dell Technologies, Nokia, Ciena

Industry consortium: Exchangewell (A Program of SAE ITC)

CONTEXT: AERONAUTICAL SYSTEMS

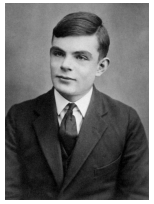
AI GENERATES MANY QUESTIONS CREATING INITIATIVES TO ANSWER THEM

1950 "Can machines think?"

Alan Turing asked the question:

"Can a machine act as player in an imitation game?"

Alan Turing **"Computing Machinery and Intelligence",** Mind 49: 433-460, 1950.



Now "Can AI replace the pilot?"

Creg Hyslop, CTO Boeing, asked the question:

"How do we maintain the existing levels of safety with an AI-based system in the cockpit?"

Charlotte Jee, **"AI is set to change the aerospace industry - but won't be flying planes anytime soon",** MIT Technology Review, Sep 13th 2018.

Industry standards bodies are joining to consider the many questions around the role of AI in aeronautical systems and applications considering its (data) needs:

- SAE International: G.34 Applied AI for Flight Critical Systems
- EUROCAE WG-114 Artificial Intelligence
- RCTA
- SAE ITC: ExchangeWell consortium initiative to create trusted implementations.

Parties need to collaborate: OAMs, OEMs, MRO's, Operators, Regulatory bodies,..
All have parts of the puzzle. Need more involvement of OPERATORS – Role for IATA?

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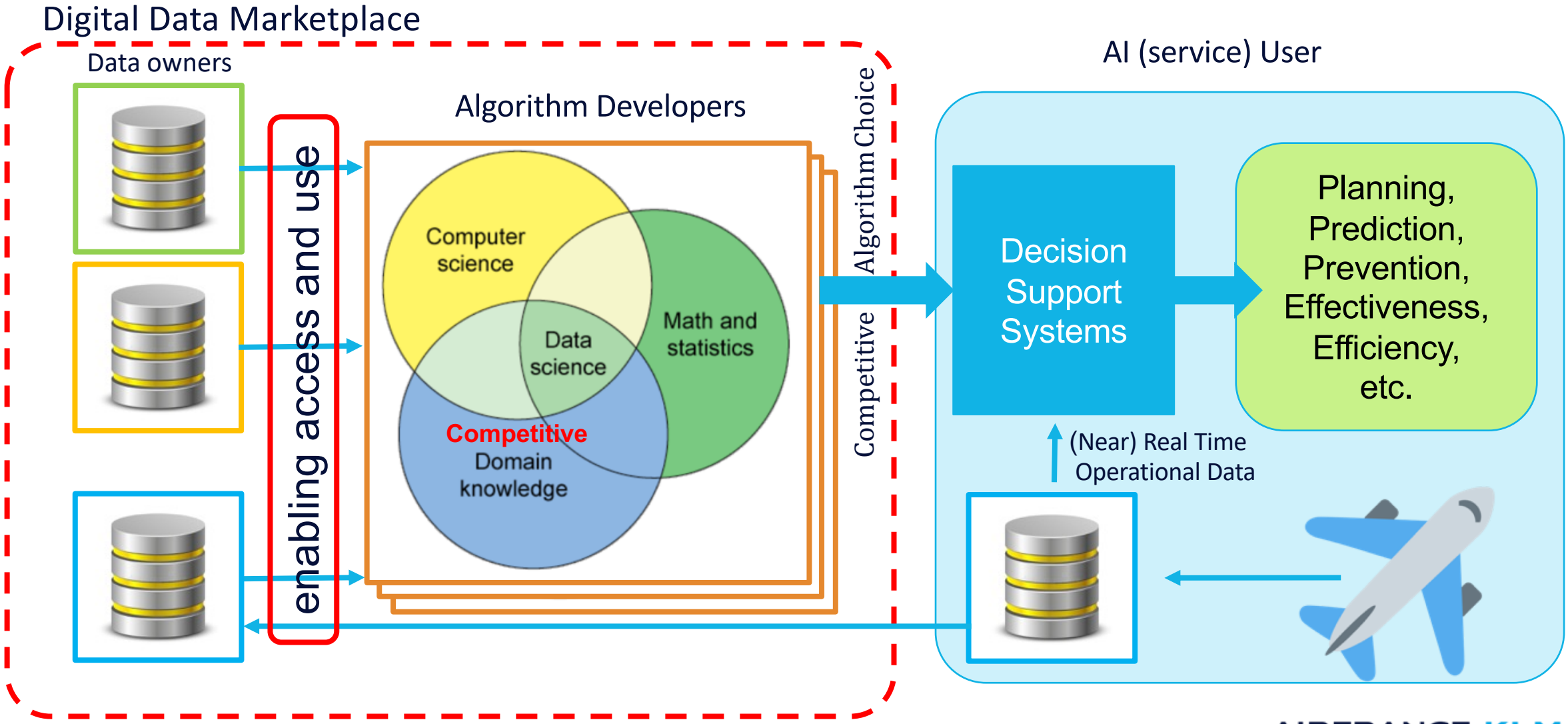
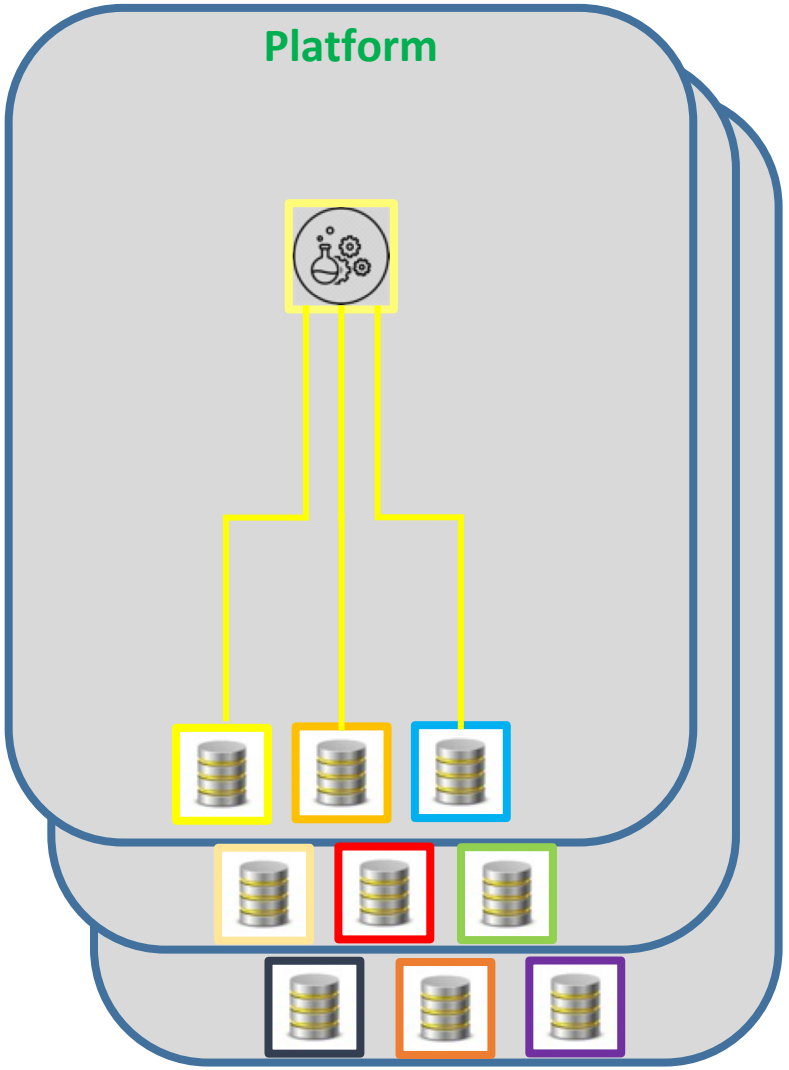
RESEACHING DATA SHARING SOLUTIONS:

A DIGITAL DATA MARKETPLACE GOVERNED BY AN INDUSTRY CONSORTIUM

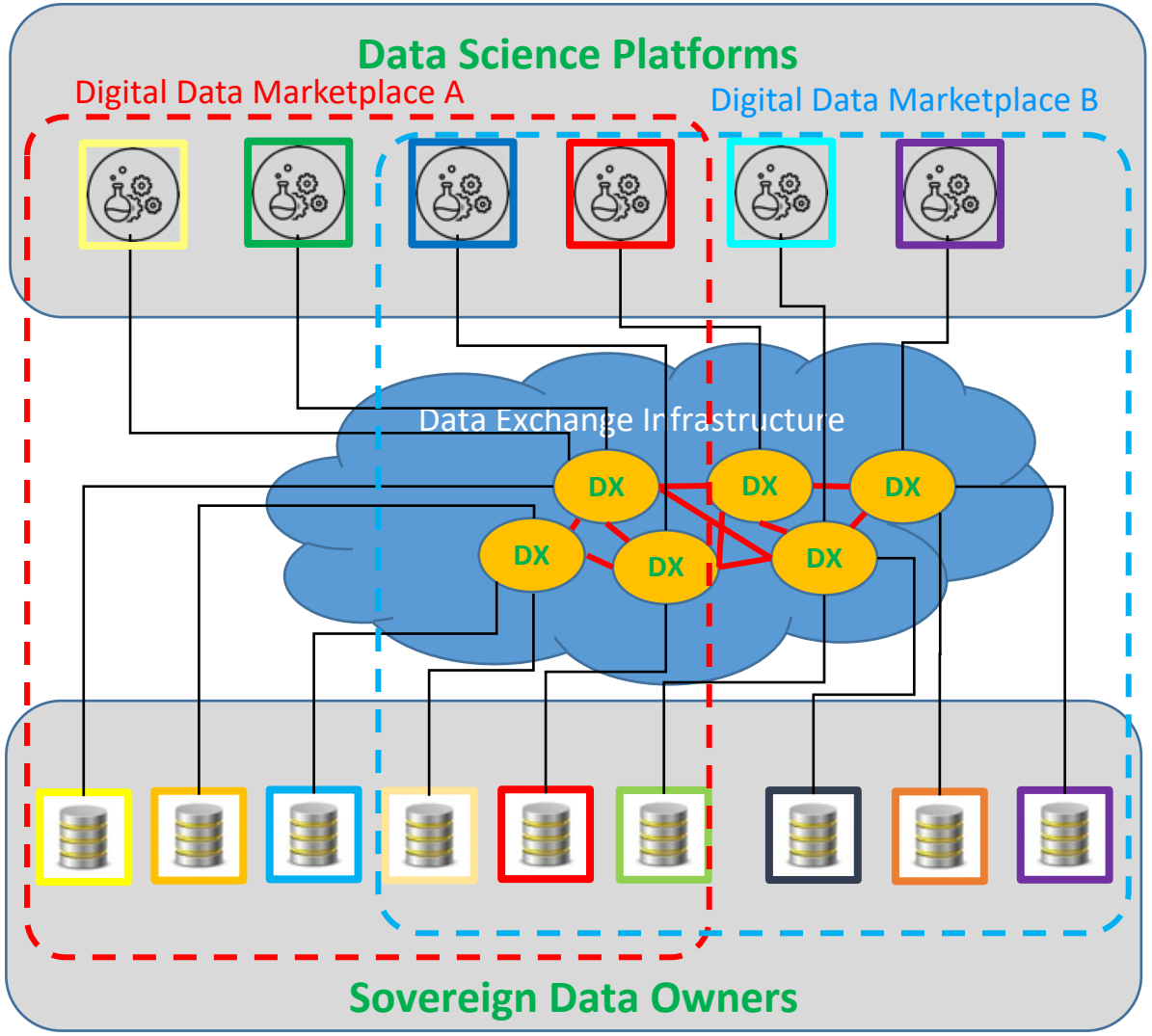


RESEARCH PROBLEM

AI QUALITY DEPENDS ON DATA AVAILABILITY: HOW TO ENABLE ACCESS TO AS MUCH DATA AS POSSIBLE?



Current solution direction



Digital Data Marketplace solution

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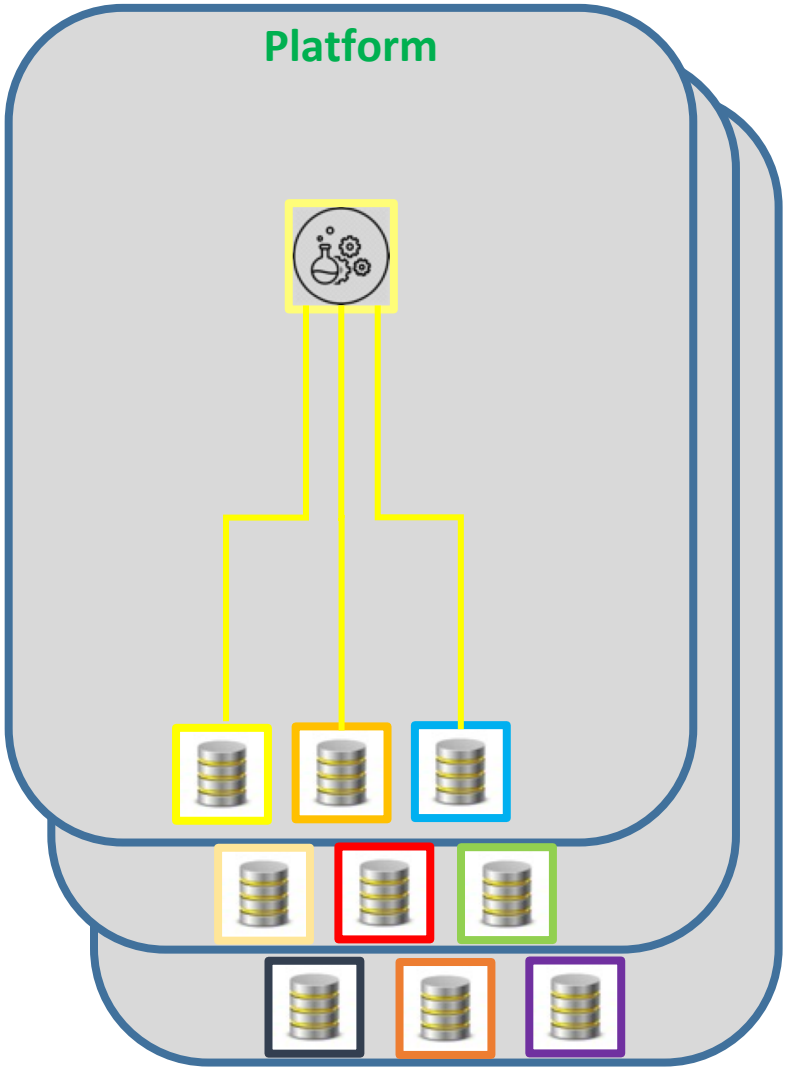

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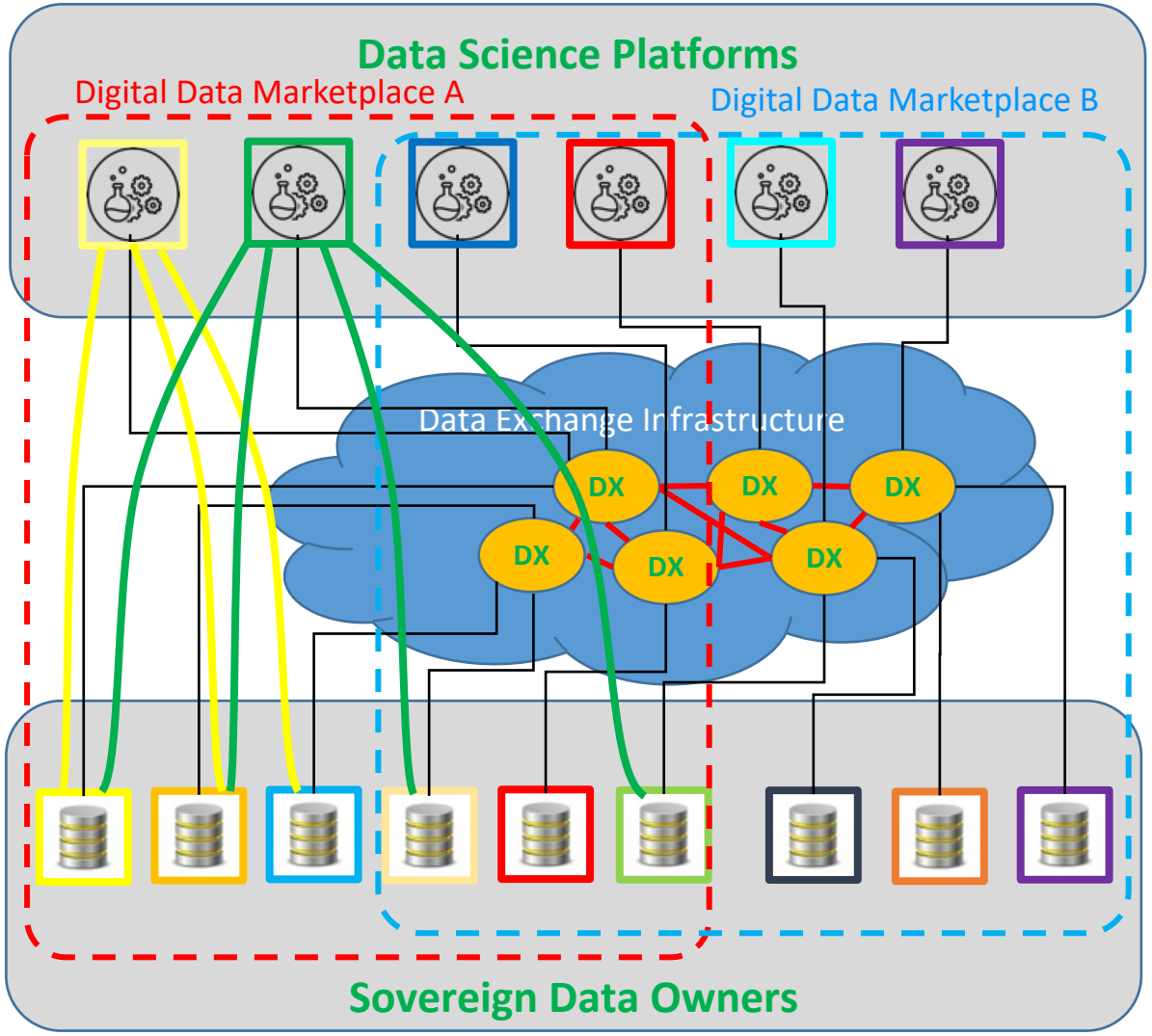

Digital Data Marketplace solution

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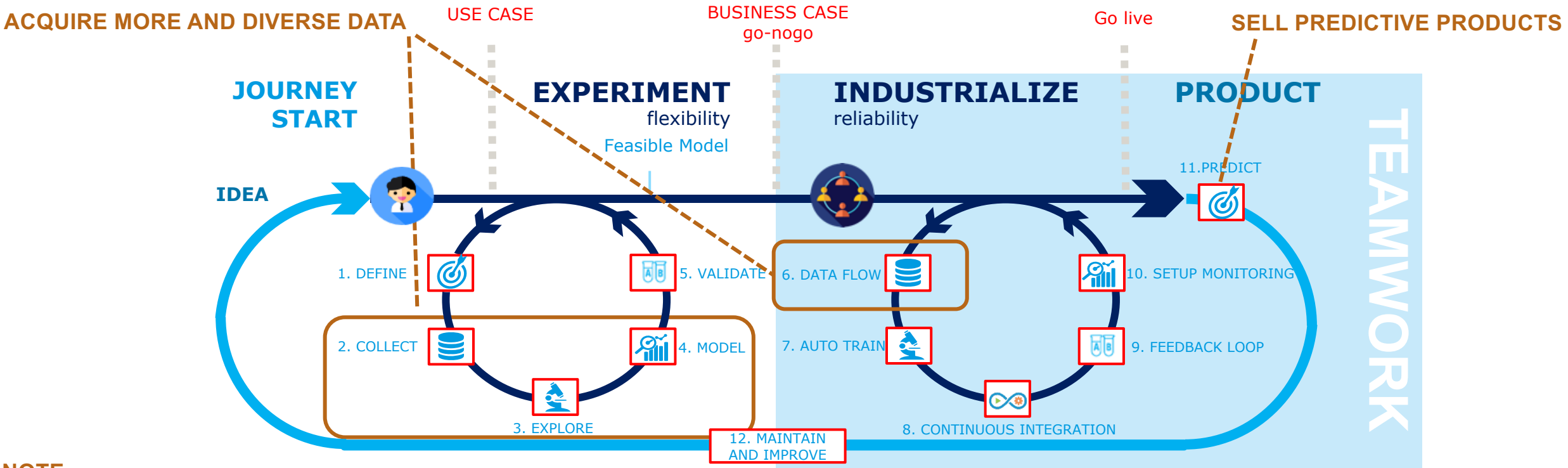
WHAT IS A DIGITAL MARKETPLACE ABOUT?

ORGANIZING TRUST, FAIRNESS AND COMPETITION TO SERVE INNOVATION

- **Serves a common benefit no single organization can achieve on its own.**
- **Is created and governed by an industry consortium as a means to reduce risk, ensuring competition and fairness.**
- **Supply members advertise their assets, contracts arrange asset access and usage by other members.**
- **To prevent data asset exposure, members can use a consortium governed data exchange infrastructure to execute data science scenario's**
- **Allows consortia to implement (digitally) enforceable contracts, whilst supporting dispute resolution by immutable logging.**

JOURNEY OF THE DATA SCIENTIST / ENGINEER

ROLE OF THE DIGITAL DATA MARKETPLACE



NOTE:
KNOWLEDGE SHARING IN OTHER PHASES (4,7,9,10) MAY ALSO BE A GOALS OF COLLABORATION IN A MARKETPLACE COMMUNITY.

DEFINE (1-3)	EXPERIMENT (4-5)	INDUSTRIALIZE (6-10)	IMPROVE (11-12)	SHARE
What is the end purpose? How will it add value? Use case, data scope and stakeholders identification	**Collect and explore data, research data science model** Prototype, go/nogo to production	**Deliver the solution in production environment** Product GO live	**Feedback analysis, A/B testing, and performance monitoring** New product releases, business insights	

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DIGITAL DATA MARKETPLACE GOVERNANCE

IMPLEMENTATION VIA A FOUR STEP APPROACH

Consortium

Provider

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

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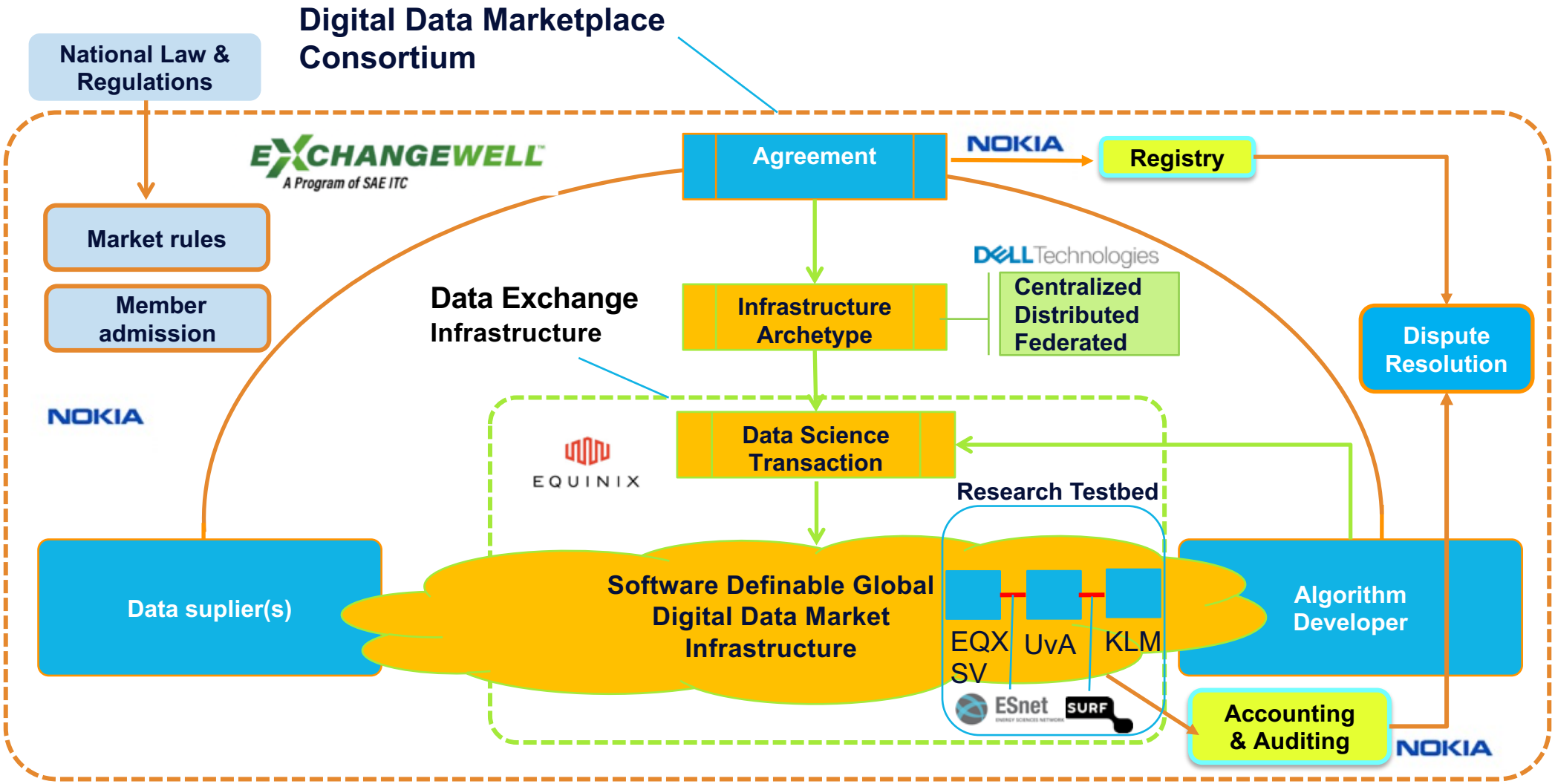
DIGITAL DATA MARKETPLACE ARCHITECTURE

IMPLEMENTING ESSENTIAL ELEMENTS



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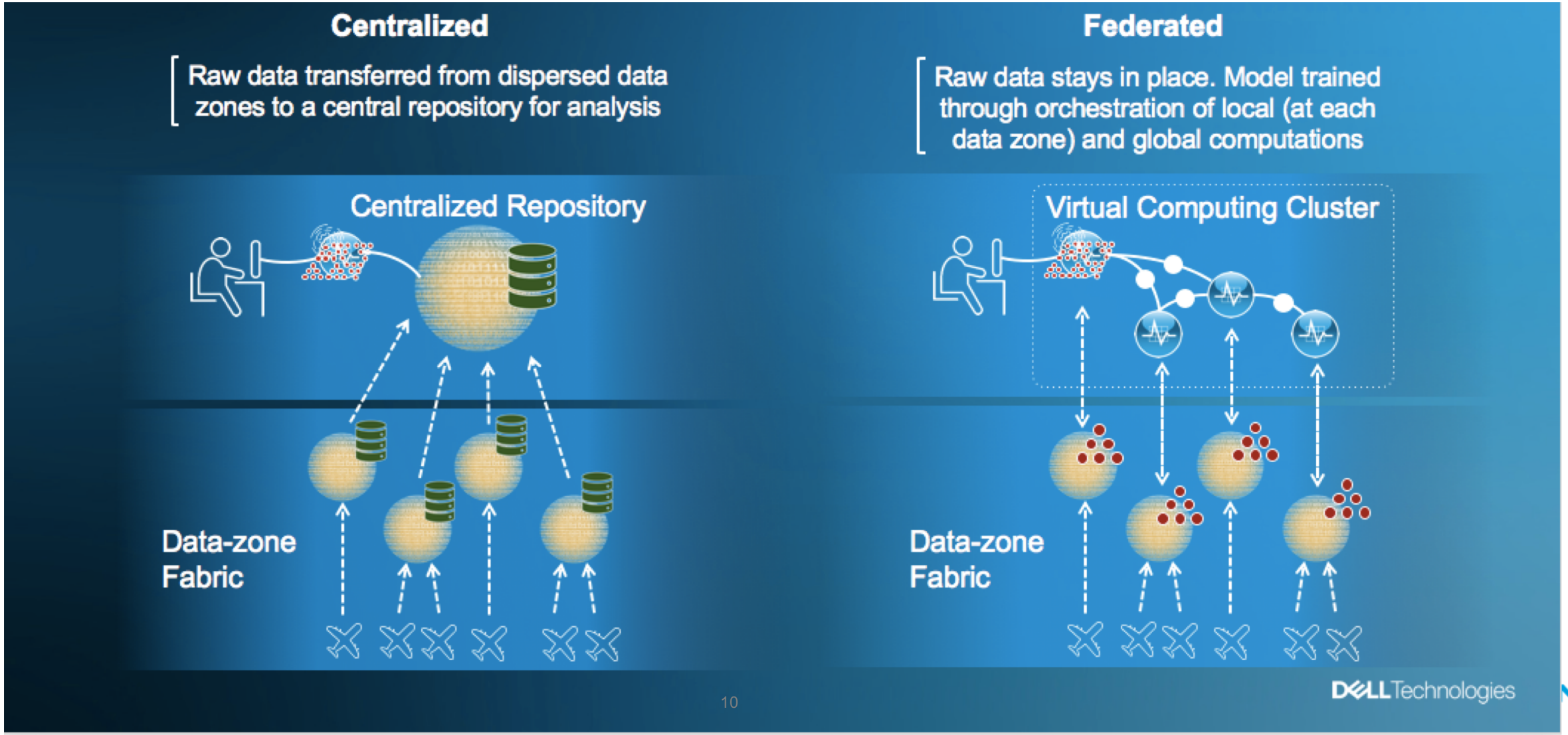
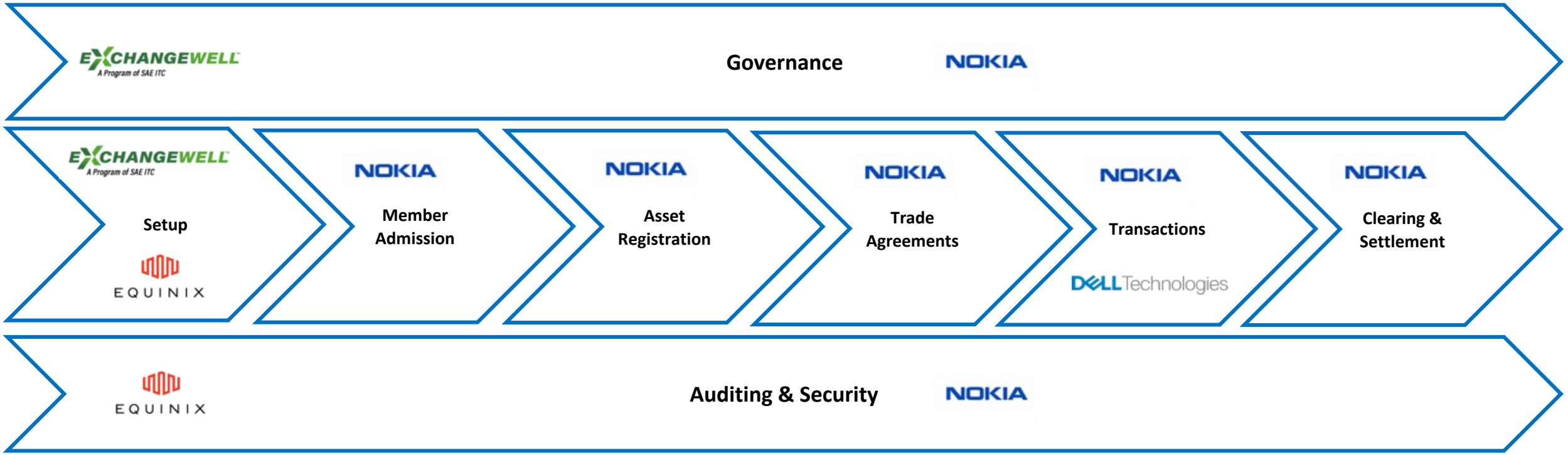
KEY COMPONENT: FEDERATED ANALYTICS

PREVENTS RAW DATA EXPOSURE AS ONLY THE ALGORITHM SEES THE DATA



MARKETPLACE WORKFLOW

IMPLEMENTING THE INDUSTRIALIZATION PHASE



NEXT: “EXPERIMENT PHASE” OF THE DATA SCIENTIST JOURNEY

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QUESTIONS

We can only see a short distance ahead,
but we can see plenty there that needs to be done.

Alan Turing

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