gaia-x future mobility

Gaia-X Lighthouse Project

Status of EU Data Spaces
Concretization for Mobility Domain

22.11.2023

Prof. Dr. Frank Köster

DLR Institut für KI-Sicherheit

Funded by the European Union
NextGenerationEU

Supported by:
Federal Ministry for Economic Affairs and Climate Action
on the basis of a decision by the German Bundestag

gaia-x

Shaping Europe's Digital Future – European Strategy for Data

The strategy for data focuses on **putting people first in developing technology**, and **defending and promoting European values and rights** in the digital world.

European Commission

Data is an essential resource for

- economic growth
- Competitiveness
- Innovation
- job creation
- societal progress in general

Shaping Europe's Digital Future – European Strategy for Data

The European strategy for data aims at **creating a single market for data that will ensure Europe's global competitiveness and data sovereignty**.

Common European **data spaces will ensure that more data becomes available** for use in the economy and society, while keeping the companies and individuals who generate the data in control.

Data driven applications will benefit citizens and businesses in many ways. They can e.g.:

- improve health care
- create safer and cleaner transport systems
- generate new products and services
- reduce the costs of public services
- improve sustainability and energy efficiency

The Commission has proposed a **Regulation on European data governance** as part of its data strategy.

gaia-x future mobility

Overview of EU Legislation in the Digital Sector

www.kaizenner.eu

Research & Innovation	Industrial Policy	Connectivity	Data & Privacy	IPR	Cybersecurity	Law Enforcement	Trust & Safety	E-commerce & Consumer Protection	Competition	Media	Finance
Digital Europe Programme Regulation, (EU) 2021/694	Recovery and Resilience Facility Regulation, (EU) 2021/241	Frequency Bands Directive, (EEC) 1987/372	General Data Protection Regulation (GDPR), (EU) 2016/679	Database Directive, (EC) 1996/9	Regulation for a Cybersecurity Act, (EU) 2019/881	Law Enforcement Directive, (EU) 2016/680	Product Liability Directive (PLD), (EEC) 1985/374, 2022/0302(COD)	Unfair Contract Terms Directive (UCTD), (EEC) 1993/13	Technology Transfer Block Exemption, (EC) 2014/316	Satellite and Cable I Directive, (EEC) 1993/83	Common VAT system, (EC) 2006/112, 2022/0407(CNS)
Horizon Europe Regulation, (EU) 2021/695, (EU) 2021/764	InvestEU Programme Regulation, (EU) 2021/523	Radio Spectrum Decision, (EC) 2002/676	Regulation to protect personal data processed by EU institutions, bodies, offices and agencies, (EU) 2018/1725	Community Design Directive, (EC) 2002/6, 2022/0391(COD)	Regulation to establish a European Cybersecurity Competence Centre, (EU) 2021/887	Directive on combating fraud and counterfeiting of non-cash means of payment, (EU) 2019/713	European Standardization Regulation, (EU) 2012/1025	E-commerce Directive, (EC) 2000/31	Company Law Directive, (EU) 2017/1132, 2023/0089(COD)	Information Society Directive, (EC) 2001/29	Payment Service Directive 2 (PSD2), (EU) 2015/2366 2023/0209(COD)
Regulation on a pilot regime distributed ledger tech. market, (EU) 2022/858	Connecting Europe Facility Regulation, (EU) 2021/1153	Broadband Cost Reduction Directive, (EU) 2014/61, 2023/0046(COD)	Regulation on the free flow of non-personal data, (EU) 2018/1807	Enforcement Directive (IPR), (EC) 2004/48	NIS 2 Directive, (EU) 2022/2555	Regulation on terrorist content online, (EU) 2021/784	Radio Equipment Directive (RED), (EU) 2014/53	Unfair Commercial Practices Directive (UCPD), (EC) 2005/29	Market Surveillance Regulation, (EU) 2019/1020	Audio-visual Media Services Directive (AVMSD), (EU) 2010/13	Digital Operational Resilience Act (DORA Regulation), (EU) 2022/2554
	Regulation on High Performance Computing Joint Undertaking, (EU) 2021/1173	Open Internet Access Regulation, (EU) 2015/2120	Open Data Directive (PSI), (EU) 2019/1024	Directive on the protection of trade secrets, (EU) 2016/943	Information Security Regulation, 2022/0084(COD)	Temporary CSAM Regulation, (EU) 2021/1232, 2022/0155(COD)	eIDAS Regulation, (EU) 2014/910, 2021/0136(COD)	Directive on Consumer Rights (CRD), (EU) 2011/83	P2B Regulation, (EU) 2019/1150	Portability Regulation, (EU) 2017/1128	Crypto-assets Regulation (MiCA), (EU) 2023/1114
	Regulation on Joint Undertakings under Horizon Europe, (EU) 2021/2085, 2022/0033(NLE)	European Electronic Communications Code Directive (EECC), (EU) 2018/1972	Data Governance Act (DGA Regulation), (EU) 2022/868	Standard essential patents, 2023/0133(COD)	Cybersecurity Regulation, 2022/0085(COD)	E-evidence Regulation, 2018/0108(COD)	Regulation for a Single Digital Gateway, (EU) 2018/1724	e-invoicing Directive, (EU) 2014/55	Vertical Block Exemption Regulation (VBER), (EU) 2022/720	Satellite and Cable II Directive, (EU) 2019/789	Digital euro, 2023/0212 (COD)
	Decision on a path to the Digital Decade, (EU) 2022/2481	Roaming Regulation, (EU) 2022/612	ePrivacy Regulation, 2017/0003(COD)	Design Directive, 2022/0392(COD)	Cyber Resilience Act, 2022/0272(COD)	Digitalization of travel documents	General Product Safety Regulation, (EU) 2023/988	Geo-Blocking Regulation, (EU) 2018/302	Digital Market Act (DMA Regulation), (EU) 2022/1925	Copyright Directive, (EU) 2019/790	Financial Data Access Regulation, 2023/0205 (COD)
	European Chips Act (Regulation), 2022/0032(COD)	Regulation on the Union Secure Connectivity Programme, (EU) 2023/588	European Data Act (Regulation), 2022/0047(COD)	Compulsory licensing of patents, 2023/0129(COD)	Cyber Solidarity Act (Regulation), 2023/0109(COD)		Machinery Regulation, (EU) 2023/1230	Digital content Directive, (EU) 2019/770	Regulation on distortive foreign subsidies, (EU) 2022/2560	European Media Freedom Act, 2022/0277(COD)	Payment Services Regulation, 2023/0210(COD)
	European critical raw materials act (Regulation), 2023/0079(COD)	.eu top-level domain Regulation, (EU) 2019/517	European Health Data Space (Regulation), 2022/0140(COD)				AI Act (Regulation), 2021/0106(COD)	Directive on certain aspects concerning contracts for the sale of goods, (EU) 2019/771	Horizontal Block Exemption Regulations (HBER), (EU) 2023/1066, (EU) 2023/1067		Revision of the late payments Directive
	Establishing the Strategic Technologies for Europe Platform (STEP), 2023/0199(COD)	New radio spectrum policy programme (RSPP 2.0)	Regulation on data collection for short-term rental, 2022/0358(COD)				Eco-design Regulation, 2022/0095(COD)	Digital Services Act (DSA Regulation), (EU) 2022/2065	Platform Work Directive, 2021/0414(COD)		
		Telecoms Act / Fair Share initiative	Harmonization of GDPR enforcement 2023/0202(COD)				AI Liability Directive, 2022/0303(COD)	Right to repair Directive, 2023/0083(COD)	Single Market Emergency Instrument (SMEI), 2022/0278(COD)		
			Interoperable Europe Act, 2022/0379(COD)					Political Advertising Regulation, 2021/0381(COD)			
			Access to vehicle data, functions and resources					Multimodal digital mobility services (MDMS)			
			GreenData4all					Consumer protection: strengthened enforcement cooperation			
								Consumer rights: adapting ADR to digital markets			

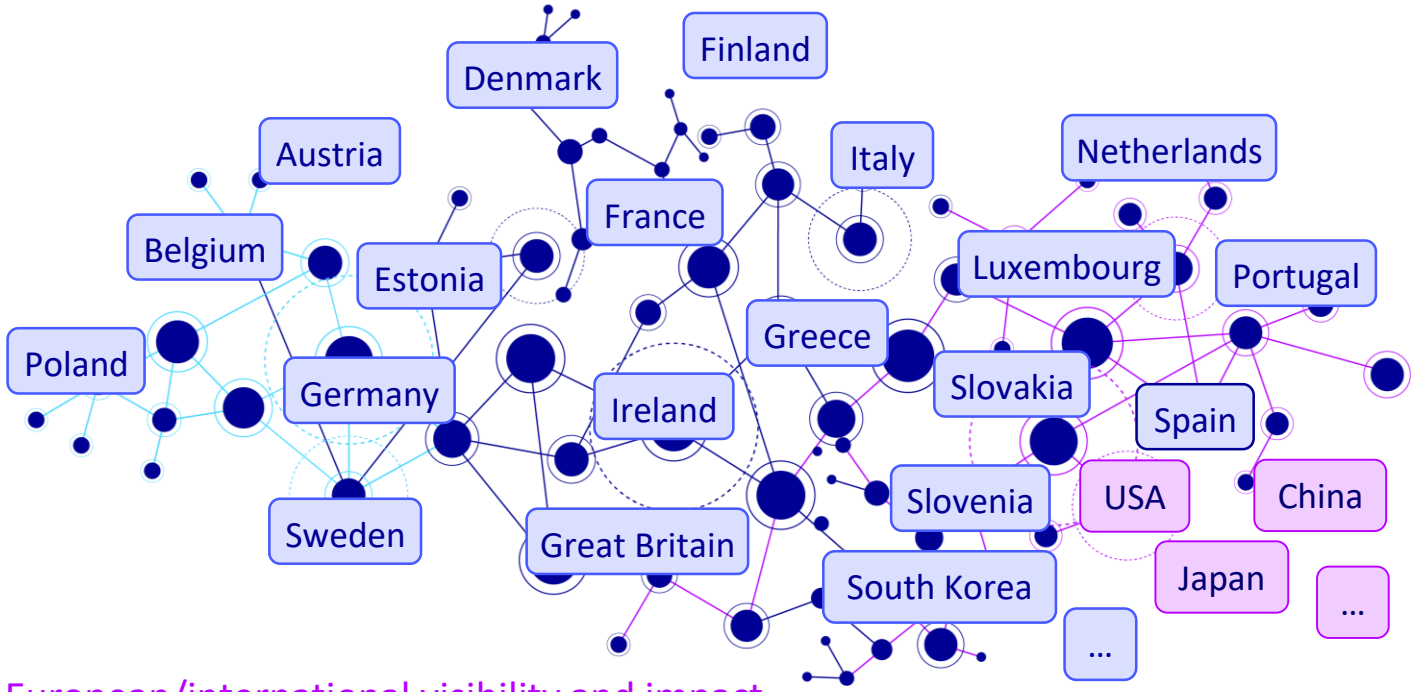
Applicable law	Published in the Official Journal of the European Union
In negotiation	Proposal by the European Commission entered the legislative process.
Planed initiative	Mentioned by the European Commission as potential legislative initiative

Gaia-X – Guiding Principles

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.

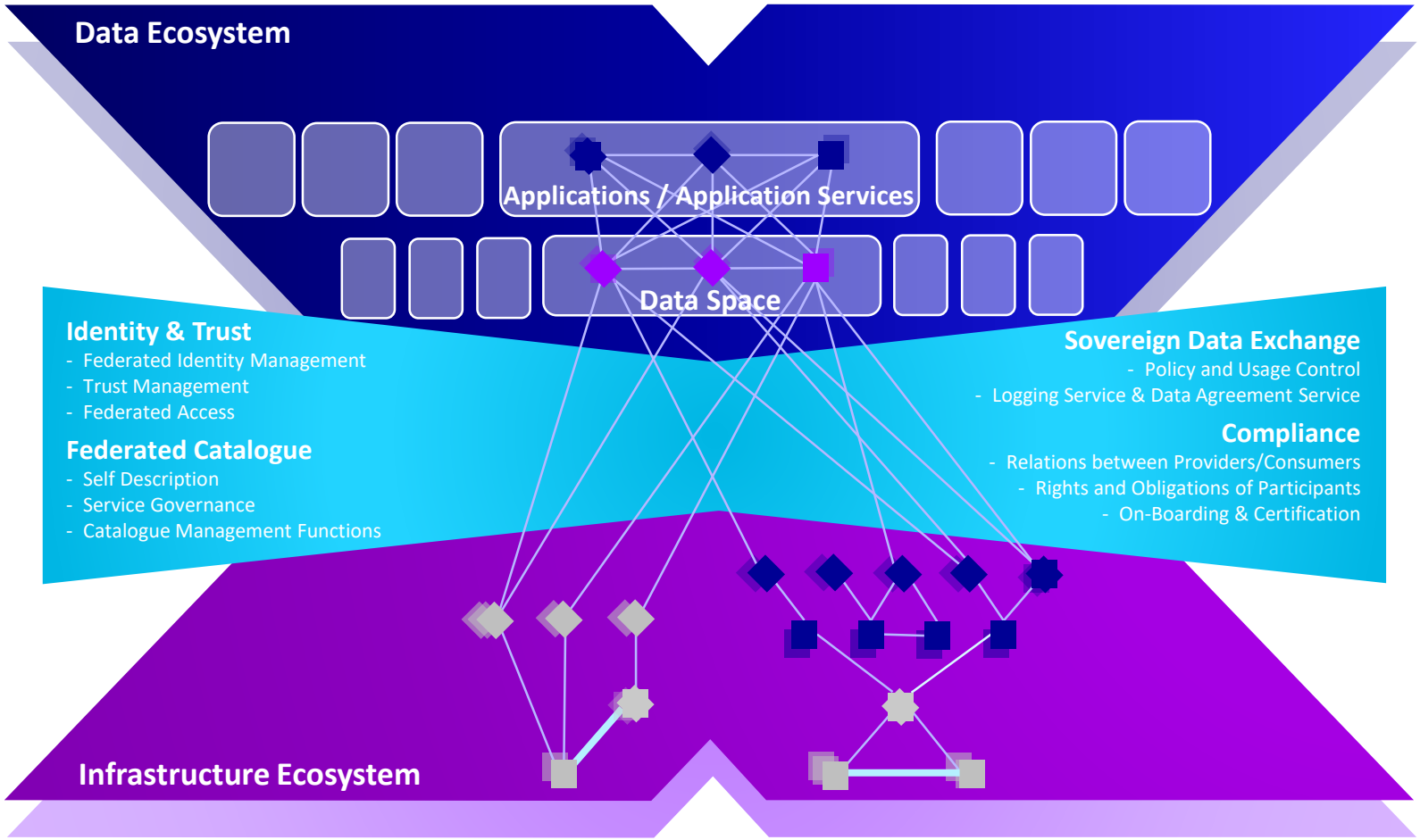
Based on **European values**, Gaia-X implements the following guiding principles:

- 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 – Guiding Principles



Governance Framework: Gaia-X Policy Rules and Gaia-X Architecture of Standards

Gaia-X Introduction: The offered Solution

The Idea

Access and share data through a federated data infrastructure to ensure innovation for our future thanks to the next generation of information technology..

European cooperation

Ensuring the efficiency of the European data infrastructure, based on European values and supported by the European Commission.

Transparency

Ensuring open interfaces and standards to enable the aggregation of data while fostering innovation and efficiency in a transparent environment.

The goal

Promote the creation, expansion, adoption and growth of digital ecosystems that can be commercialised in and across Data Spaces.

Highest possible safety

Maximum data sovereignty for businesses, customers, and governments through services that ensure interoperability and privacy by design

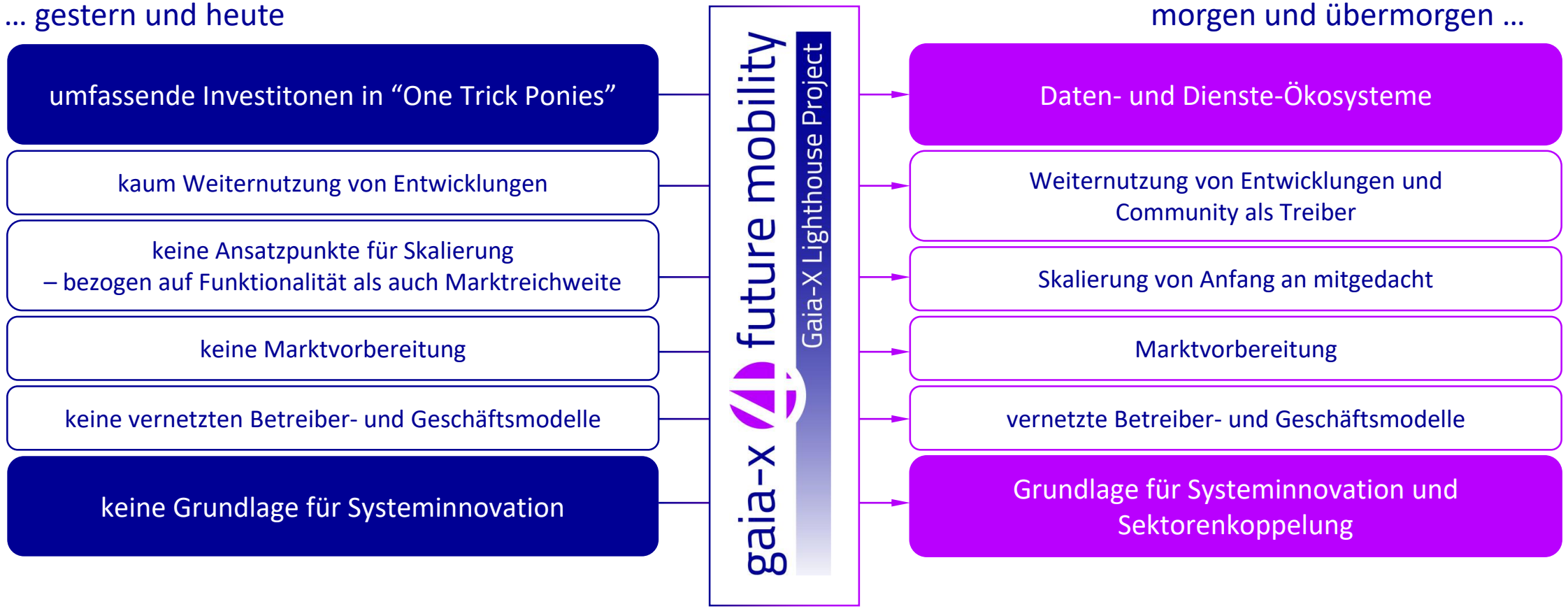
Protection of rights

Ensuring the privacy of citizens as a human right and respecting the sovereignty of other nations.

Several mobility-related Use-Cases were addressed by different R&D Initiatives throughout the last years …

Figure: acatech Studie – Neue autoMobilität II

Datenräume und Daten-/Dienste-Ökosysteme als Basis für vernetzte und automatisierte Mobilitätslösungen



Project Family – Relation to Other Domains and Initiatives

Agriculture | Energy | Finance | Geoinformation | Health | **Industry 4.0/SME** | **Mobility** | Public Sector | Smart City/ Region | Smart Living | Plan/Build /Operate

gaia-x future mobility
Gaia-X Lighthouse Project

- gaia-x KI
- gaia-x AMS
- gaia-x ROMS
- gaia-x PLC-AAD
- gaia-x moveID
- gaia-x AGEDA

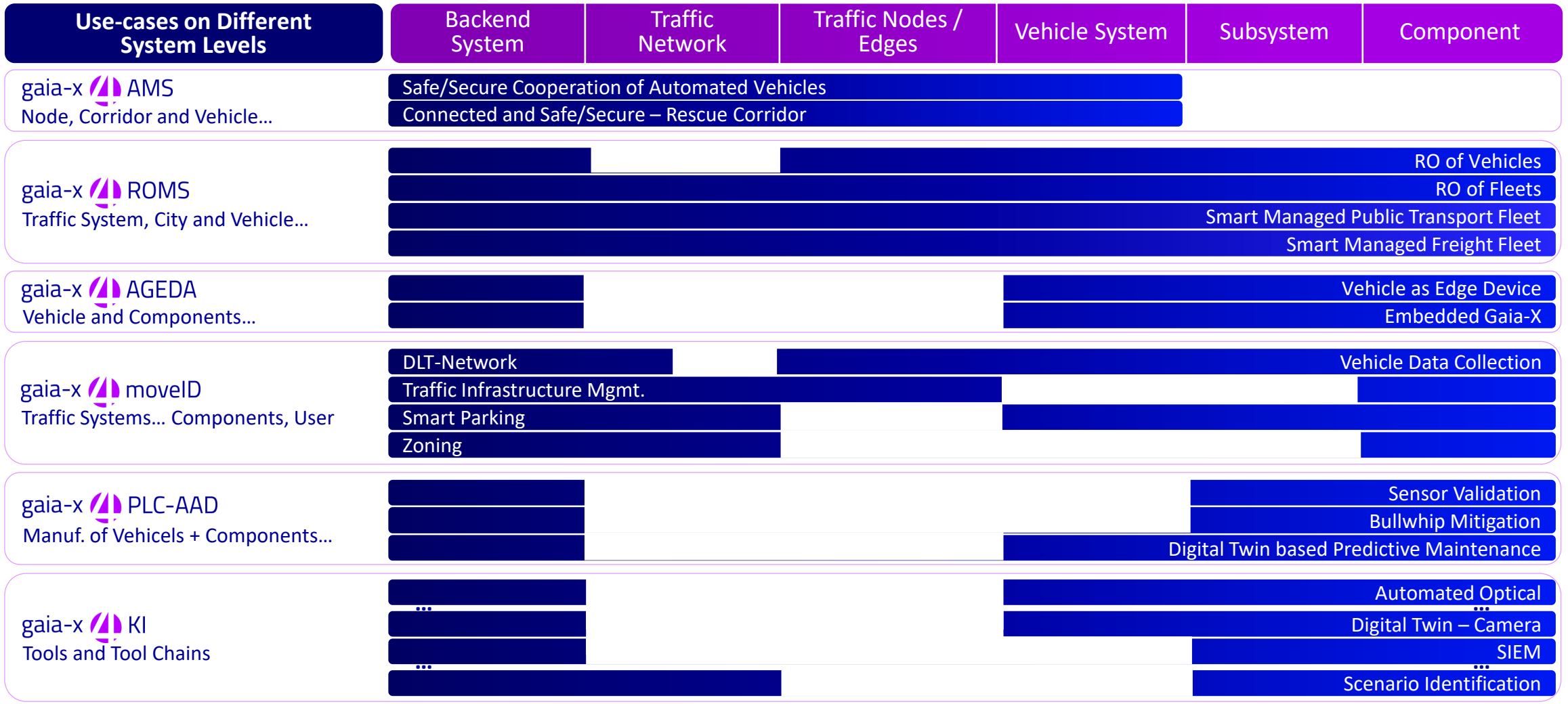
Catena-X Automotive Network

Mobility Data Space

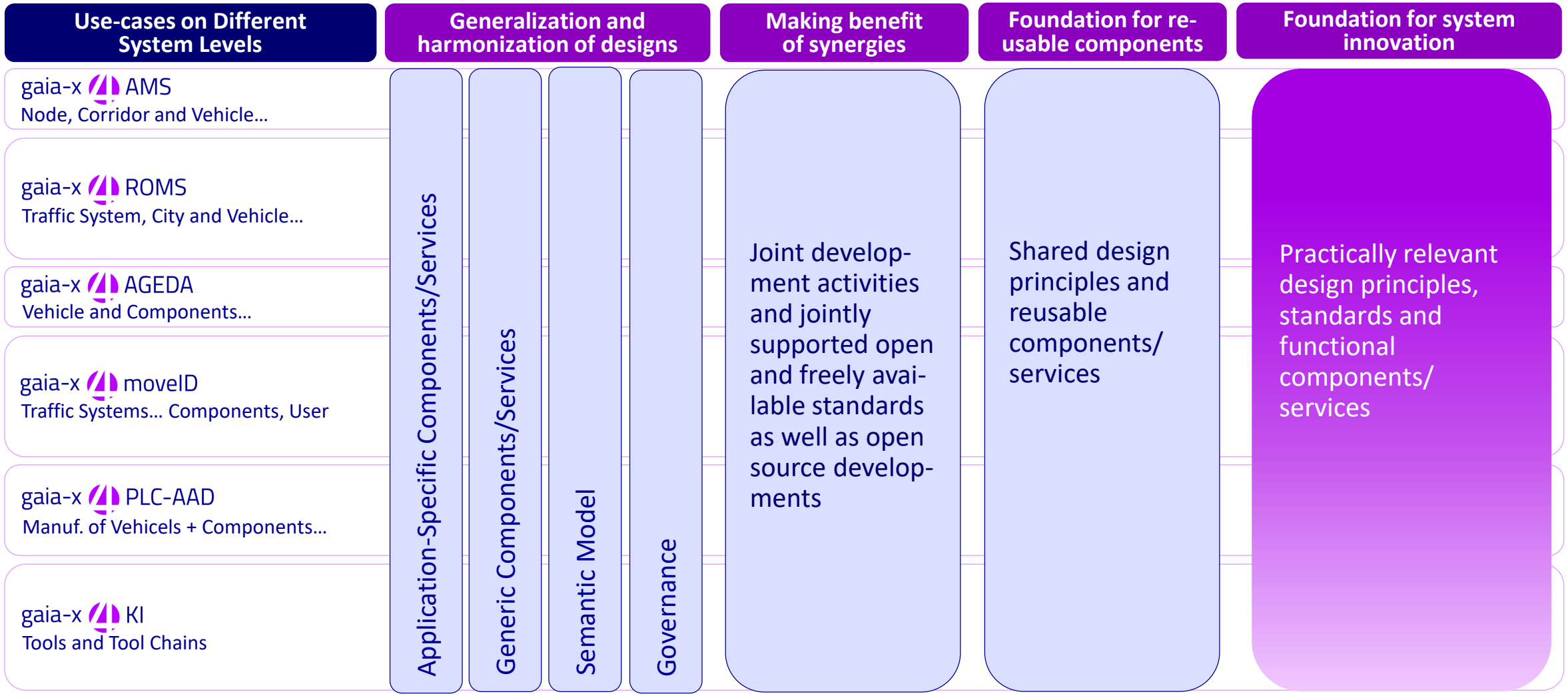
Datenraum Mobilität = DRM

transfer-x knowledge network

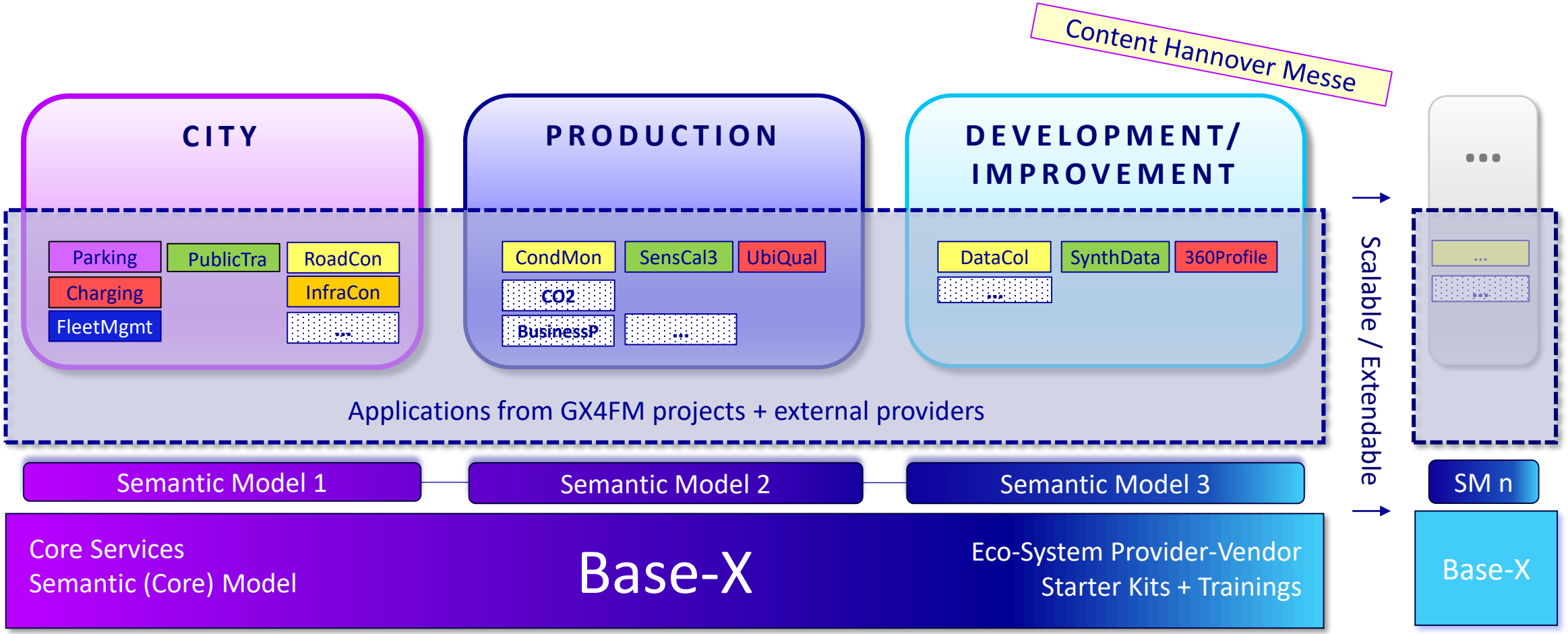
Family of Projects – Synergies by Design



Family of Projects – Synergies by Design



Base-X* Architecture
Scalable Mobility Solutions & Foundation for System Innovation

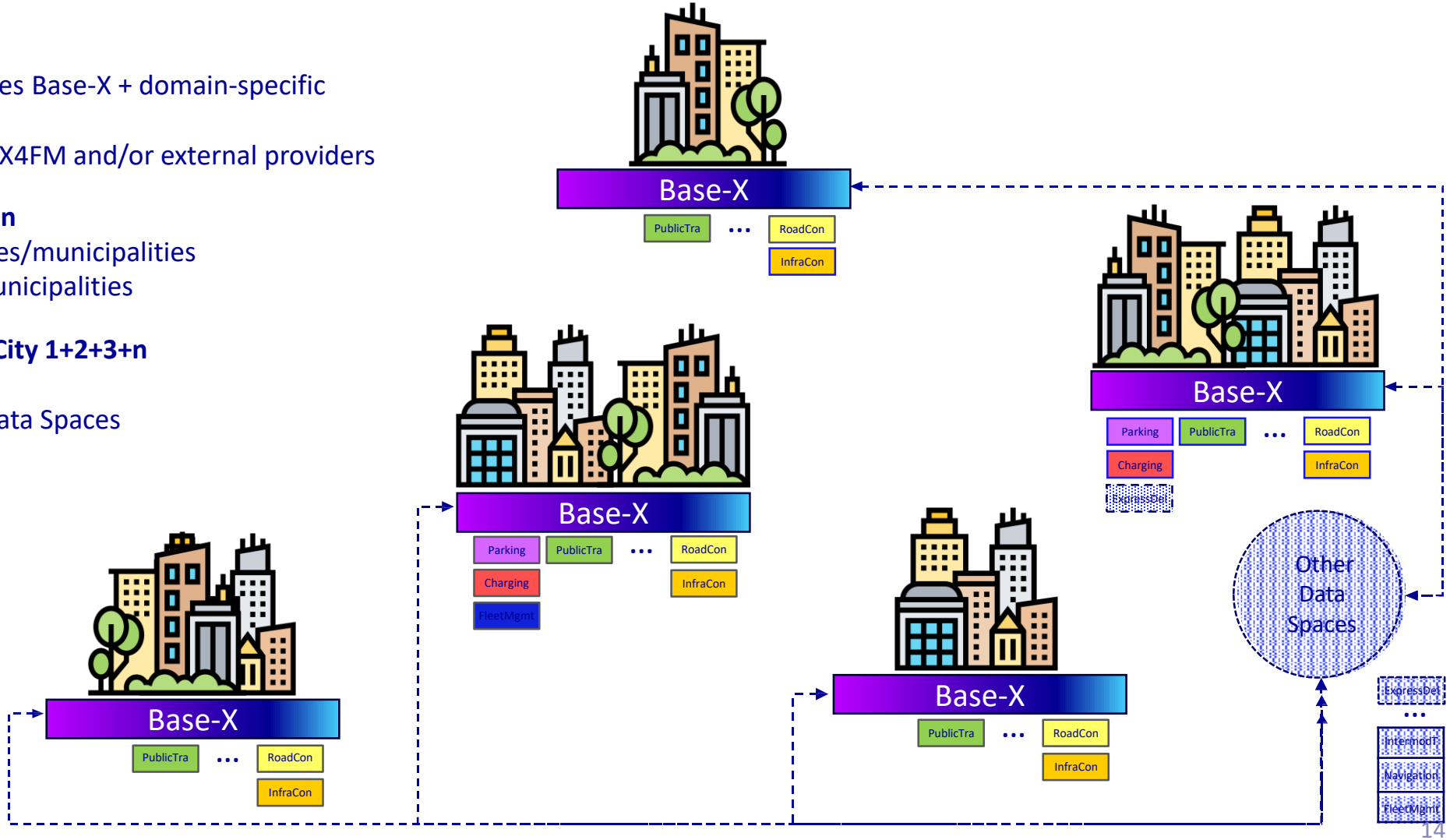


Scalable Mobility Solutions & Foundation for System Innovation
CITY

Step 1: Data Space City 1
- City/municipality instantiates Base-X + domain-specific semantic model
- Selects applications from GX4FM and/or external providers

Step 2: Data Space City 1+2+3+n
- Instantiation by further cities/municipalities
- Connection of the cities/municipalities

Step 3: Connected Data Space City 1+2+3+n
+ other existing Data Spaces
- Connection with non-city Data Spaces



Data Spaces and Data/Services Ecosystems

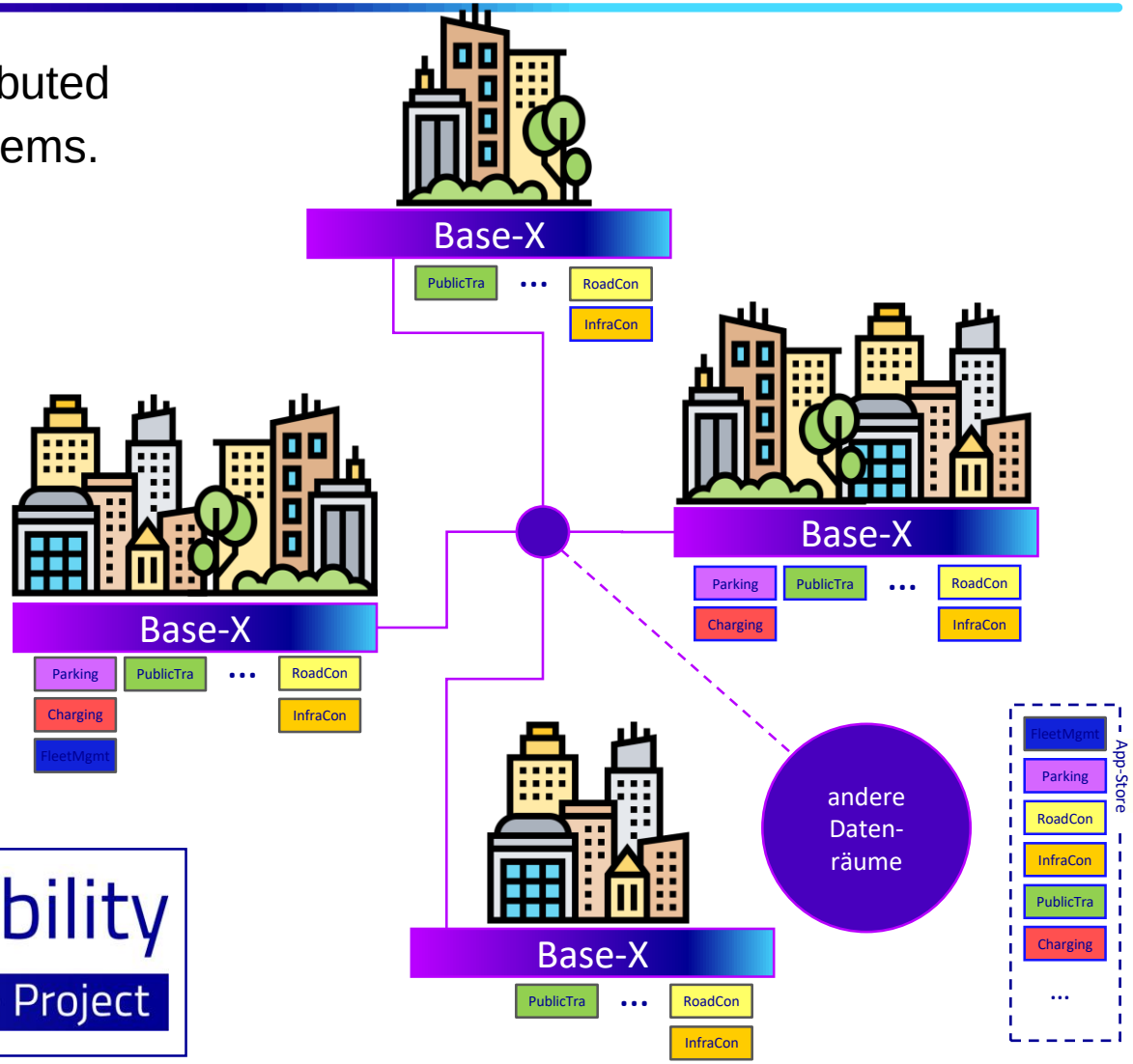
Institute for AI-Saftey & Security| Sankt Augustin and Ulm – Germany – www.dlr.de/ki

Data Spaces are the basis for data exchange in distributed data exchange in distributed data and service ecosystems.

Standards, processes and **guidelines** guarantee the central principles

- Trust
- Sovereignty
- Openness and extensibility

Your organization follows federated principles and is based on various **core services** - e.g. data catalogs and connectors.



Finanziert von der Europäischen Union
NextGenerationEU
Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
aufgrund eines Beschlusses des Deutschen Bundestages
gaia-x future mobility
Gaia-X Lighthouse Project

gaia-x future mobility

Gaia-X Lighthouse Project

The family of projects consists of

gaia-x KI

gaia-x AMS

gaia-x ROMS

gaia-x moveID

gaia-x PLC-AAD

gaia-x AGEDA

Contact for Gaia-X 4 Future Mobility

Prof. Dr. Frank Köster
DLR Institute for AI Safety and Security
Frank.Koester@dlr.de

Gaia-X 4 Future Mobility
Coordinated by the DLR Institute
for AI Safety and Security