“IoT Security & Data Protection at a Crossroad”

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Why does it matter?

Universal applicability for any personal data collected from EU residents

and:

Art 83, al 5
“Infringements of the following provisions shall (...) be subject to administrative fines
up to 20 000 000 EUR,
or in the case of an undertaking,
up to 4 % of the total worldwide annual turnover of the preceding financial year, whichever is higher…”
Risk Management

- **End-user Acceptance**
- **Legal Risks**
- **Financial Risks**
- **Reputational Risks**
Data Protection by Design

Article 25 Data protection by design and by default

1. Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organisational measures, such as pseudonymisation, which are designed to implement data-protection principles, such as data minimisation, in an effective manner and to integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects.
Privacy by Design

Mapping:
- Stakeholders
- Data
- Processes

Analysing:
- Compliance
- Risks
- Risks mitigation
Data Protection Impact Assessment

Art 35, al 3

Where a type of processing in particular using new technologies, and taking into account the nature, scope, context and purposes of processing, is likely to result in high risk to the rights and freedoms of natural persons, the controller shall, prior to the processing, carry out an assessment of the impact of the envisaged processing operations on the protection of personal data. A data protection impact assessment referred to in paragraph 1 shall in particular be required in case of:

• …

• A systematic monitoring of a publicly accessible area on a large scale. ”
Data Protection Impact Assessment

Title/name of the dataset
Describe the Category of Internet of Things devices used to collect the data
How many devices are deployed?

Identification of Personal Data
Any data that can be easily linked to individuals shall be considered as "personal data". Please indicate if you are collecting any of the following data:
- Name of individuals
- Personal addresses
- Personal email addresses
- Personal phone numbers
- Pictures or videos on which individuals may appear
- Audio recording on which conversations could be recorded
- Personal device identifier (e.g. MAC address, IMSI number)
- Geolocation of users or users' mobile devices (e.g. tablets, smartphones, smartwatches)
- Any other personal identifier (e.g. public transport badge, access badge)

For what purpose are you collecting these data?

Information
Do you provide clear information to the public or the individuals about why you collect these data?
Is there a clear indication on how to contact the data controller and its data protection officer?

Data Subject Rights
Can the individuals access their personal data?
Can the individuals request to update their personal data?
Can the individuals object to the processing of their personal data?
Is there a clear procedure for the individuals to request the erasure of their personal data, and for the city/partners to assess such requests in accordance with the GDPR?
Is there a clear procedure for the individuals to request the restriction of the processing of their personal data, and for the city/partners to assess such requests in accordance with the GDPR?
Is there a clear procedure for the individuals to request the human intervention in case of automated processing which affects them?

Security measures
Data Controller must secure any personal data and prevent unwanted access, modification, or deletion. Do you apply the following security measures?
- Data encryption
- Protection of datasets against the risk of intrusion
- Regular backup of data on different servers
- Pseudonymisation
- Placement of servers in access-restricted areas
- Access to datasets granted to limited number of people on a need-to-know basis
- Strong authentication techniques to access personal data
- Recording of access logs to personal data
- Separation of special categories of data (e.g. health data, political data) from the others
- Other (please specify)

Data Processing Modalities
Do you process data through automated means (e.g. intelligent cameras, algorithms, Information Management Systems etc.)?
Do people within your city/organization intervene on the collected data by categorising it, deciding what to do with it, or otherwise?

According to Article 35 paragraph 7 of the GDPR, a PIA shall contain "a systematic description of the envisaged processing..."
Duty to Inform

Article 12 **Transparent information**, communication and modalities for the exercise of the rights of the data subject

1. **The controller shall take appropriate measures to provide any information** referred to in Articles 13 and 14 and any communication under Articles 15 to 22 and 34 relating to processing to the data subject in a concise, transparent, intelligible and easily accessible form, using clear and plain language, in particular for any information addressed specifically to a child. The information shall be provided in writing, or by other means, including, where appropriate, by electronic means. When requested by the data subject, the information may be provided orally, provided that the identity of the data subject is proven by other means.

2. **The controller shall facilitate the exercise of data subject rights** under Articles 15 to 22. In the cases referred to in Article 11(2), the controller shall not refuse to act on the request of the data subject for exercising his or her rights under Articles 15 to 22, unless the controller demonstrates that it is not in a position to identify the data subject. 3.
Privacy App

Category: Noise sensor
Purpose: Street noise monitoring in three dimensions.
Description: Noise sensor measuring the sound level [dBA].
Data controller: City of Carouge
Retention period: 6-12 months
Location: 46.190125 latitude 6.134022
Legitimate interest: Public health
Recipient: Internal use only
Crossborder transfer: None
Picture:
Privacy Flag Approach

Law \rightleftharpoons PRIVACY FLAG \rightleftharpoons ICT

Users \rightleftharpoons Scalability

EU legislation

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Crowdsourcing Model

Knowledge base on data protection compliance

Browser add-on

Mutualization of knowledge

Smart Phone App

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Certification

Article 42 Certification

1. The Member States, the supervisory authorities, the Board and the Commission shall encourage, in particular at Union level, the establishment of data protection certification mechanisms and of data protection seals and marks, for the purpose of demonstrating compliance with this Regulation of processing operations by controllers and processors. The specific needs of micro, small and medium-sized enterprises shall be taken into account.
EuroPrivacy
Data Protection Certification

→ Encompasses European (GDPR), national, and international obligations

→ Covers emerging technologies
  Smart Cities, Big data, Internet of Things, etc…

→ Hybrid Scheme encompassing both:
  - Products & Services (ISO 17065)
  - Information Management Systems (ISO 17021-1)

→ ISO compliant
  and easily combined with ISO/IEC 27011

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Transitionning

Reactive Approach
Adapting Technology to GDPR

Proactive Approach
Leveraging Technology for GDPR
The ANASTACIA framework includes:

1. **Security development paradigm**
   - Based on the compliance to security best practices and the use of the security components and enablers. This will provide assisted security design, development, and deployment cycles to assure security-by-design.

2. **Distributed trust and security components and enablers**
   - Able to dynamically orchestrate and deploy user security policies and actions within complex and dynamic CPS and IoT architectures. Online monitoring and testing techniques will allow more automated adaptation of the system to mitigate new and unexpected security vulnerabilities.

3. **Holistic Dynamic Security and Privacy Seal (DSPS)**
   - Combining security and privacy standards and real-time monitoring and online testing. This will provide quantitative and qualitative run-time evaluation of privacy risks and security levels, which can be easily understood and controlled by the final users.
DSPS in the context of ANASTACIA

Security development paradigm

Distributed trust and security components and enablers

Holistic Dynamic Security and Privacy Seal (DSPS)

Self-protection capabilities

Self-healing capabilities

Self-repair capabilities

FRAMEWORK

VALUE CHAIN

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Dynamic Security and Privacy Seal (DSPS)

Real Time Privacy & Security Trustability
Asymmetric Challenge

Data Protection

Cyber Security

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Assymetric Challenge

Data Protection

Cyber Security

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THANK YOU!

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