Applying Technologies from the Gaia-X Infrastructure Model for Trustworthy EO Data Ecosystems.
Lessons Learnt from Data Exchange Use Cases in the Automotive Network Catena-X
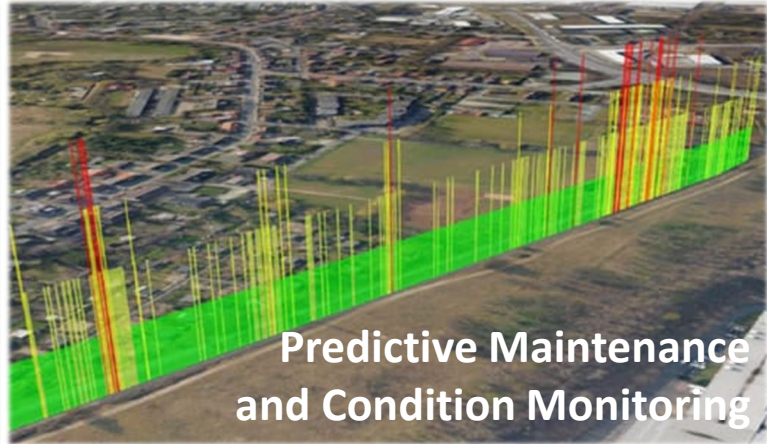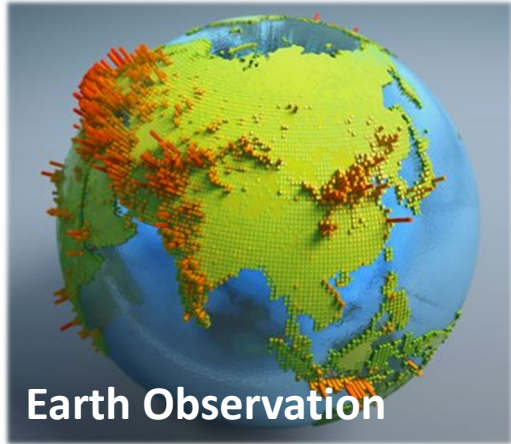
Arne Peter Raulf (DLR Institute for AI Safety & Security)
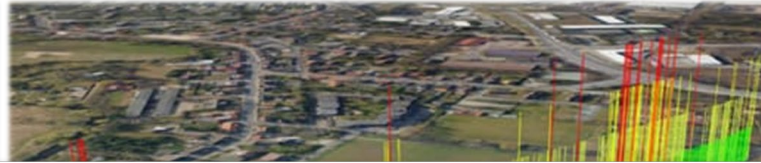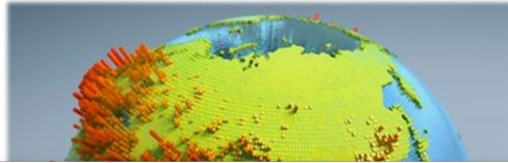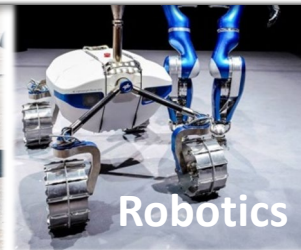
Knowledge for Tomorrow

DLR

Earth Observation

Predictive Maintenance and Condition Monitoring

Production

Automated and Connected Transport Systems

Robotics

Personal Assistants and Expert Systems

Research for AI Safety and Security – Motivation

Production

AI
must be capable
to meet the requirements
of safety-critical applications
and also secure against
attacks and misuse.
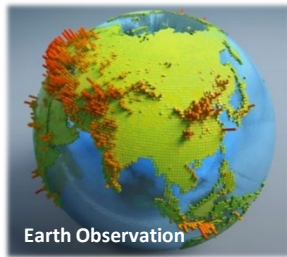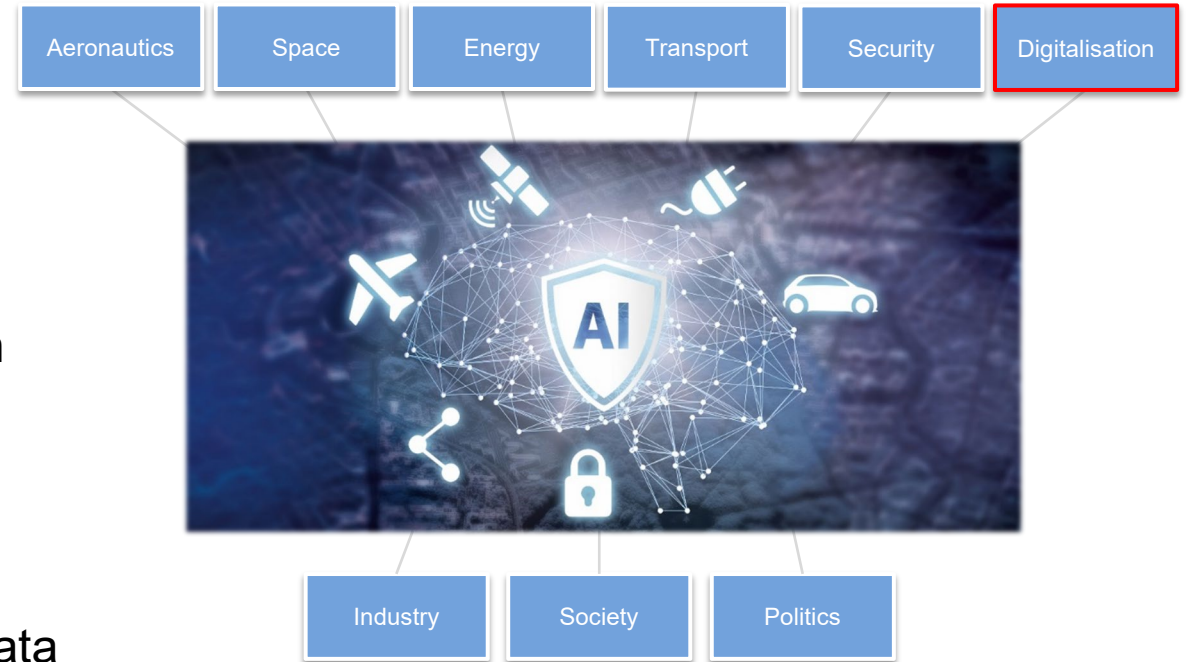
Robotics

**Personal Assistants and
Expert Systems**

Institute for AI Safety and Security
Sankt Augustin and Ulm – Germany – www.dlr.de/ki

The AI Institute contributes to a unique constellation for ambitious interdisciplinary and transdisciplinary research at the DLR – research areas:

- processes and methods for safety-critical AI
- robust and reliable approaches to safeguard AI
- security in the context of AI and the use of sensitive data
- execution environments and innovative computation methods

- AI-related network activity on the subjects of ethics, law and society

GAIA-X – Guiding Principles
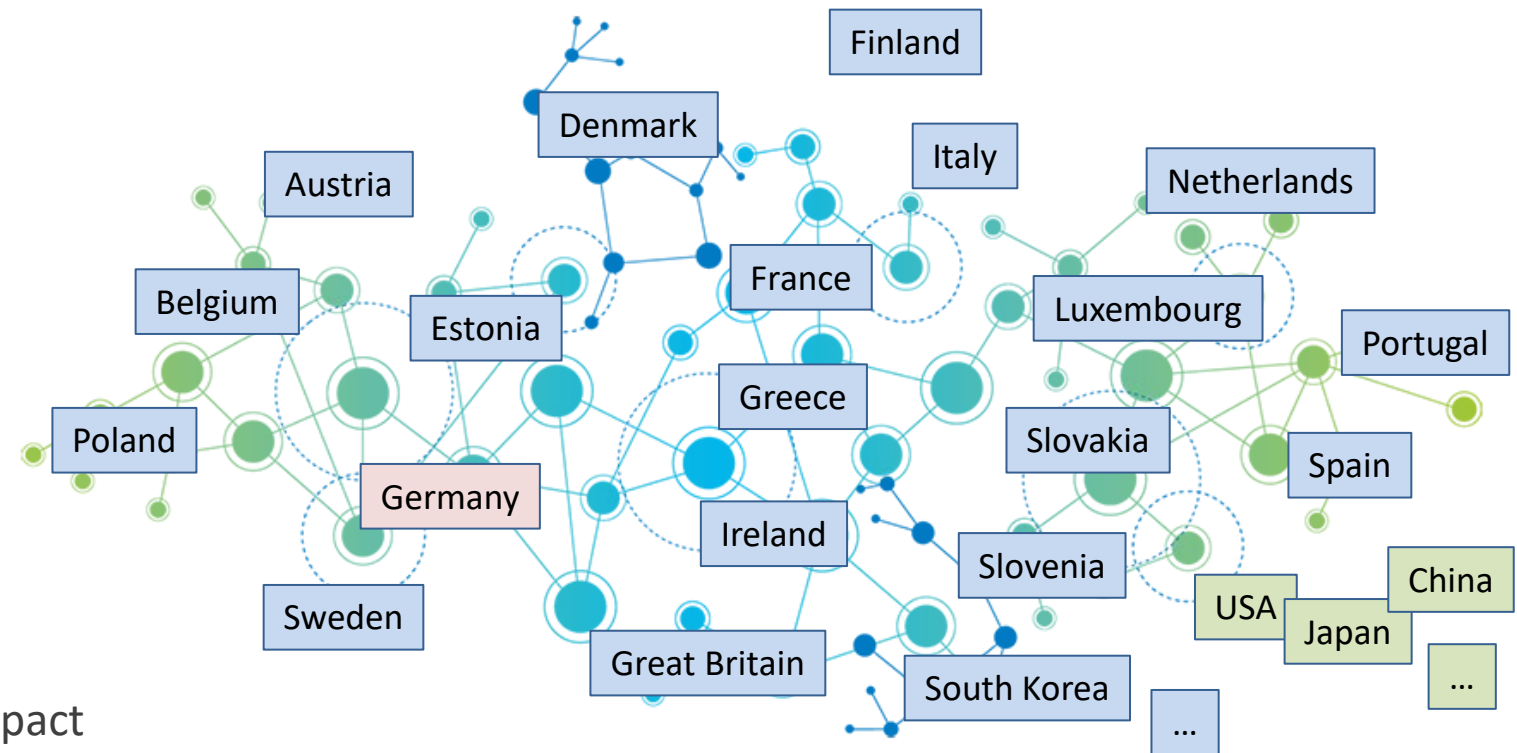
gaia-x
🇩🇪 Hub Germany

- GAIA-X will be the basis for a digital ecosystem in which data and services can be made available, integrated/merged, shared and used securely and with an ultimate level of trust.

- Based on European values, GAIA-X implements the following guiding principles:

  - European data protection principles

  - authenticity and trust

  - openness and transparency

  - sovereignty and self-determination

  - free market access as well as European stability and growth

  - modularity and interoperability

  - usability

- European/international visibility and impact

GAIA-X *4* Future Mobility & Catena-X

gaia-x

🇩🇪 Hub Germany

- **Mobility**

- Agriculture

- Energy

- Geographic Inform. Systems

- Health

- Finance

- Industry 4.0 / SMEs

- Public Sector

- Smart Living

- Smart City / Smart Region

- …

Fig.: acatech

- User-Oriented / -Friendly
- Systemically Approached

- Intermodal
- Coordinated | Cooperative

- Connected | Digitized
- Smart | Automated

- Robust | Available
- Safe and Secure

- Open | Flexible
- Service-Oriented
- Capable of Transformation

- Affordable | Sustainable

GAIA-X – Guiding Principles & Ecosystem

Advanced Smart Services
(Cross-) Sector Innovations /
Market places / Applications

Data Spaces
Interoperable & portable (Cross-)
Sector data-sets and services
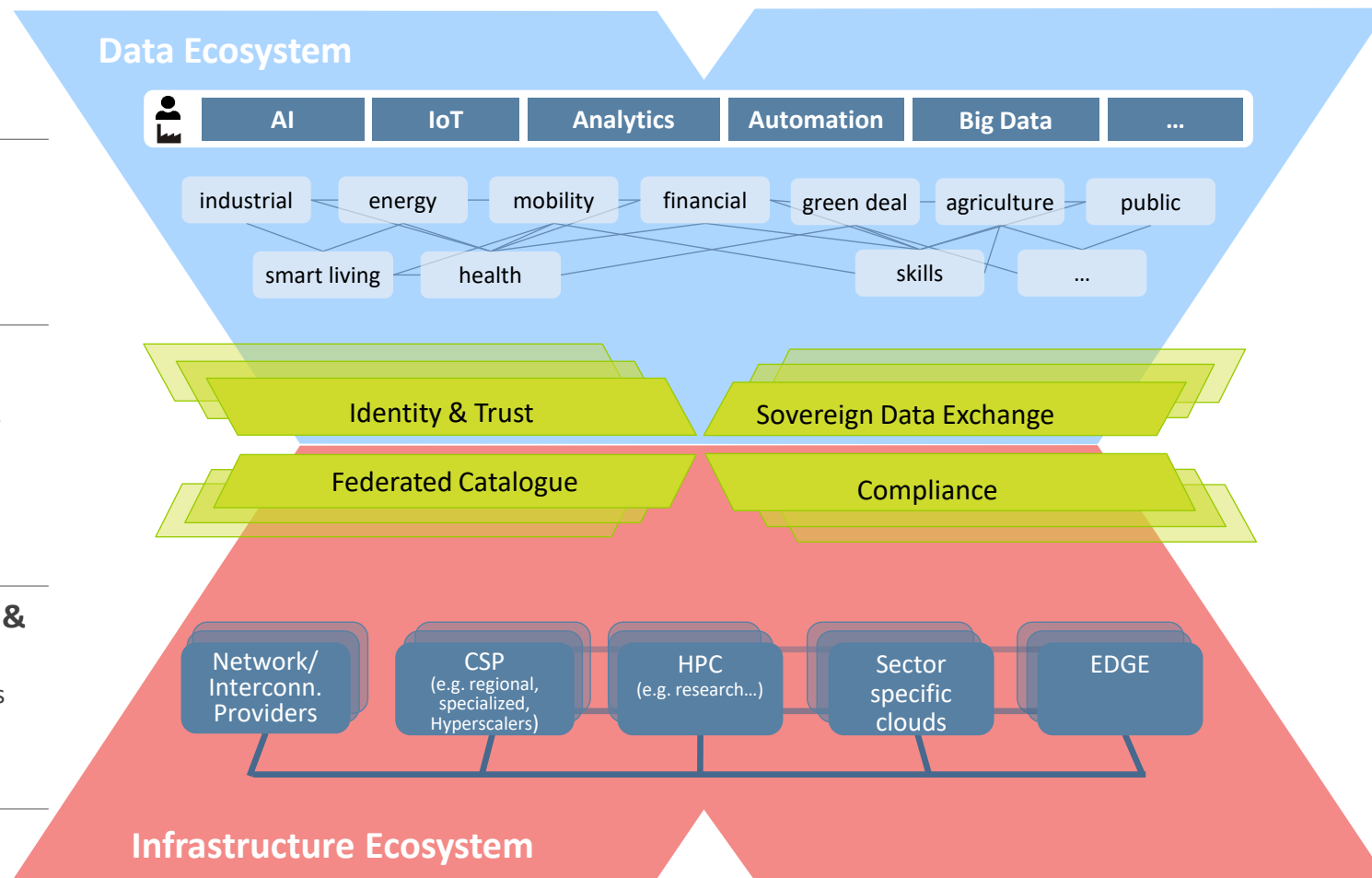
Gaia-X Federation Services
Federated & distributed for
interoperability Trust & Sovereignty
services

**Portability, Interoperability &
Interconnectivity**
Technical: Architecture of Standards
Commercial: Policies

Compliance
Legal: Regulation & Policies

Data Ecosystem

| AI | IoT | Analytics | Automation | Big Data | ... |

industrial energy mobility financial green deal agriculture public

smart living health skills ...

Identity & Trust   Sovereign Data Exchange

Federated Catalogue   Compliance

Network/ Interconn. Providers

CSP (e.g. regional, specialized, Hyperscalers)

HPC (e.g. research...)

Sector specific clouds

EDGE

Infrastructure Ecosystem

# GAIA-X *4* Future Mobility & Catena-X

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- Catena-X – joint mission

  - „We offer the **most user-friendly environment** for the construction, operation and collaborative use of **end-to-end data chains along the entire automotive value chain**.

  - The resulting data ecosystem makes us unique and is an important factor for the **sustainable development of the industrial sector as well as the individual companies**.

  - It **rewards all participants** with above-average resilience, innovative strength and profit opportunities."
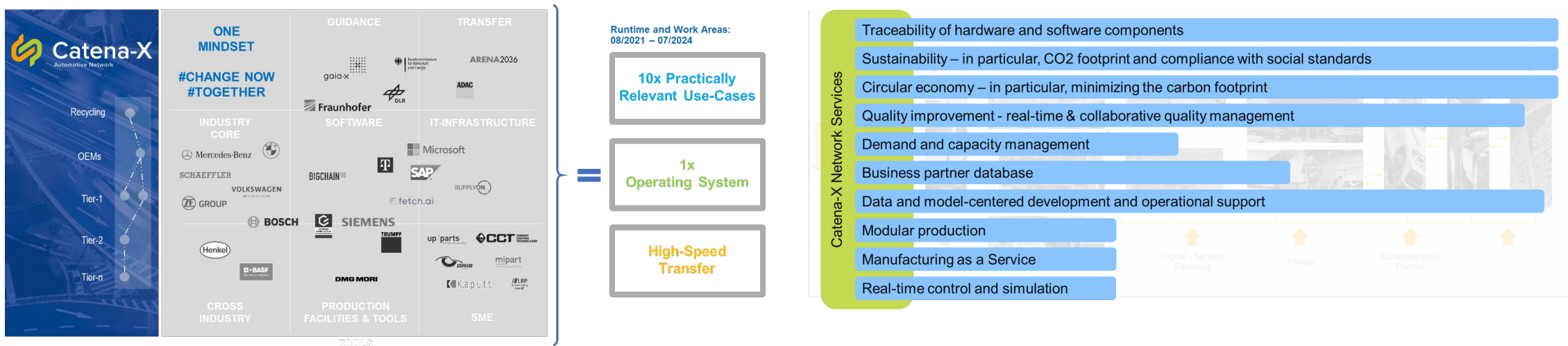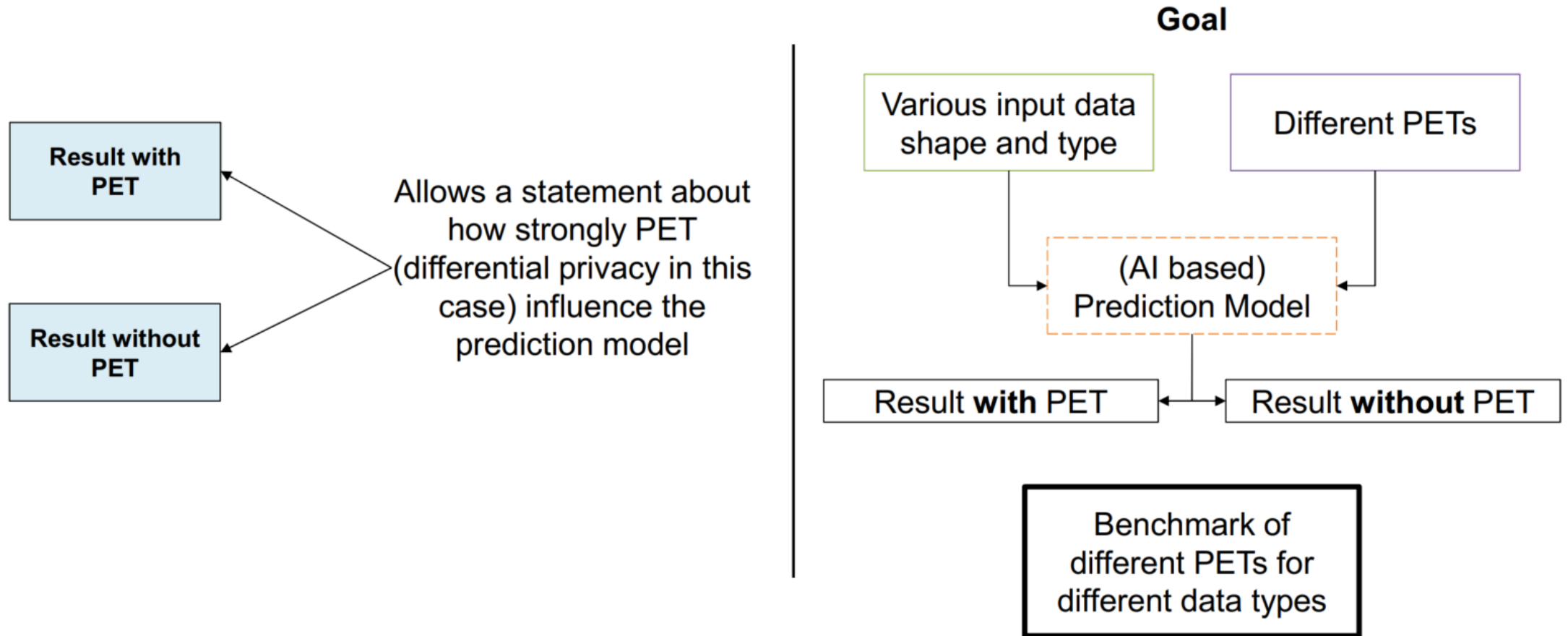
Demonstrators of Privacy-Enhancing Technologies (PET)
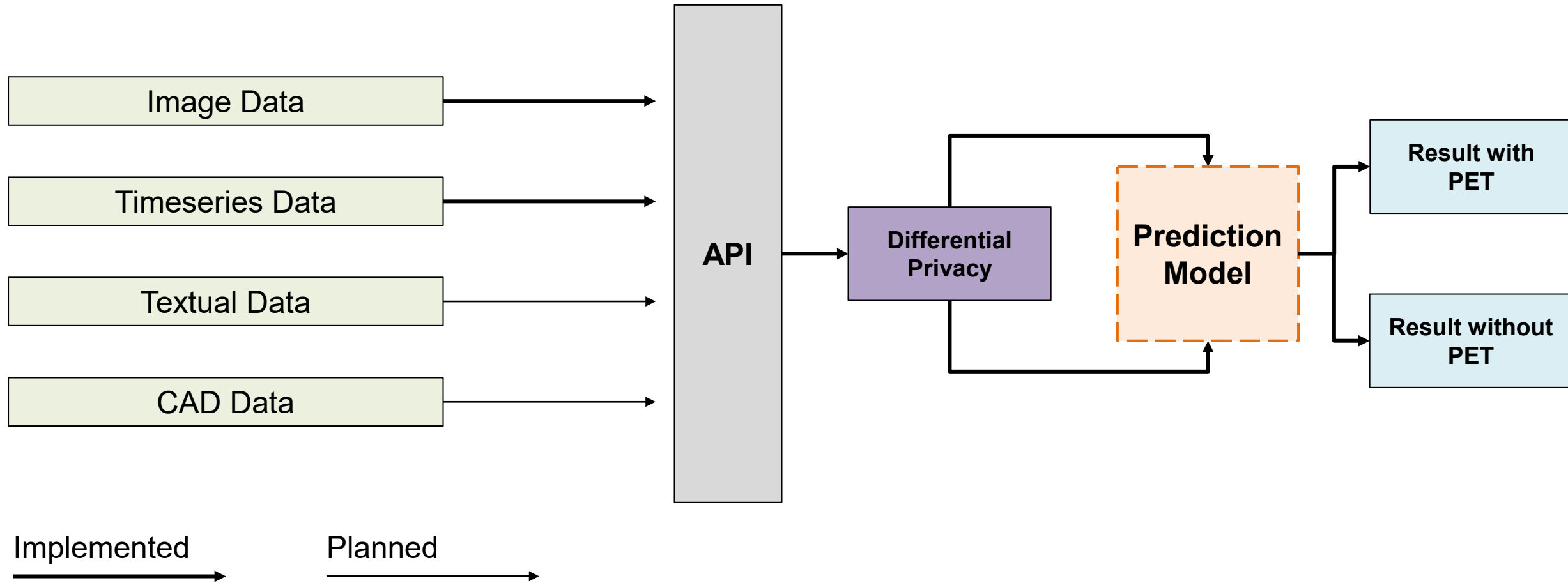
Demonstrators of Privacy-Enhancing Technologies (PET)

Contact

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arne.raulf@dlr.de