

TOWARDS THE INTEROPERABLE ENERGY ECOSYSTEM OF THE FUTURE

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The 5 Areas of the Digitalisation of Energy Action Plan





Digital Decade: a Compass and Common Targets

Skills

ICT Specialists: 20 millions + Gender convergence Basic Digital Skills: min 80% of population

Government

Key Public Services: 100% online **e-Health:** 100% availability medical records **Digital Identity:** 80% citizens using digital ID

Infrastructures

Connectivity: Gigabit for everyone, 5G everywhere **Cutting edge Semiconductors:** double

EU share in global production **Data – Edge & Cloud:** 10,000 climate neutral highly secure edge nodes **Computing:** first computer with quantum acceleration

Business

Tech up-take: 75% of EU companies using Cloud/AI/Big Data **Innovators:** grow scale ups & finance to double EU Unicorns **Late adopters:** more than 90% of European SMEs reach at least a basic level of digital intensity

Industrial Internet of Things: the strategic picture for Europe **Next generation IoT**

Green: Fit for 55



European Strategy for Data

A common European data space, a single market for data

Data can flow within the EU and across sectors Free Flow of non-Availability of high-quality **Personal Data** data to create and innovate Regulation European rules and values are fully respected Rules for access and use of data **GDPR** are fair, practical and clear & clear data governance mechanisms are in place

The European Data strategy



Common European data spaces



EU programme support for the energy data space

- Horizon Europe
 - Projects establishing the grounds for Common European Energy Data Space
- DIGITAL programme
 - Deployment projects for data spaces including mobility, energy, agriculture
 - Data spaces Support Centre
 - Smart middleware
 - Edge and cloud services
- Connecting Europe Facility
 - Deployment of pan-European Operational Digital Platforms



Towards interoperable data spaces

Leveraging the **momentum**

- GAIA-X energy data space
- Converging guidelines: Open DEI design principles for data spaces
- Minimum operability mechanisms





Data spaces standardisation activities







Paradigm Shift: Cloud – Edge – IoT Trend/Paradigm Shift: from Cloud to Edge Bringing compute resources closer to the data (((0))) Computing Continuum Cloud / HPC Far Edge / IoT Edge **Smart Device** Infrastructure Cloud Decentralised swarm intelligence Federating far edge resources ad hoc via wireless (5G, mesh) to provide cloud resources close to the edge



Technology Drivers for Edge Computing



Commission

 Reduces complexities of distributed installations and unit cost economics

Internet of Things – Interoperability and Evolution

- Interoperability framework
 - Reference architecture
 - Open platforms
 - APIs
 - Ontologies/Semantics
- Important developments
 - Decentralisation move to the edge
 - Computing continuum
 - Data spaces



- Use cases
- Sectors energy (bridge projects group), transport, agriculture, health, manufacturing
- Cross-sector cases in communities, homes, etc.
- Stakeholders Gaia-x, AIOTI, SDOs (ETSI, OneM2M, CEN/CENELEC, ITU-T, ISO/IEC, OGC, W3C...)





European Commission's view on needs in standard activities

Annual Union Work Programme

- An annual EC Communication to identify strategic priorities, mandates to be launched. Links to the EU political agenda.
- Rolling Plan

Political

Technical

- Much more detailed and technical. Much wider view on internationally ongoing actions.
- Provides an overview of the needs for ICT standardisation activities to be undertaken in support of EU policy activities.
- It covers technologies of 'horizontal importance', ones whose application have a wide impact across different technical fields, in the context of ICT infrastructures and ICT standardisation.
- Drafted with the Multi-Stakeholder Platform (MSP) ~70 Members + EC Services. Is not only the EC view anymore.
- Medium term, Specific to **ICT**.
- For ICT, the EC only funds standard activities IN the Rolling Plan
- Updated annually

European Commission

Rolling plan content

38 topics in 4 thematic areas:

- Key enablers and security
 - Cloud and edge computing
 - Internet of Things
- Societal challenges
- Innovation for the single market
- Sustainable growth
 - Smart Grids and Smart Metering

https://joinup.ec.europa.eu/collection/rolling-plan-ict-standardisation/rolling-plan-2022





A European framework for sharing data in support of innovative energy services

Rationale: The key enabler for a digitalised energy system is the availability of, access to, and sharing of energy-related data.

Aim: To facilitate the development of innovative and inclusive energy solutions/services for grid developments and energy market integration.

Means: Develop a European framework for sharing energy data. Establish a common European data space for energy. Set up an expert working group and a governance structure. Select and agree on the priorities ('high level use cases') which will include: (i) flexibility services, (ii) smart and bi-directional EV charging, and (iii) smart and energy efficient buildings.

Legal instruments



Impl Act Interop Metering data O Upcoming Impl Acts

Define interoperability requirements and procedures for access to metering and consumption data

On interoperability requirements and procedures for access to data required for demand response and customer switching.



Architectures and frameworks

- Horizon 2020/Europe
 - Large scale pilots and other R&I actions and CSAs (e.g. Open DEI)
 - Clusters e.g. Bridge (extended SGAM)
 - Partnerships
- Digital Europe Programme
 - Common European Data Spaces Sectorial, Support Centre
 - Cloud-Edge continuum/services, Smart middleware
 - Local/Urban digital platforms
- National and cross-border efforts
- Way forward is convergence and interoperability towards an open shared reference architecture and interoperability framework



The Standardisation Challenges

- Interoperability essential for a Digital Single Market, with seamless flow of data across sectors and value chains.
- Chicken and egg supply- and demandside are both struggling to define standards at appropriate level.
- Innovation open innovation systems move fast, and the standards processes struggle to keep up.

- Non-technical aspects solutions should be more than technical solutions, and take into account organisational aspects and cross domains issues
- Policy & Legislation security and privacy are still a limiting factor.
- Acceptance communities are sceptical, and often with good reason.



Gaia-X

- The European Commission has followed Gaia-X with interest, but no formal relationship exists.
 - > The Commission is not formally affiliated with Gaia-X.
- Largest ecosystem of industrial partners and public authorities in the area of cloud and data spaces in Europe.
- Growing network of Gaia-X hubs involving many SMEs and users.
- Open architecture and standards.
- Need to create adequate synergies between EC-led initiatives/investment and Gaia-X to avoid fragmentation / duplication.





CEF Digital Operational Digital Platforms (ODPs) Common European Data

Spaces (Energy, Mobility)

EU environmental, energy and digitalization targets

European data, federated cloud and edge computing continuum and connectivity infrastructures

ODPs are pan-European physical and virtual information communication technology resources, operating via the communication infrastructure and retrofitting the existing energy and transport infrastructures , which support the flow, storage, processing and analysis of transport or energy infrastructure data, or both.

identify the most appropriate cases
deliver the building blocks

Indicative budget: EUR 4 Million Maximum Co-Funding Rate: 100%

Octobe

Balanced consortium covering digital, transport and energy

Deployment works project



Thank you!

