AIOTI Signature Event
IoT and Edge Convergence – Moving towards European solutions

30 Nov Webinar 2021

Golden sponsor: SIEMENS
Event Partner: Fraunhofer IPSI
EUROPEAN DATA STRATEGY FROM THE IoT MARKET PERSPECTIVE
For companies, their customers' trust is hard currency and this trust starts with the customers' understanding of, and confidence in, privacy settings [...]

Andrus Ansip, Vice-President for the Digital Single Market Data Protection Regulation one year on - Press release 13 June 2019
NUANCES OF TRUST

Workshop, Digital Catapult in London, May 14-15 2018
AIOTI Response to the Public Consultation on

Data sharing in the EU –
common European data spaces
(new rules)

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30 July 2020
• intelligence and autonomy at the edge
• IoT, edge and cloud converge to form a computing continuum
• call for a federated approach for data sharing
Discussion topics

What will change with the European Data Strategy and the upcoming Data Act?

What are the implications for the implementation of the European Data Strategy in IoT verticals?

How will the new regulatory framework influence the privacy aspect of data sharing?

What value will new digital ecosystems supporting computing continuum bring to the European market players?
What will change with the European Data Strategy and the upcoming Data Act?
What are the implications for the implementation of the European Data Strategy in IoT verticals?
European Strategy for Data and related legislation

4 key instruments

Nov 2020
Data Governance Act
Ensure **TRUST** in data transactions
Public sector data, private sector data and personal data voluntarily made available by data holders

Dec 2020
Digital Market Act
Regulate **MARKET POWER** based on data
Personal data and private sector data held by online platforms and originating from the users (both businesses and individuals)

Q4 2021
Impl. Act. High Value Datasets
Unleash the socio-economic potential of data as a **PUBLIC GOOD**
Public sector data of high value

Q1 2022
Data Act
Ensure **FAIRNESS** in the allocation of data value among the actors of the data economy
Private sector data, personal data and co-generated (IoT) data

Existing legislation

Directive 96/9/EC on the legal protection of databases
General Data Protection Regulation – Regulation (EU) 2016/679

Complemented by sectoral legislation

Promote a competitive market on car data services, expanding the current legislation on non-discriminatory access to repair data
Data Act overview

**B2B DATA SHARING**
- Mostly non-personal data
- Right for users to access the data they generate through a device or service and to allow 3rd parties to access it
- Tools to help manufacturers or service providers to control data use (smart contracts, APIs)
- Exclusion of machine-generated data from the scope of the database *sui generis* right

**B2C DATA SHARING**
- Mostly personal data
- Contractual transparency

**B2G DATA SHARING**
- Mostly non-personal data
- Rules for data requests by national and EU bodies in case of public emergencies and specific public interest situations
- Compensation rules and safeguards for private sector
- Structures to facilitate B2G data sharing + "once-only principle"

**DATA INFRASTRUCTURES**
- Mostly non-personal data
- Switchability requirement for providers of cloud services
- Requirements to prevent unlawful 3rd country data access

**Fairness tests for contracts**
**Horizontal access modalities**

**Better cross-sectoral standardisation**: legal basis for the Commission to act
OpenDEI: Design Principles for Data Spaces

- Principles for Data Governance / Data Sharing:
  - Data Spaces supported by an Ecosystem
  - Synthesis of building blocks
  - Soft Infrastructure (9 building blocks)

Courtesy: IDSA, InnoPay, OPEN DEI CSA
https://www.opendei.eu/
Industrial IoT: Where are we heading at?

Finding the Perfect “Core-Cloud-Edge” Infrastructure Workload Balance

Going beyond mere data collection towards new IoT-driven business models and data monetization

From Descriptive to Predictive and Artificial Intelligence-infused Analytics

Evolving ecosystem, new architecture, functional enhancements, and consumption models

From ad-hoc to by Design Data Management & Security

Hybrid approaches including emerging technologies such as LPWA and 5G

Source: IDC European IoT Practice, 2019
Visionary use-case for sector coupling: Energy connected to Electromobility and Smart Buildings

Delivering a fair and green deal for consumers:
- Market push through e-Mobility
- Efficient integration of renewables
- Integrated smart home/building services through IoT
- Storage / EV batteries to mitigate peak capacity

R&I – Policy space:
- Connected and interoperable x-sector data spaces
- Decentralised intelligence at the Edge (HE Cluster 4)
- AFID regulation
- RED II, - Integration of Renewables
- Smart Building Readiness Indicators / new labelling
- International cooperation: Linux Foundation LF Energy, US DoE
Thank you

Useful links:

- **European Data Strategy:**

- **BRIDGE Framework:**
  https://www.h2020-bridge.eu/

- **ETIP SNET**

- **Coordination & Support Action OPEN DEI**
  → https://www.opendei.eu/

- **The Alliance of Internet of Things Innovation AIOTI**
  https://aioti.eu/news/
How will the new regulatory framework influence the privacy aspect of data sharing?
• How are the technological advances in AI today going to affect data sharing efforts in the (near) future?

• How will the advances in AI help bridge the gap between (expected) privacy for users and need for data access and sharing by companies?
Key Points related to Data Act

Goals:
• Facilitate data sharing across EU & between industry sectors
• Create fair & human-centered data economy
• Unlock potential of (industrial) data
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How:
• Increase trust in data intermediaries
• Strengthen mechanisms for data sharing
• Provide safe access to data
• Guarantee fair allocation of data value
• Define rights & obligations of parties involved in data transactions

But how to break data silos?

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A (provocative) idea:
• Share Privacy-Preserving AI (PPAI) Models, not data

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A (provocative) idea:

• **Share Privacy-Preserving AI (PPAI) Models**, not data
• **Distill knowledge** locked in data
• **Build model while protecting privacy** of data owners:
  • Industrial entities / Organizations
  • Private citizens
• **Allow data source combination** while building PPAI model

Example solution?

Example solution? Federated Learning (FL) between parties

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• Differential Privacy & Trusted Execution Environments\(^1\)
  • Protection of data sources against ML attacks


Example solution? Federated Learning (FL) between parties

• Differential Privacy & Trusted Execution Environments
  • Protection of data sources against ML attacks
• Model provenance for usage tracking / locking / charging
• Feasible: FL-as-a-Service scheme

What value will new digital ecosystems supporting computing continuum bring to the European market players?
Huge amount of IoT/IIoT data require decentralization and parallel processing

- Digital ecosystems as a new network of value

- To make this real, we need deep decentralization of IoT/IIoT architectures and «Data Spaces»
European Data Strategy to build a data driven society

Projected figures 2025

- 530% increase of global data volume
  - From 33 zettabytes in 2018 to 175 zettabytes
- €829 billion value of data economy in the EU27
  - From €301 billion (2.4% of EU GDP) in 2018
- 10.9 million data professionals in the EU27
  - From 5.7 million in 2018
- 65% Percentage of EU population with basic digital skills
  - From 57% in 2018

Examples of industrial and commercial data use

- Jet engines filled with thousands of sensors
- Wind farms use industrial data to reduce visual impact and optimise wind power
- Real-time traffic avoidance navigation can save up to 730 million hours
- Real-time notification of delayed trains can save 27 million working hours.
- Better allocation of resources to fight malaria could save up to €5 billion in healthcare costs globally.

Source: ec.europa.eu
Some next main streams and EU strategy

- Interoperable data spaces
- Data sovereignty & Trust
- Data Interoperability & hybrid cloud in Cloud Continuum
- Ecosystem platforms
- Digital Identity in IoT/IIoT