

- › Vision GAIA-X for the Netherlands: How can we take the right step?
  - › Which innovations can add value to the sector?

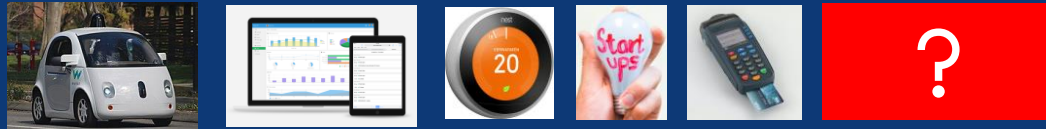
## **PRESENTATION - EDWIN HARMSMA**

Edwin Harmsma is portfolio manager for cloud topics at TNO

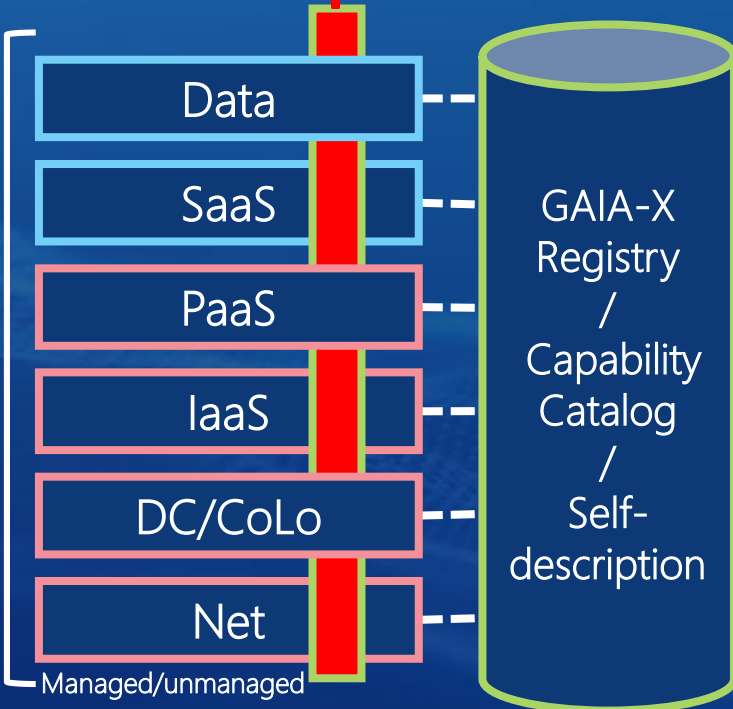
# MAKING THE PROMISE OF GAIA-X

*Trust*  
*Interoperability*  
*Transparency*  
*Sovereignty*

Demand from - and value for - end-users and businesses



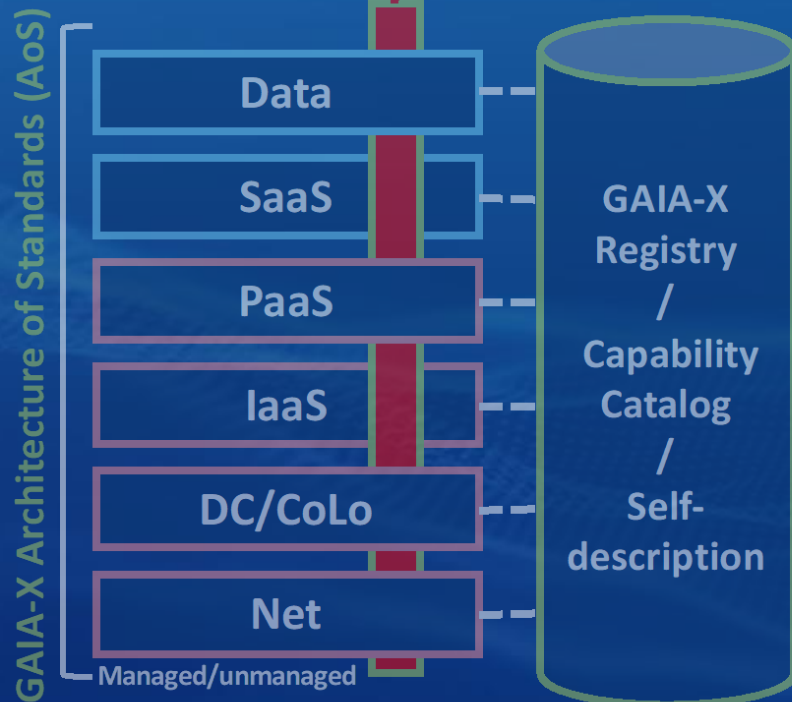
GAIA-X Architecture of Standards (AoS)



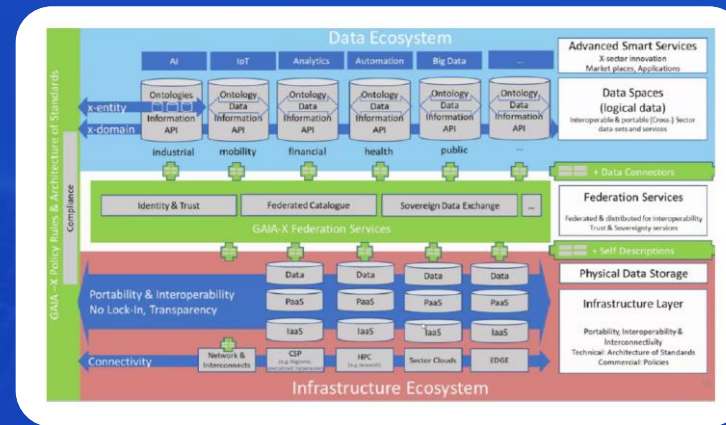
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## EU & NL Roadmap

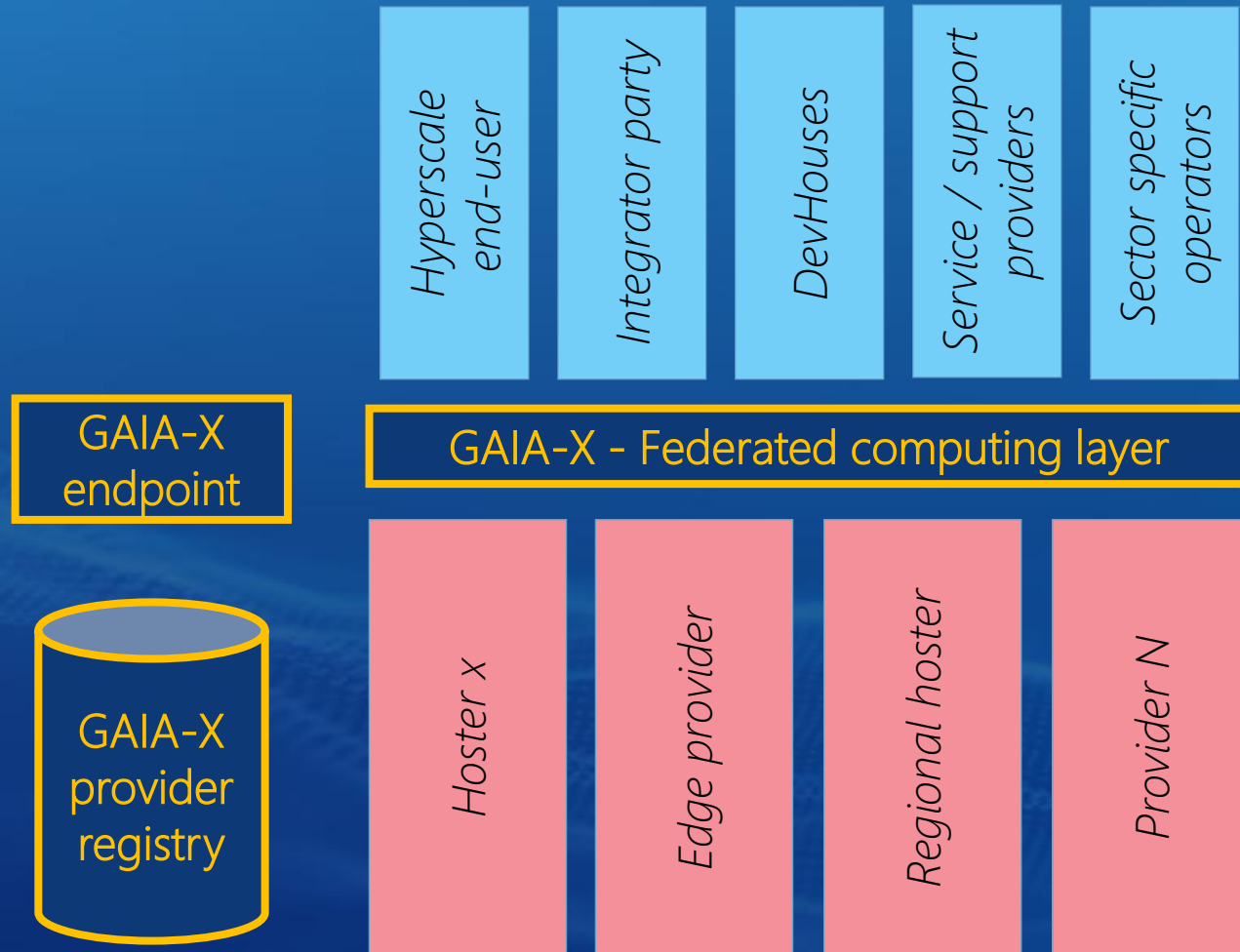


Holistic projects covering specific opportunities of GAIA-X

GAIA-X Cloud Federation topics

GAIA-X Cloud Infrastructure topics

# GAIA-X: CONDITIONS FROM PROVIDER PERSPECTIVE



1: Maintain possibility to differentiate, ... (Service) quality, specific features and services, locality/region/location, certificates, audit procedures, compliance ... but all *in a transparent and uniform way*.

2: Size doesn't matter, i.e. every provider can participate. Boost infra innovation and *avoid lock-in* effects or *winner-takes-all* situations.

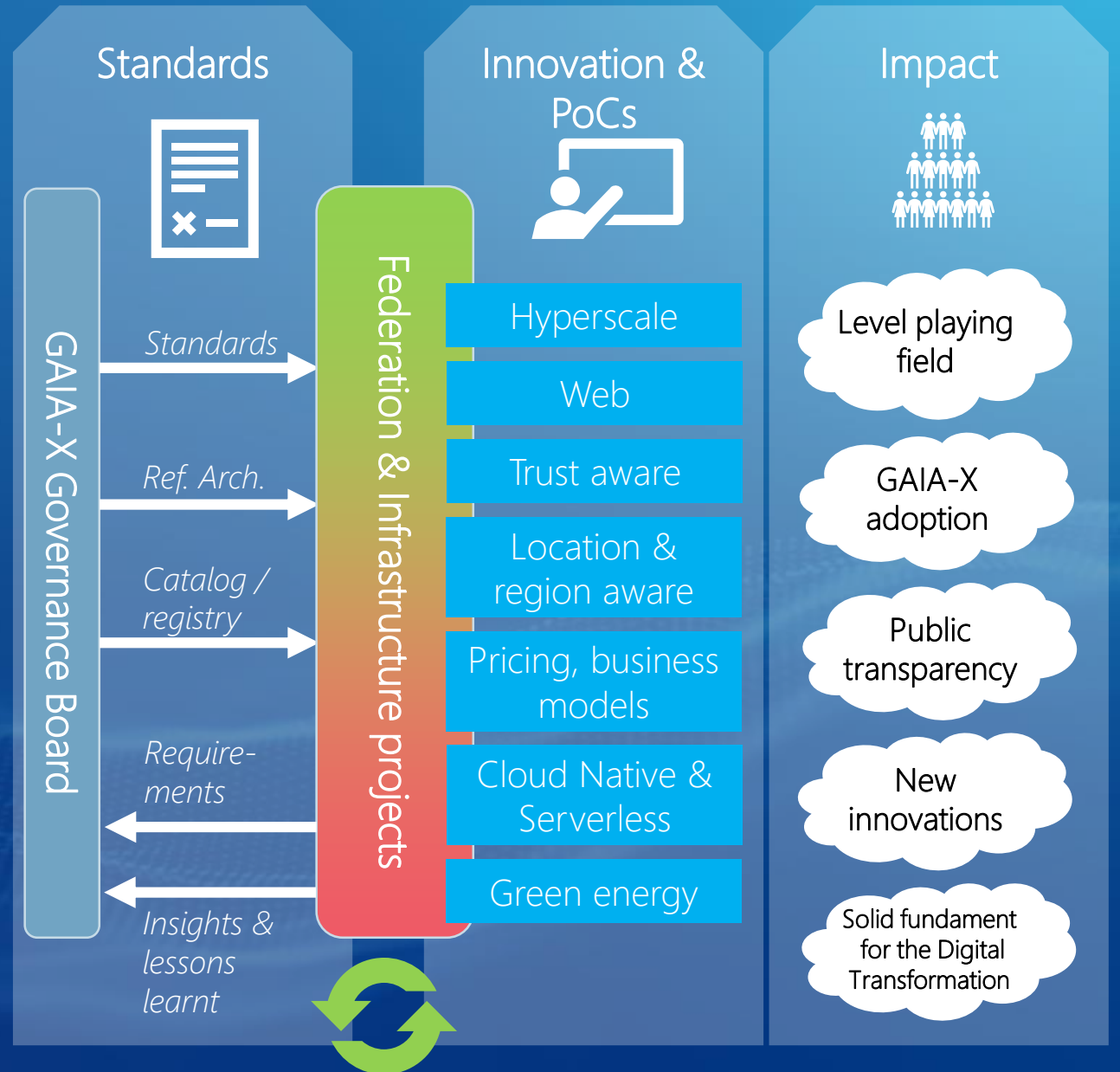
3: Collaborate in order to be strong together. With EU, national, regional and other strategic *allies* we can sustain in the global ecosystem.

4: Ability to attract service providers on top of the federated infrastructure. Bootstrap an innovative service ecosystem (e.g. scaleups providing AI or digital twinning solutions) which cannot incubate in provider depended infrastructures.

## FROM PAPER TO PILOTS...

- › GAIA-X governance board will deliver updates of standards and reference architecture periodically.
- › Businesswise we want to translate this paperwork into market value in an efficient way.
- › Moreover, we provide feedback about bottlenecks, insights and lessons learned to the governance board.
- › Applying GAIA-X artifacts in business and innovation activities is a challenging task and depends on the specific interests of each organization.

What are the challenges that we want to face together?



## › SOME POSSIBLE TOPICS, IN TWO STREAMS

› TNO has identified 10 topics across two streams:

- 1) **Hyperscale on Collaborative Clouds**  
*How to join forces between IaaS and PaaS providers to handle hyperscale workloads in the federated infrastructure?*
- 2) **Web and App on GAIA-X**  
*How to deploy web and mobile frameworks on GAIA-X and let Web and App users benefit from the values of GAIA-X?*
- 3) **Things in GAIA-X**  
*How to embed the IoT domain in the federated infrastructure?*
- 4) **The edge of GAIA-X**  
*How to integrate regional (micro) DCs and the Mobile Edge part of the GAIA-X infrastructure, such that application can effectively mix cloud, edge and fog resources?*
- 5) **Inter-GAIA-X**  
*How to make the inter-DC connectivity flexible and open for control in the federated ecosystem?*

GAIA-X Cloud Infrastructure topics

- 1) **Making Business in Federation**  
*How to create business models and pricing structures that work in the federated ecosystem?*
- 2) **GAIA-X 2 Consumer**  
*How to make EU citizens aware of values of GAIA-X in their daily digital life?*
- 3) **E2E Trust in federation**  
*How to make the GAIA-X infrastructure self-aware of trust aspects (availability, security aspects, applicable regulations)?*
- 4) **GAIA-X Monitor**  
*How to obtain independent insight in performance and costs aspects in the federated ecosystem?*
- 5) **Green GAIA-X**  
*How to make (green) energy consumption and cloud efficiency a transparent (and controllable) property in the federated infrastructure?*

GAIA-X Cloud Federation topics

>>> An example of a 'cloud infrastructure' project follows

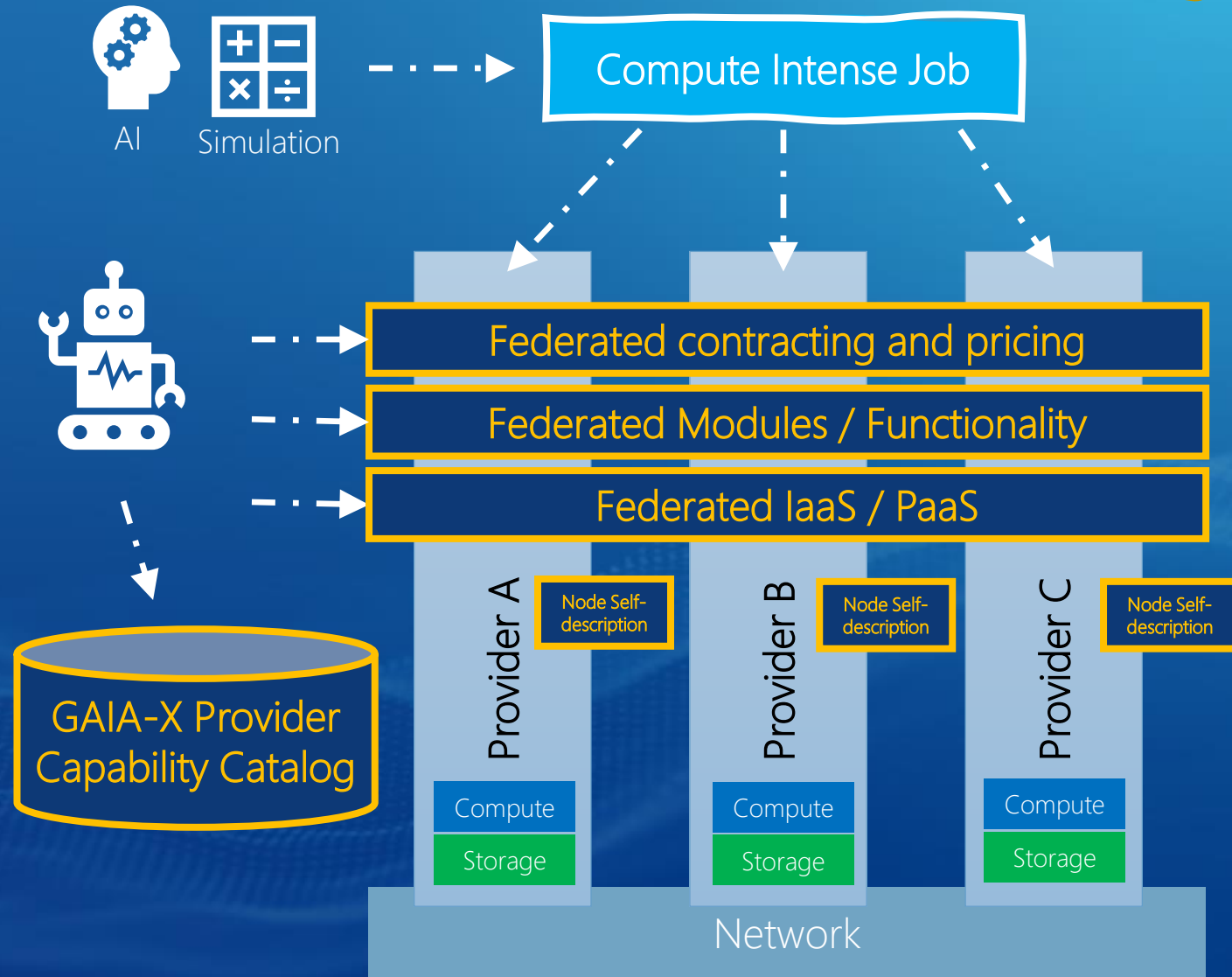
Example for topic #1 

# HYPERSCALE ON GAIA-X

Mission: Be strong together

*Host large scale workloads across multiple providers*

- › Compute intense calculation scenarios are created and deployed on the federated GAIA-X infrastructure.
- › Resources and data are strategically placed across multiple providers, based on criteria specified by the user. Environment (software modules, network, contracting) is allocated and configured accordingly.
- › Infra allocation, job deployment, contracting, and billing is performed through standardized GAIA-X interfaces.
- › Powerful flagship project that shows the key of federation: **Vertical and Horizontal collaboration.**

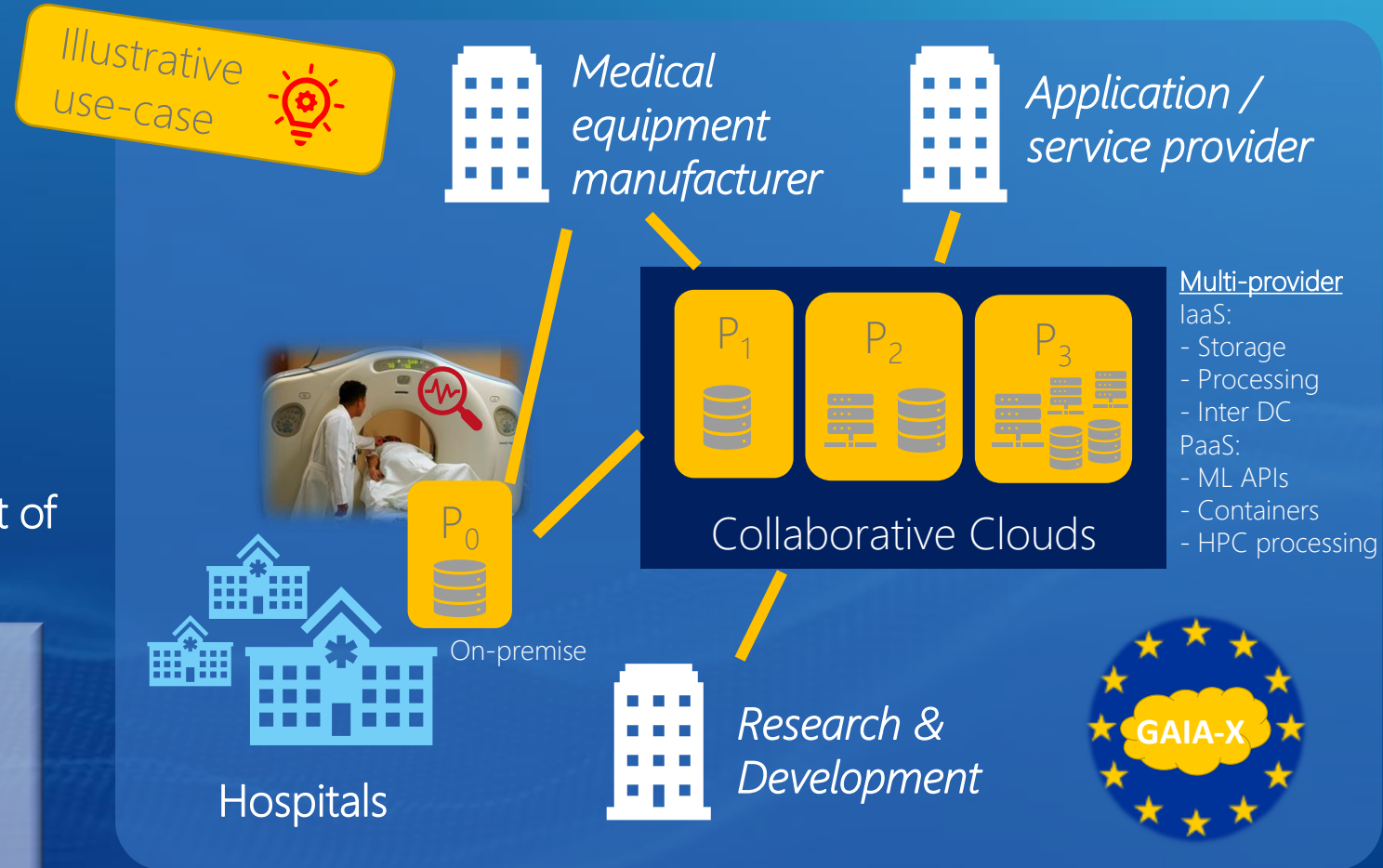


# APPLICATION IN THE HEALTH DOMAIN

Characteristics:

- › Trust is an **end-to-end** condition
- › Tradeoff between **local and cloud** resources
- › Processing and storage requirements vary per organization
- › Specific certifications needed for patient data
- › Opportunity for providers to deliver a part of the digital supply chain to this vertical.

Public  
Mission Critical  
Traffic & Transport  
Finance & Admintech  
Smart Agriculture  
Smart Industry  
...





## › WE HAVE MORE IDEAS! AND MORE IDEAS ARE WELCOME.

- › We have many ideas and more ideas are welcome. We will also share more of these ideas with you all after this round table.
- › My colleague will now describe how we want to take concrete steps and select the concrete innovations that we want to tackle together with you.

