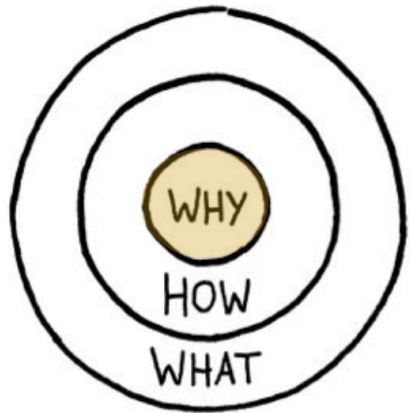


A New Vision for InfraTech

Governance and Value Network Integration
through Federated Data Spaces and Advanced Infrastructure Services
for a Resilient and Sustainable Future



Source: Simon Sinek (2013): „Start with why“

WHY:

Closing the infrastructure investment gap through the delivery of efficient, innovative, clean/climate-neutral and socio-/human-centred infrastructure enabled by platform technology

HOW:

Agile integration of the infrastructure value network via shared data spaces and federated digital infrastructure (InfraTech) services

WHAT:

Platform enabled sustainable, resilient planning, production and operation system connecting municipalities, public authorities and companies (esp. SMEs) as an infrastructure value network ecosystem

A New Vision for InfraTech

Authors & Collaborators

*Prof. Michael Bühler, Konstanz University of Applied Sciences,
Dr. Thorsten Jelinek, Taihe Institute/DPG
Prof. Konrad Nübel, Technical University Munich*

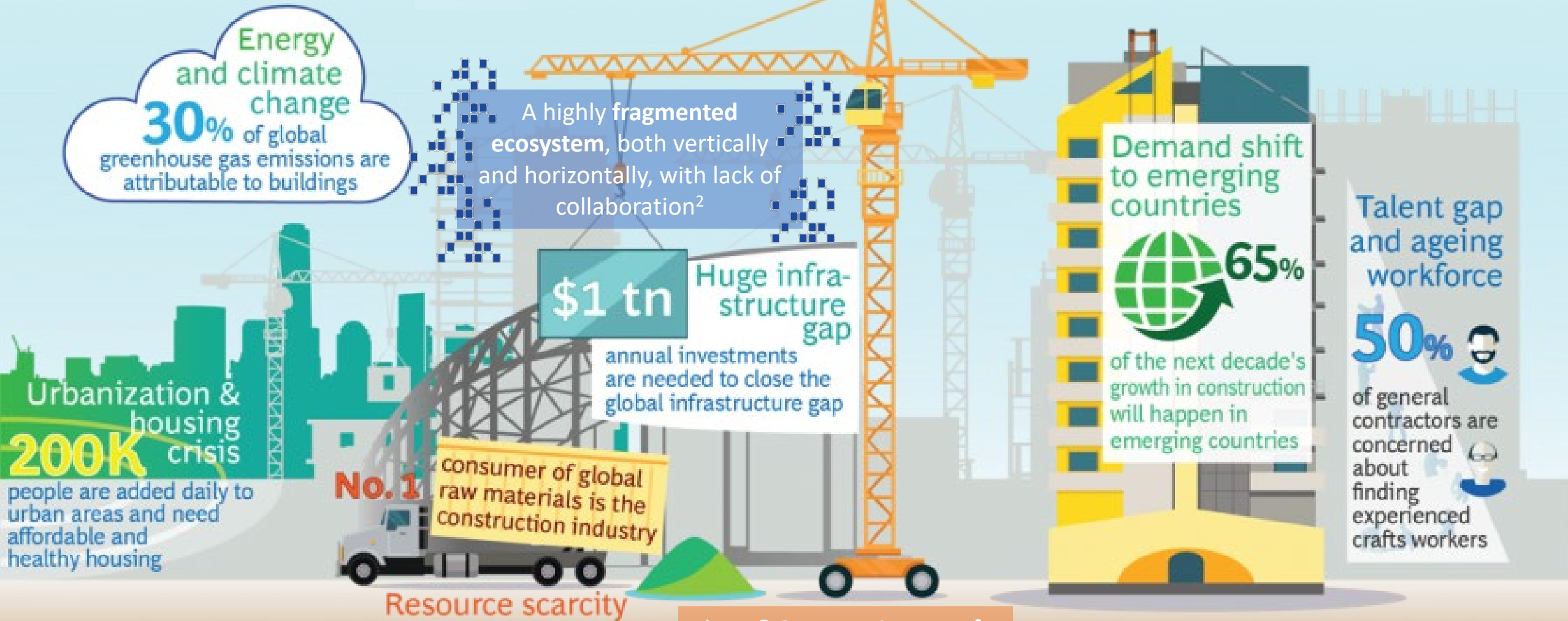
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Prof. Gerd Buziek, Esri Deutschland GmbH
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Thomas Maier, G20 Global Infrastructure Hub
Prof. Ibrahim Odeh, Columbia University
Prof. Rafael Sacks, Technion Israel Institute of Technology
Thomas Schmid, Bavarian Construction Industry Association
Prof. Hajnalka Vaagen, Norwegian University of Technology



A New Vision for InfraTech – addressing current infrastructure challenges (Why)



megatrends impacting the E&C industry



The E&C sector is one of the least digitized¹



Source: The Boston Consulting Group; World Economic Forum

¹McKinsey (2015) Global Institute (MGI) analysis

²McKinsey (2020) The next normal in construction

A New Vision for InfraTech

(How)

Holistic perspectives on infrastructure development

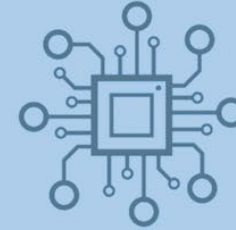
- How can we achieve the **climate targets and protect the environment**?
- How can we build **human-/socio-centred infrastructure** to serve our communities?
- How can we master the **digital transformation** to substantially increase productivity and achieve value for money?

Human-centered – individual internal



- Create visions for infrastructure development by platform-oriented co-creation process
- Allow full-lifecycle participation of private stakeholders in the planning and innovation process
- Motivate end-users to participate and express their individual needs

Technology-enabler – individual external



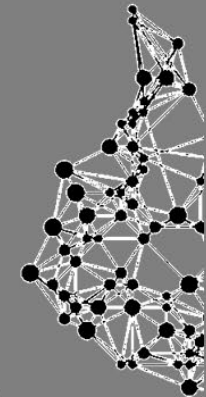
- Reduce value chain and lifecycle risks, increase return, and enhance investment security
- Enable collaborative and smart contracting; monitor and control of the value creation process using distributed ledger technology
- Enable data and service sharing and international data flows

Culture embracing – collective internal



- Allow full-lifecycle participation of public stakeholders in the planning and innovation process
- Increase trust and transparency, reduce complexity, support data and service sharing, and enable the development of ecosystem teams connected by common goals and transparent outcomes

System thinking – collective external



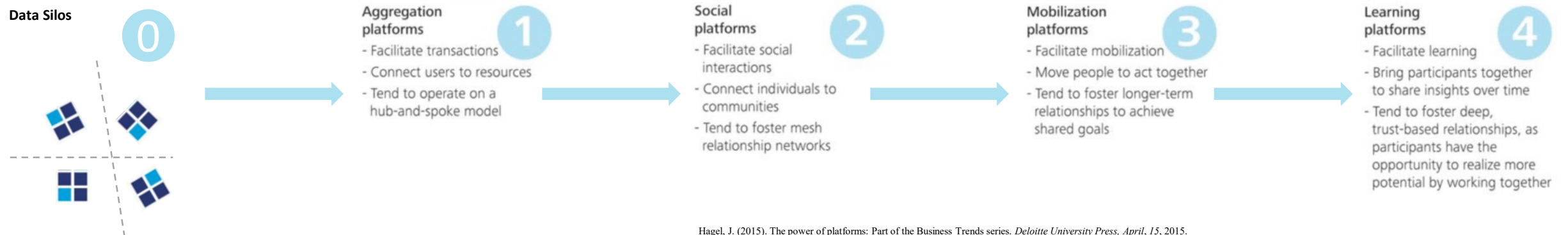
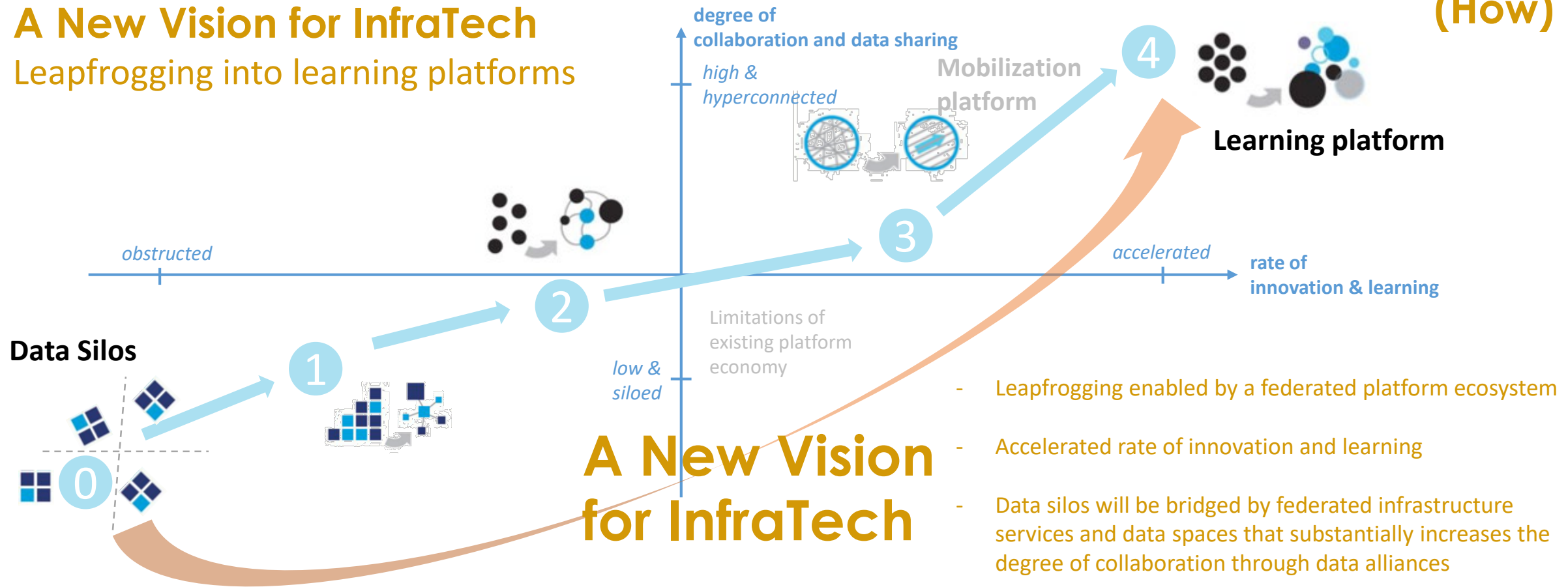
- Accelerate digitalization of the infrastructure sector by following policies, standards, processes, protocols
- Introduce impact metrics that incentivize a sustainability-total-cost-of-ownership model to accelerate and ensure decarbonisation, circular material flows and environmental/commons protection
- Include smaller firms thereby avoiding technology and economic concentration, while accelerating innovation and growth; implement digital federation services to comply with cybersecurity, privacy, and digital sovereignty rules and regulations

Source: Bühler, Nübel, Jelinek (2021): „A New Vision for InfraTech“, T20 Policy Brief

A New Vision for InfraTech

Leapfrogging into learning platforms

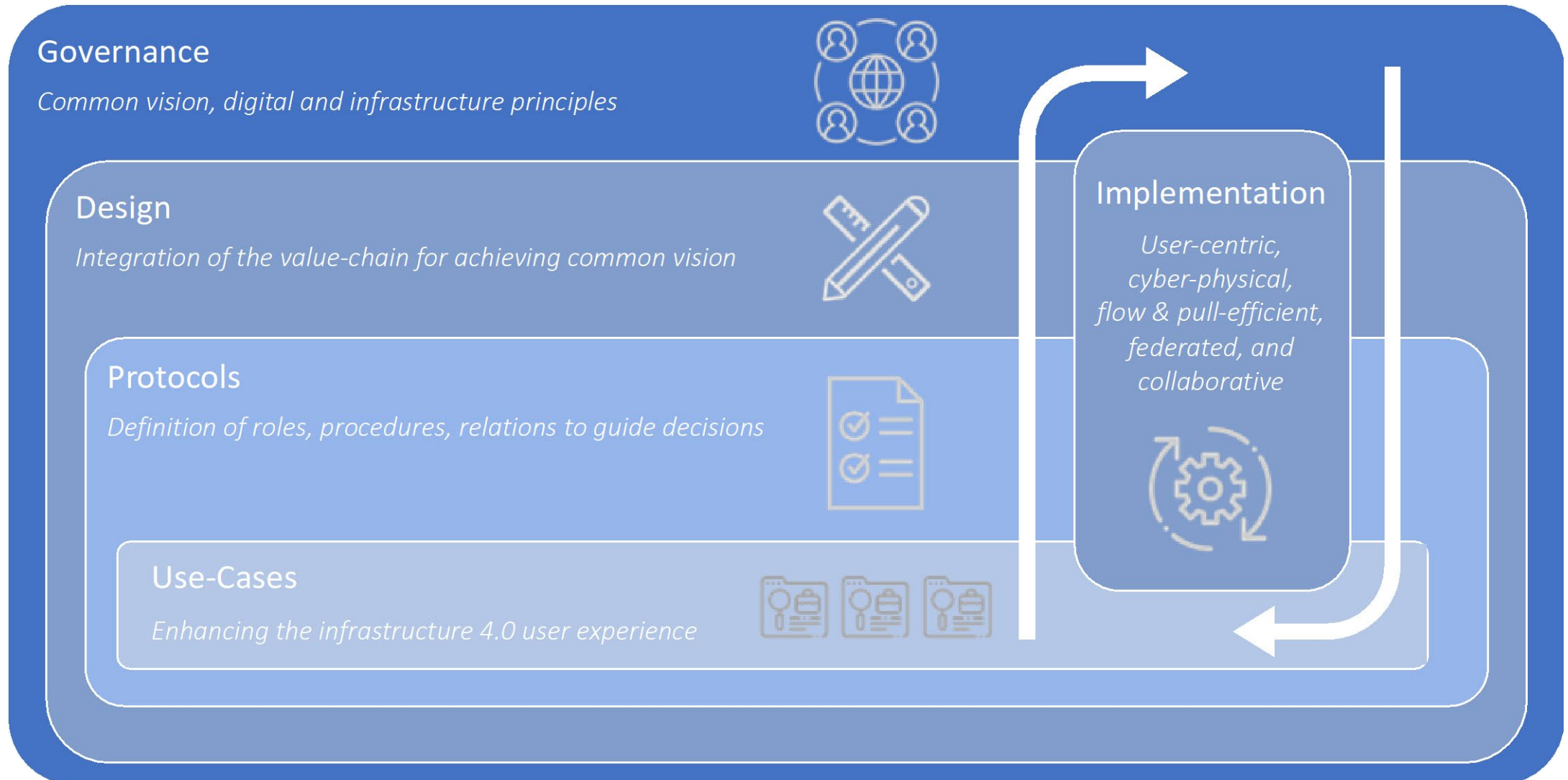
(How)



A New Vision for InfraTech

(What)

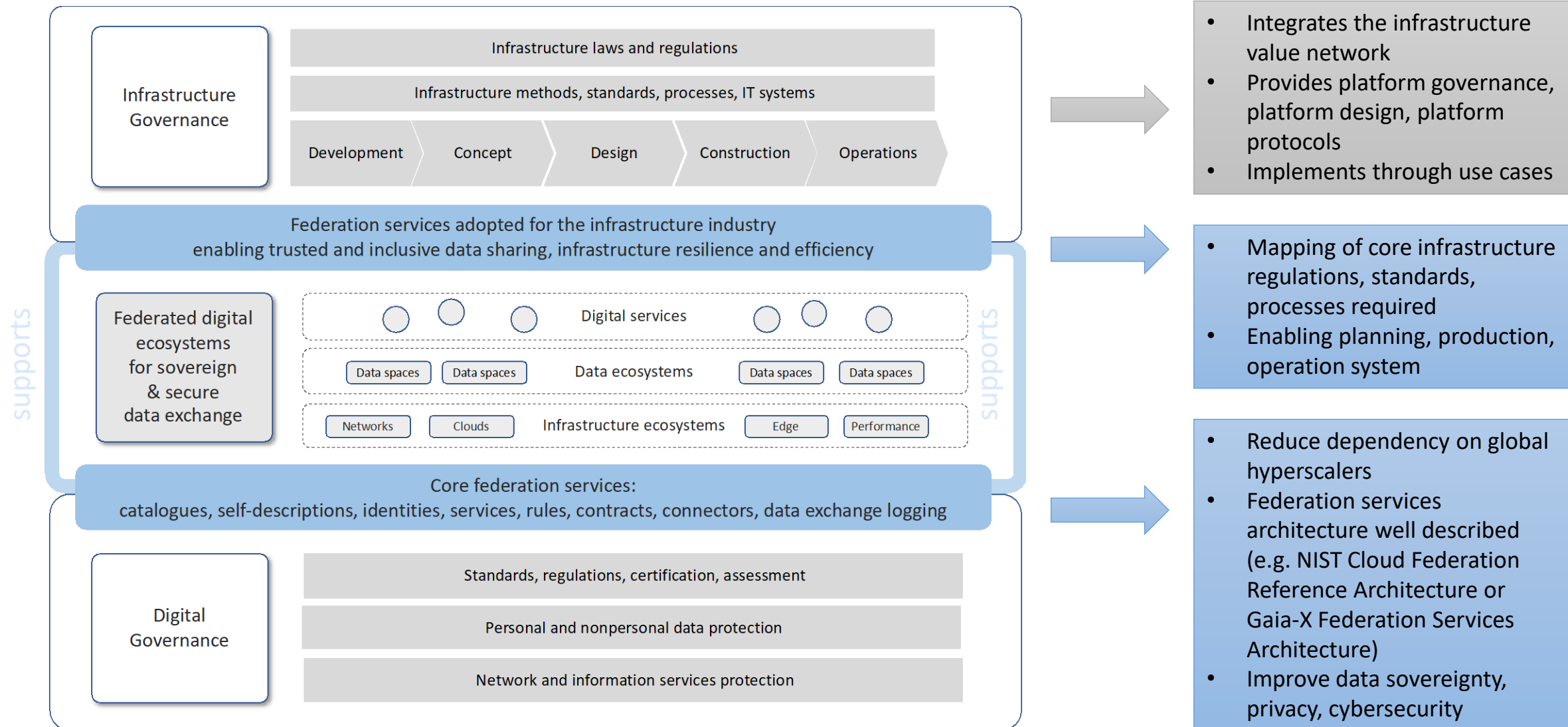
Five dimensions of implementing a mobilization and learning platform



A New Vision for InfraTech

(What)

Governance structure of the federated digital platform for infrastructure



A New Vision for InfraTech

(Why – How – What)

Innovation, feasibility, benefits and relevance of our New InfraTech Vision



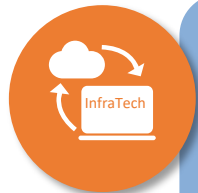
Innovation potential and originality

- Provides **new vision & narrative for infrastructure**
- Integration of the infrastructure value network (bridging InfraTech islands)
- Avoidance of stand-alone solutions through replicable use cases selected along the infrastructure lifecycle with cross-use case governance structure



Feasibility and application potential

- Provides **strong platform governance structure**
- Use cases of varying levels of application maturity with existing providers, consumers, and resources or robust network of potential participants and end users for effective and scalable reuse



Need and benefits of *New InfraTech Vision*

- Unleashes **full InfraTech innovation potential**
- Need to merge existing silos into cross-domain value networks with potential for a learning platform through data sovereignty, interoperability, portability, security and trust

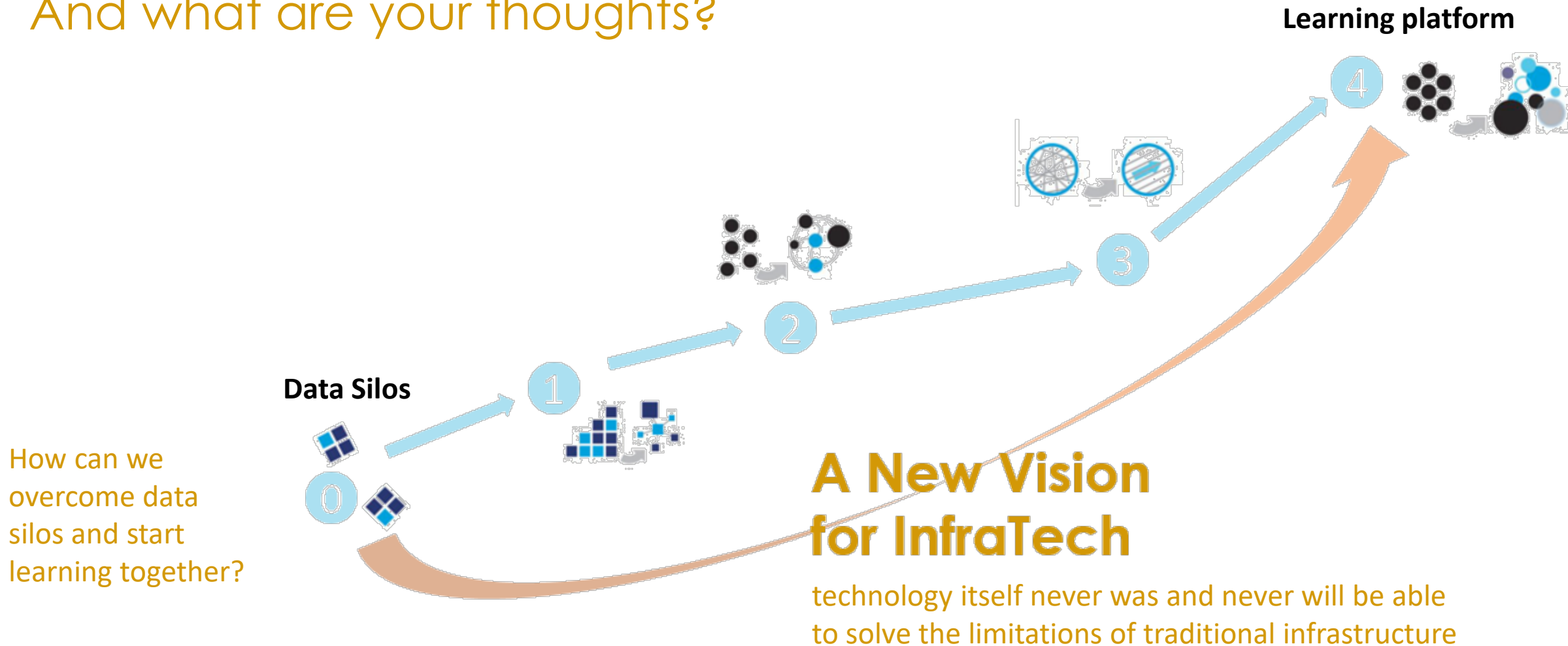


Relevance for society and the environment

- Supports **human-/socio-/eco-centred platform design**
- Create project opportunities and reduce the investment backlog for socially and climate responsible infrastructure through replicable use cases focused on sustainable (ESG*) value proposition

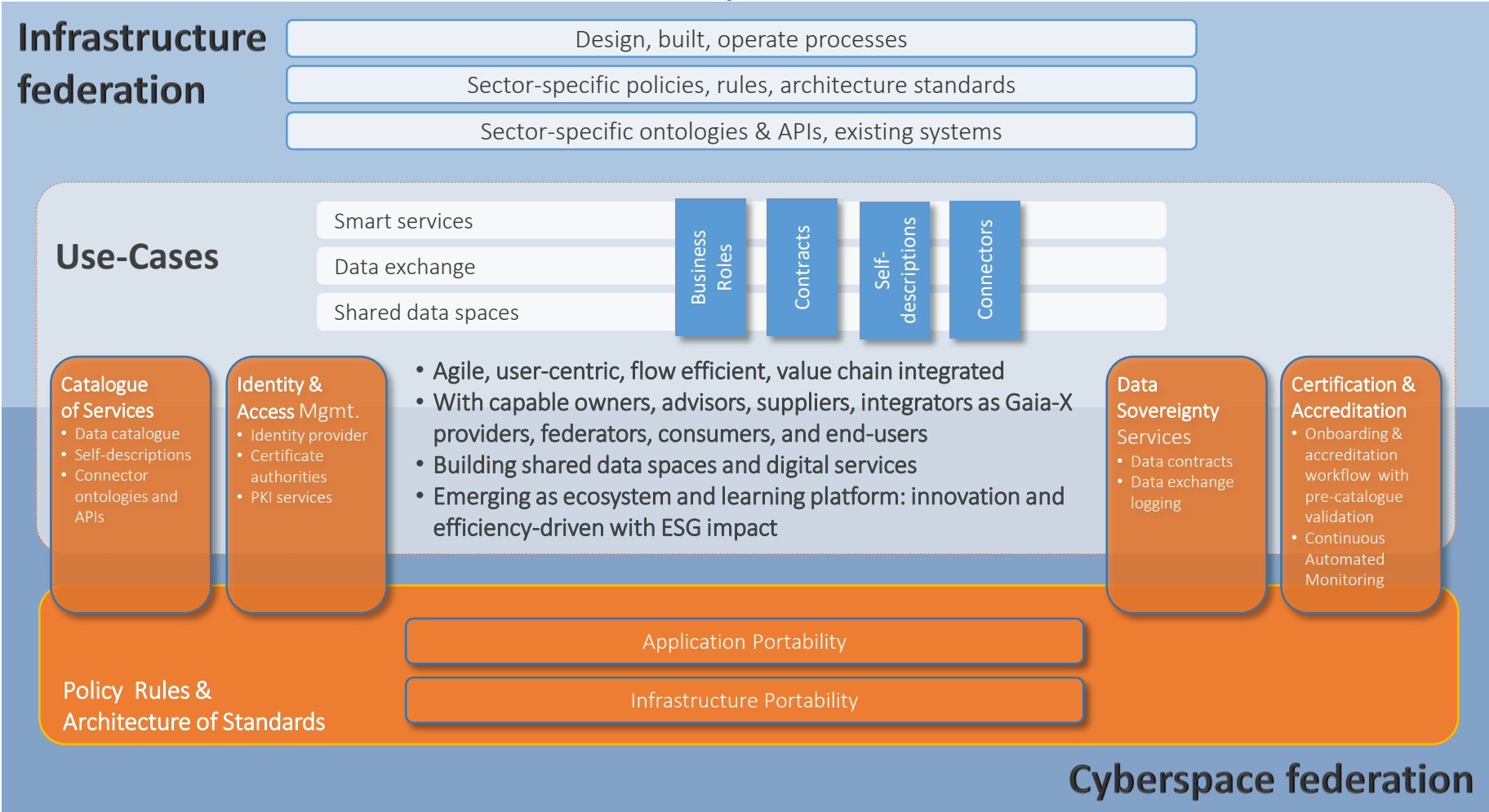
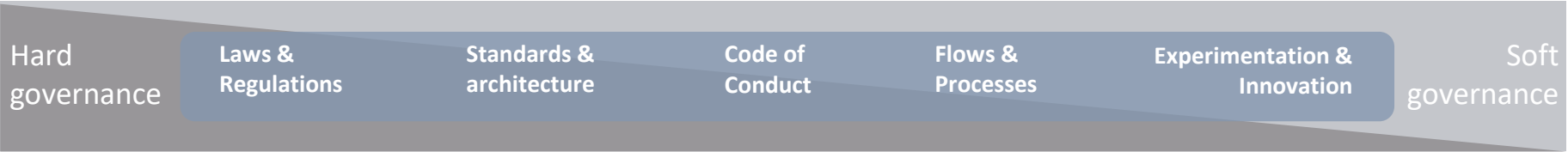
A New Vision for InfraTech

And what are your thoughts?



Appendix

Polycentric governance framework: digital federated platform for infrastructure design and management



Developed by the Consortium based on existing use-cases, participants and end-users

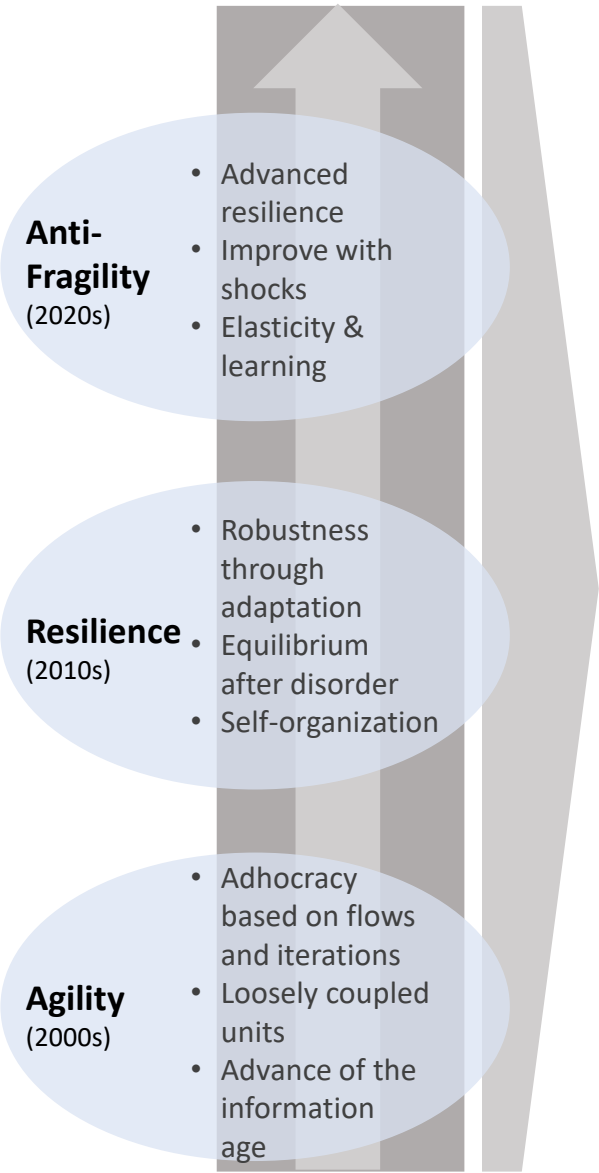


Provided by Gaia-X open-source

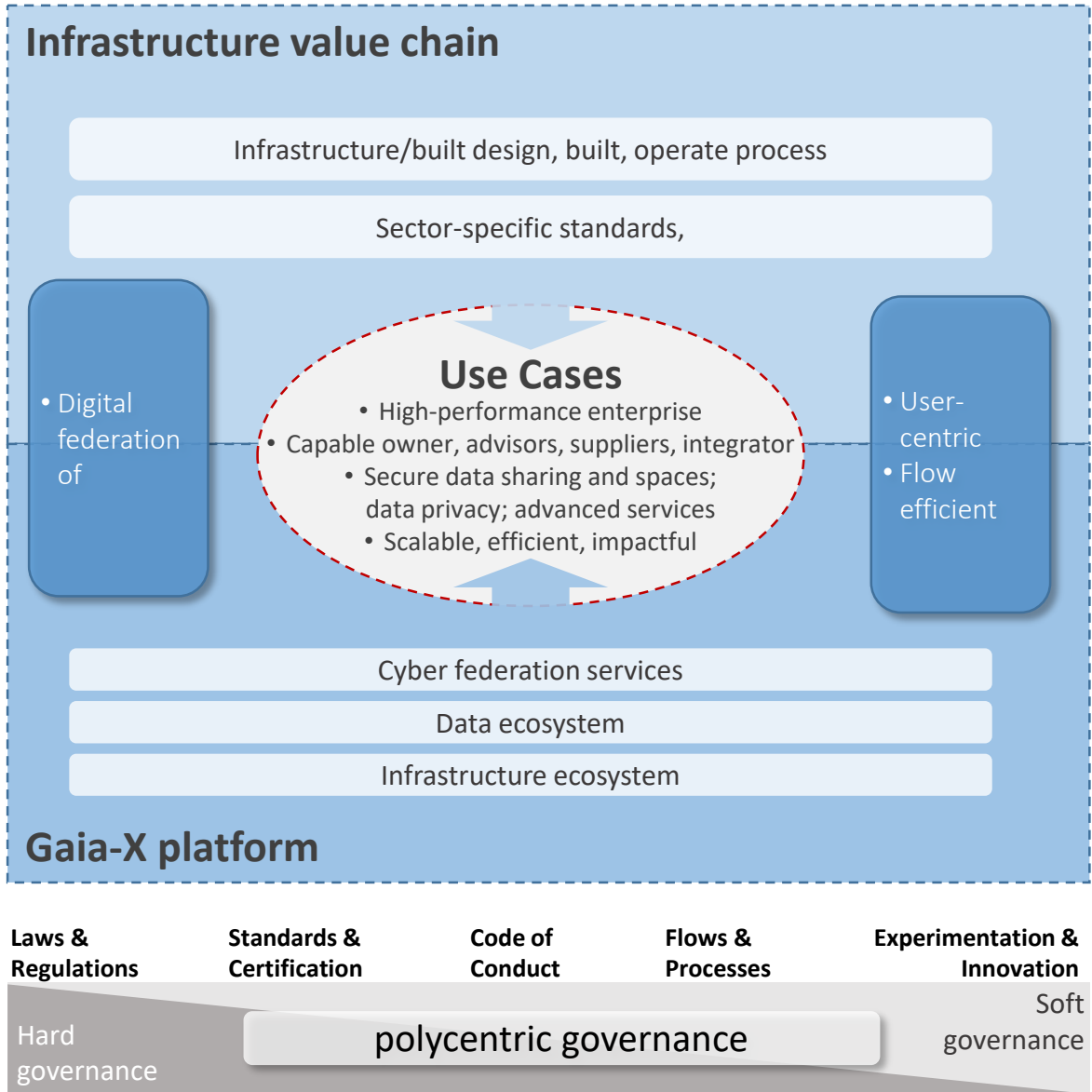


Governance as possibility for collaboration based on shared principles for the benefit of society

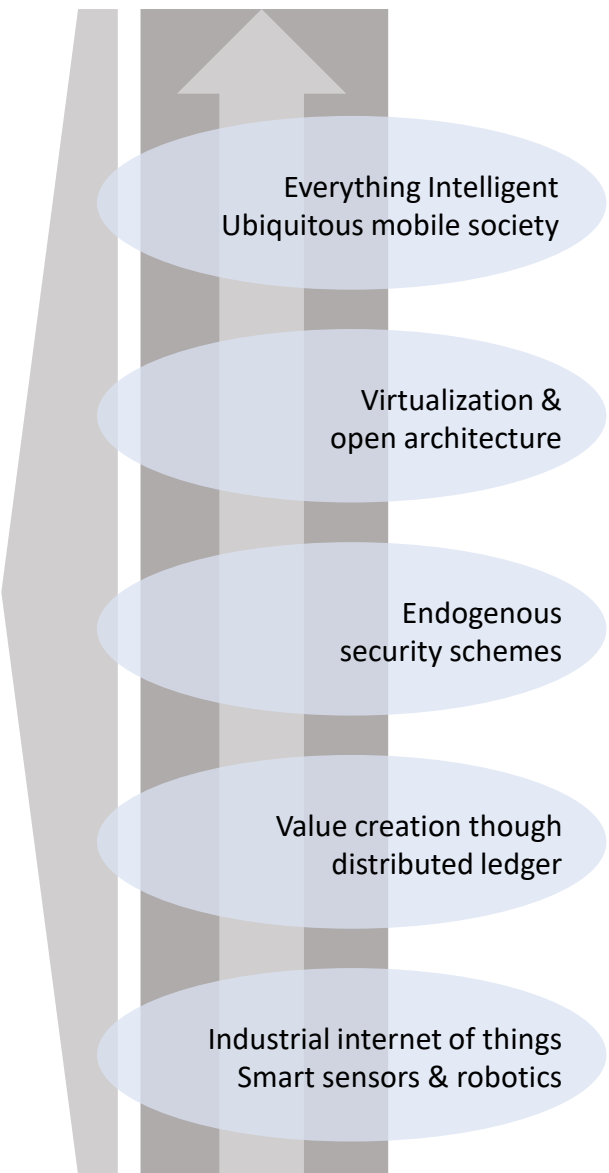
Governance evolution



The use case at the center of governance



Technology trends



Blue Dot Network



Blue Dot Network

Member of the OECD Executive Consultation Group for the Blue Dot Network

G20 InfraTech Agenda



Global Infrastructure Hub

Member of the G20 GIHub Academic Advisory Panel




Member of the G20/T20 TASK FORCE 7 Infrastructure Investment and Financing

Infrastructure 4.0 - Value Chain Integration through Federated Digital Platforms




Accredited Member



gaia-x

Gaia-X domains geoinformation and public sector



InfraTech Stock Take of Use Cases



2016

2017

2018

2019

2020

2021

2022

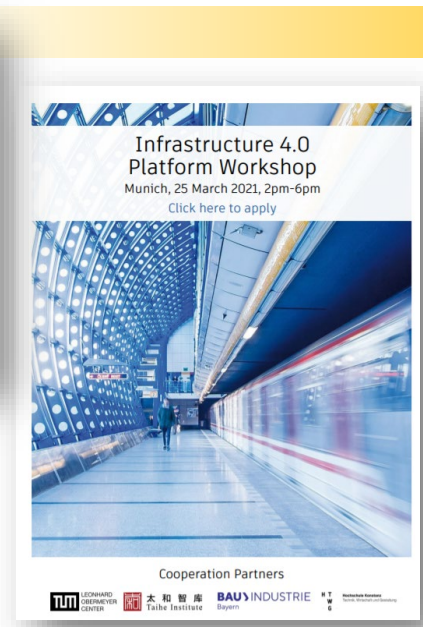


WEF Strategic Infrastructure Initiative

WEF Future of Construction Initiative



WEF Infrastructure 4.0 Initiative



infraX4.0

infraX4.0

Sustainable and resilient planning, provision and operation of infrastructure



Fondazione
Compagnia
di San Paolo



Prof. Dr.-Ing. Michael Bühler
Professor of Construction Business Management
Kostanz University of Applied Sciences
Germany

June 3, 2021

Dear Prof. Dr.-Ing. Bühler,

We are writing with regards to a closed-door workshop, organized by the International Affairs Institute (IAI) and the Fondazione Compagnia di San Paolo on Infrastructure 4.0: Data, Technology and Resilience.

The workshop titled “*Transforming Infrastructure Through Digital Technology: The Role of G20*” is organised within the framework of the Think 20 (T20), the G20 official engagement group bringing together leading global think tanks and research centres, of which the IAI is the National Co-Chair. The event will be held on Monday July 12, 2021 from 14:00 until 15:45 CEST.

The event will investigate the impact of the digitalization in the infrastructure sector in order to better understand the changes triggered by new digital technologies and discuss the related challenges and opportunities for the infrastructure sector.

We would be honoured if you could serve as a speaker in the panel discussion, which will begin at 14:30 CEST. A draft programme will soon be shared.

The event will be held entirely in English.

Should you have any inquiries, please do not hesitate to contact us.

We very much hope that you will be able to accept our invitation and look forward to hearing from you.

Best regards,

Francesco Profumo
President, *Fondazione Compagnia di San Paolo*
and
T20 Lead Co-Chair Task Force 7
“Infrastructure Investments and Financing”

Ettore Greco
Executive Vice President, *IAI*
and
T20 Coordinator



Roundtables



TRANSFORMING INFRASTRUCTURE THROUGH DIGITAL TECHNOLOGY:

THE ROLE OF G20

12 JULY 2021, 14:00-15:45 CEST

AGENDA

WELCOME REMARKS

Francesco Profumo, President, Fondazione Compagnia di San Paolo; Lead Co-Chair TF7 – Infrastructure Investments and Financing

Ettore Greco, Executive Vice President, Istituto Affari Internazionali

KEYNOTE ADDRESS

Enrico Giovannini, Minister, Ministry of Sustainable Infrastructures and Mobility

PANEL DISCUSSION

Monica Bennett, Director of Thought Leadership, G20 Global Infrastructure Hub

Francesco Bonfiglio, CEO, Gaia X

Michael Bühler, Professor of Construction Business Management, Konstanz University of Applied Sciences

Raffaele della Croce, Senior Economist, Organization for Economic Co-operation and Development

Q&A

MODERATOR

Joisa Dutra, Co-chair Task Force 7 “Infrastructure Investment and Financing”, T20 Italy & Director, Infrastructure Regulation Center, Fundação Getulio Vargas



Fondazione
Compagnia
di San Paolo



Prof. Dr.-Ing. Michael Bühler
Professor of Construction Business Management
Kostanz University of Applied Sciences
Germany

July 14, 2021

Dear Prof. Dr.-Ing. Bühler,

We are writing to renew our gratitude for your participation as a speaker during the closed-door workshop “Transforming Infrastructure Through Digital Technology: The Role of G20”.

We wanted to thank you for your insightful remarks which we feel greatly contributed to a fruitful discussion on the impact of the digitalization in the infrastructure sector, highlighting the changes triggered by new digital technologies as well as the related challenges and opportunities for the infrastructure sector.

We thank you once again for having accepted our invitation to attend the workshop,

Best regards,

Francesco Profumo
President, *Fondazione Compagnia di San Paolo*
and
T20 Lead Co-Chair Task Force 7
“Infrastructure Investments and Financing”

Ettore Greco
Executive Vice President, *IAI*
and
T20 Coordinator