Digitalisation of Energy Architectures in Data Exchange Frameworks

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Digitalisation of Energy - Context

**Twin Energy and Digital Transition**

European Green Deal

Europe fit for the Digital Age

A better-functioning, smart, integrated and interconnected energy system, where new business models can easily emerge in a fast-changing market.

**October 2021: Commission WP 2022**

[...] the Commission will propose an action plan for an accelerated digital transformation of the sector, which is needed to ensure the shift towards renewables, connected mobility, smart buildings, and a more integrated energy system with consumers at its core.

**July 2021: Fit for 55 package**

To reduce emissions by at least 55% by 2030. This will cover wide-ranging policy areas – from renewables to energy efficiency first, energy performance of buildings, as well as land use, energy taxation, effort sharing and emissions trading.

**May 2022: REpowerEU Communication**

Key actions to drive the energy independence, including:

“the Digitalisation of Energy Action Plan scheduled for adoption in September will propose measures to enhance data exchange and interoperability, and to support the development of digital tools for consumers”
Industrial Internet of Things: the strategic picture for Europe

New Industrial Strategy
- Transition pathways towards resilient, innovative, sustainable and digital ecosystems
- Open, dynamic ecosystems for EU tech businesses
- Vertical, horizontal & cross-sector integration
- Standardisation & Interoperability
- Next generation operating Systems
  - Decentralised/swarm intelligence
  - Cognitive computing continuum
- Next generation IoT
  - Power to the edge, where the data is
  - Seamless connectivity
- Next generation chips powering intelligence at the edge
- Chips Act
- Semiconductor Chips made in Europe
- The EU Policy Context:
  - NextGenerationEU
  - REPowerEU
  - Twin Transition:
    - Digital Compass
    - Green: Fit for 55
- Data Strategy
  - Data legislation, e.g.:
    - Data Act: Access and fairness on data market
    - Digital Market Act: limited role of gatekeepers

Data Spaces
- Investment in Data Spaces
- EU 5G & cloud-edge infrastructure/services

Common Open Digital Platforms & Ecosystem
- Competition law, Geopolitics
- Strategic autonomy

- Next generation chips
- Chips Act
The 5 Areas of the Digitalisation Action Plan

- Enhancing a data exchange framework
- Cybersecurity & Data protection
- Empowerment of consumers
- Carbon Footprint of ICT solutions
- Promoting investments
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.
Unleash the socio-economic potential of data as a PUBLIC GOOD.

Regulate MARKET POWER based on data.

Ensure a proper functioning of the single market for DIGITAL SERVICES.

Unleash the socio-economic potential of data as a PUBLIC GOOD.

Ensure TRUST in data transactions.

Ensure FAIRNESS in the allocation of data value among the actors of the data economy.

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.
The European Data strategy

**Cloud actions:**
- Cloud Rulebook
- Co-Investments in cloud-to-edge services, cloud federation and marketplaces.

**Data actions:**
- New legislation (Data Governance Act, Services Act, Data Act, Market Act, Impl. High value data sets …)
- Co-investments in EU Data Spaces

**DIGITAL Europe Programme**

**Coordination**

Complementing & integrating private and public initiatives, e.g.:

- Federation & interoperability standards
- Use cases; technical architecture

**IPCEI* on Next Generation Cloud** (*Important Project of Common European Interest*)

**Common European Data spaces**

**Data Spaces Support Centre**
Coordination and governance

**EUROPEAN ALLIANCE FOR INDUSTRIAL DATA, EDGE AND CLOUD**

**DIGITAL Europe Programme**
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
Thank you!