Sensor-based Networks and Data Protection

Andreas Krisch <andreas.krisch@edri.org>

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Sensor Networks

- large variety of potential applications
  - improvement of machine efficiency
  - farming: humidity measurement
  - road / airport safety
- common characteristics
  - decentralised sensing
  - centralised computing
  - huge quantities of data
  - data potentially useful for multiple purposes

Personal Data

- Three types of systems
  - systems that obviously process personal data (e.g. healthcare)
  - systems that do not obviously process personal data (e.g. farming humidity measurement)
  - systems that obviously process both (e.g. road safety)
- All three types need to be analysed!
  - the second type still can involve personal data (e.g. of the farmer)

Data Protection

- Privacy Impact Assessments
  - the more data is collected the more precise the assessment has to be
  - assess not only before deployment but already before starting research → Privacy by design! (see PRISE Project http://prise.oeaw.ac.at/)
- Data minimisation
  - only process the absolute minimum amount of data
- Effective supervision
  - strengthen Data Protection Authorities

Data Protection (2)

- Data subjects rights
  - Who / where is the controller / processor?
  - Who owns a particular sensor?
  - What are the legal grounds of processing?
  - How to give / decline consent to processing of personal data?
  - How can rights to information, correction / deletion be exercised?

Security

- Confidentiality
  - wireless communication technologies are more vulnerable than wired ones
  - encryption needs lots of processing power
- Integrity
  - sensors cannot be kept under control (manipulation is possible)
- Availability
  - without maintainance a number of sensors will fail

Security (2)

- Accountability
  - who triggered the processing?
- Liability
  - it must be (legally) provable which instance is responsible for the processing

Interoperability / Acceptance

- Interoperability
  - establish open standards to enable vital markets
  - open standards also foster innovation
  - interoperability is key for innovative applications
- Acceptance
  - trust is essential: needs privacy protection and secure systems
  - rights of the data subject must be ensured
  - environment protection is important (harmless materials, recycling, ...)

Thank you for your attention!

Andreas Krisch

andreas.krisch@edri.org

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