



**IoTSec.no kick-off, Industrial Session
5-6Oct2015, eSmartSystems, Halden**

The Need for Measurable Security and Privacy

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Technology Outlook 2020 / Transformative Technologies



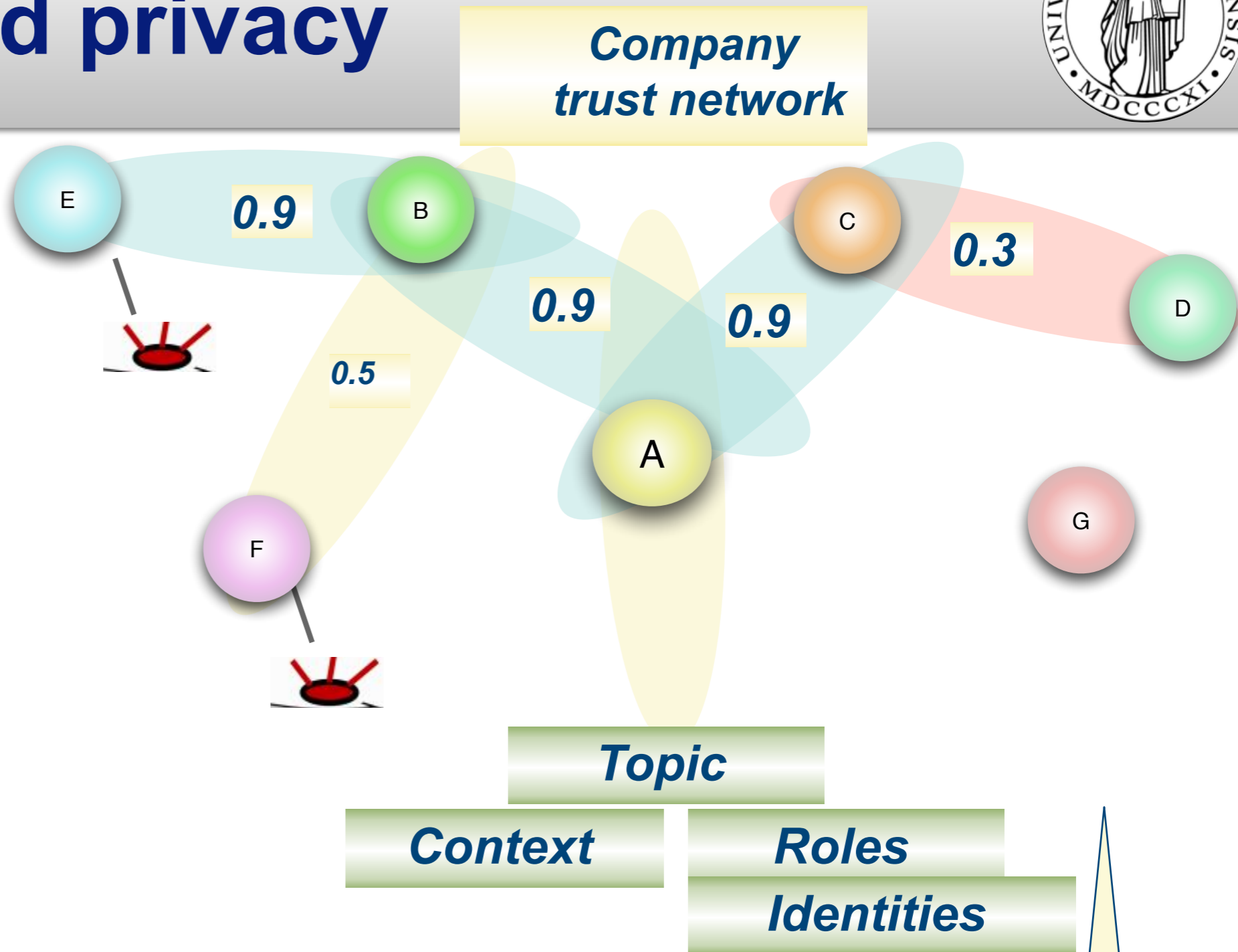
- Technology applications in Maritime, Renewables & Electricity, Health Care, Oil & Gas and Food & Water industries
 - sensors will drive automated data management
 - from passive data to automated decisions
 - automated decision tools by 2020
- Maritime: «policy driven»
- Health care: «trust» on sensor and mobile apps

“Only 59% of the public trust the energy industry,” (Edelman Trust Barometer 2013)

“In any change management process, the challenge is communicating risk,” (Peter Bjerager, DNV GL)

Trust-based privacy

- “With whom to collaborate?”
- Share data?
- Trust-based privacy
- Information and your social life

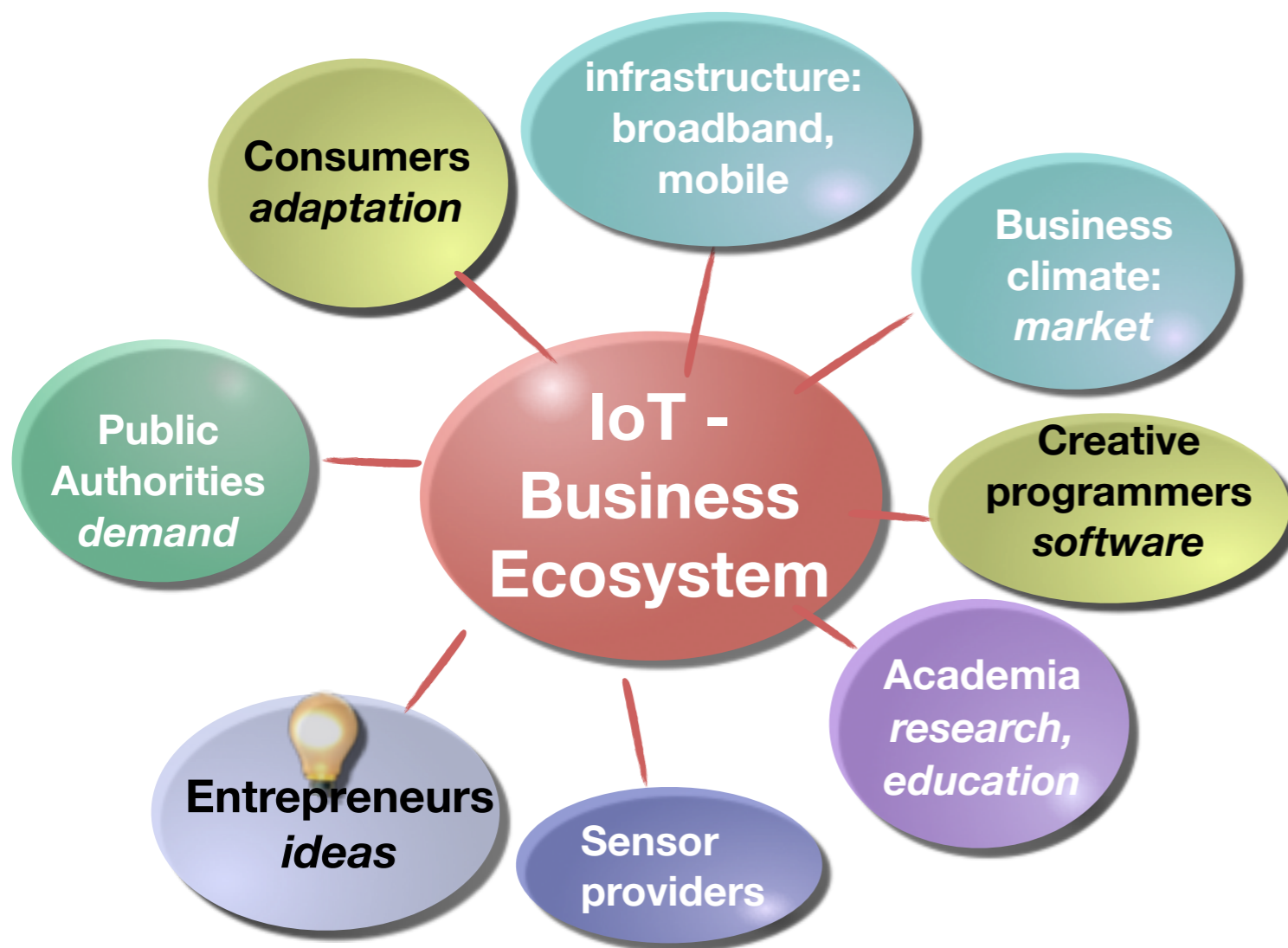


- *Measurable trust? Transient Trust?*
- *Value chains: from sensors to systems*

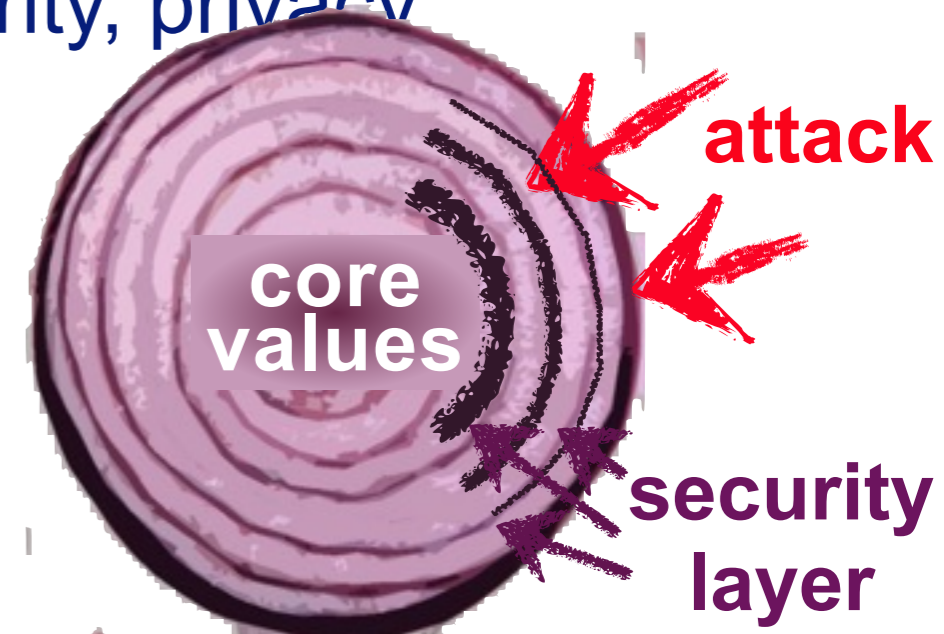
Thanks to Vladimir Oleshchuk for ideas and discussions

IoT ecosystem

Create a successful ecosystem



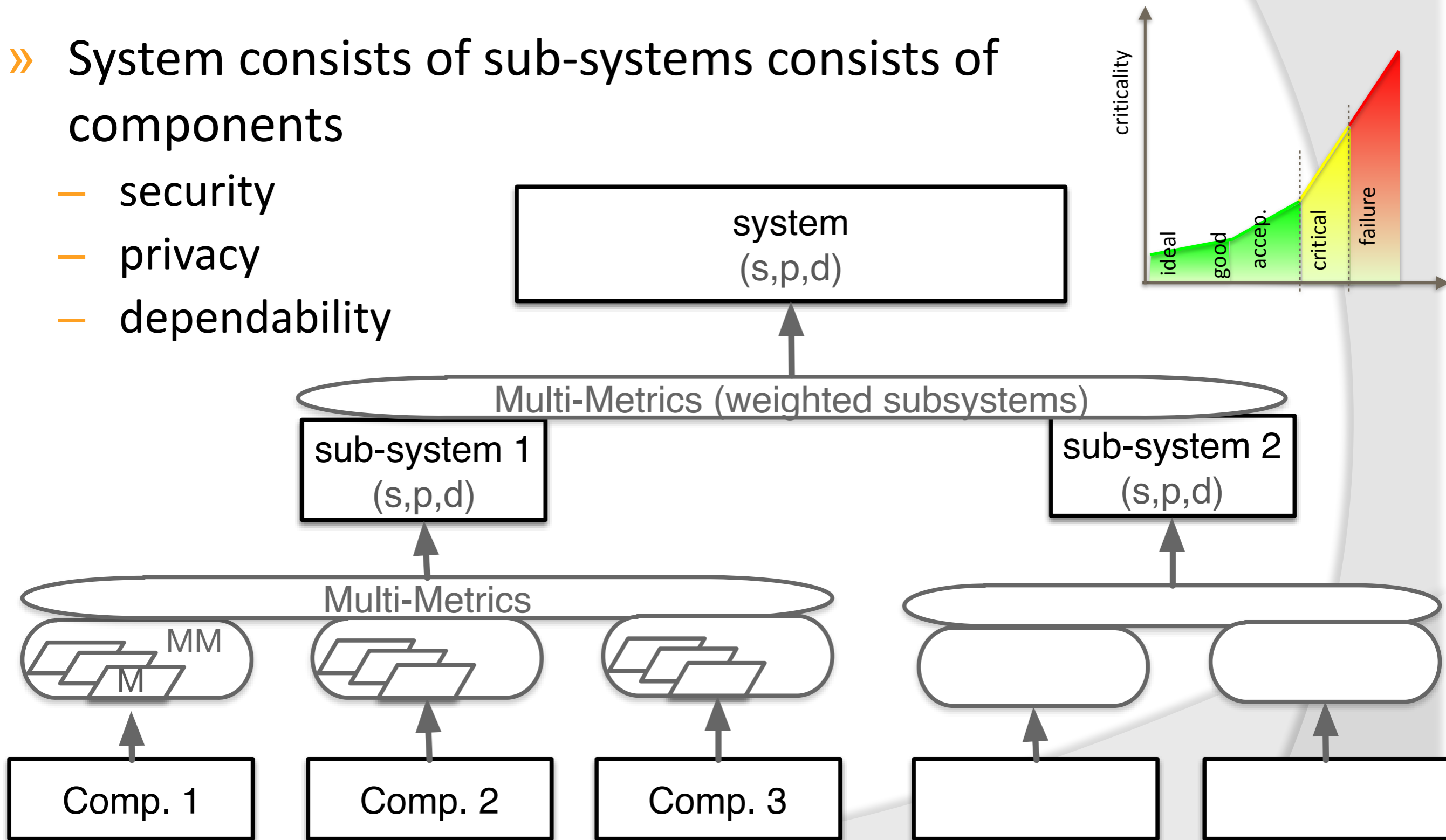
- Demand
 - mobile/wireless
 - autonomy
 - “me”, context-/content-aware
- Adaptation
 - infrastructure
 - business environment
 - trust
- Security, privacy



Multi-Metrics_{v2} - system composition

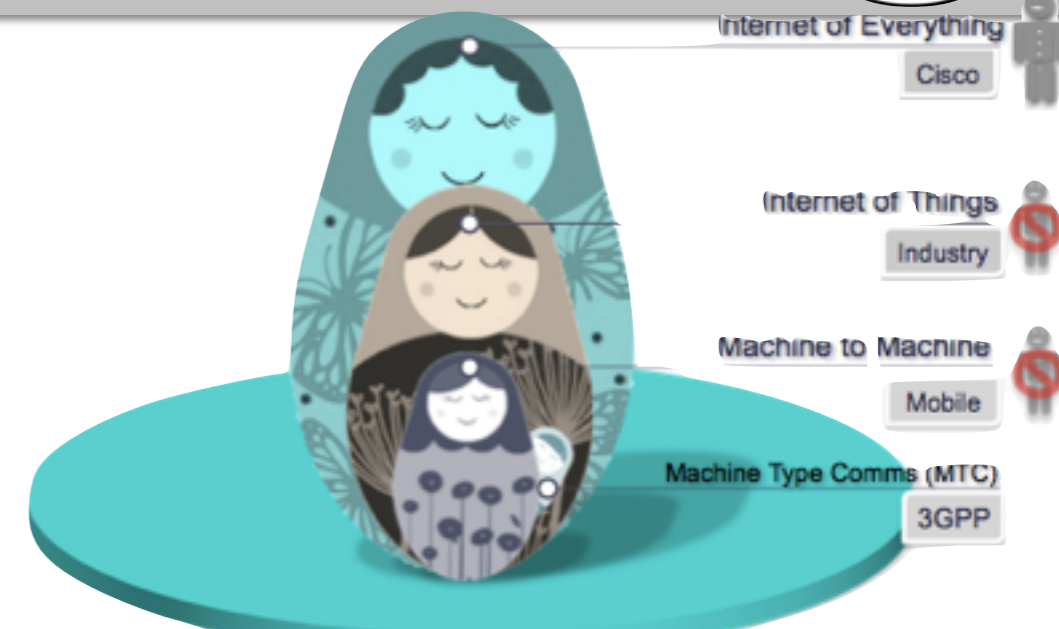
» System consists of sub-systems consists of components

- security
- privacy
- dependability

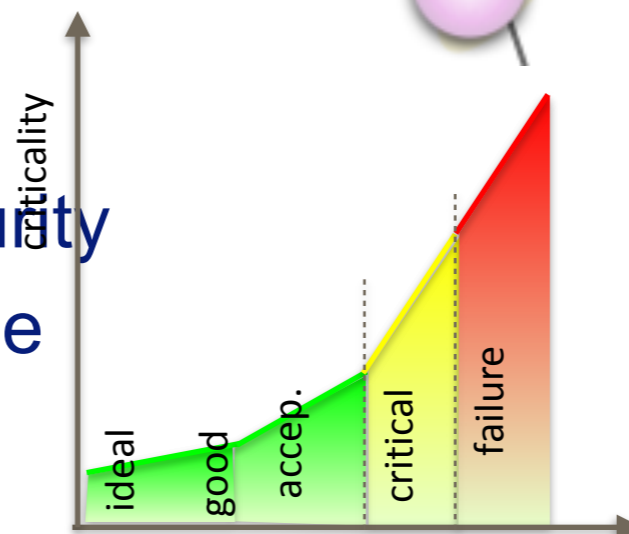
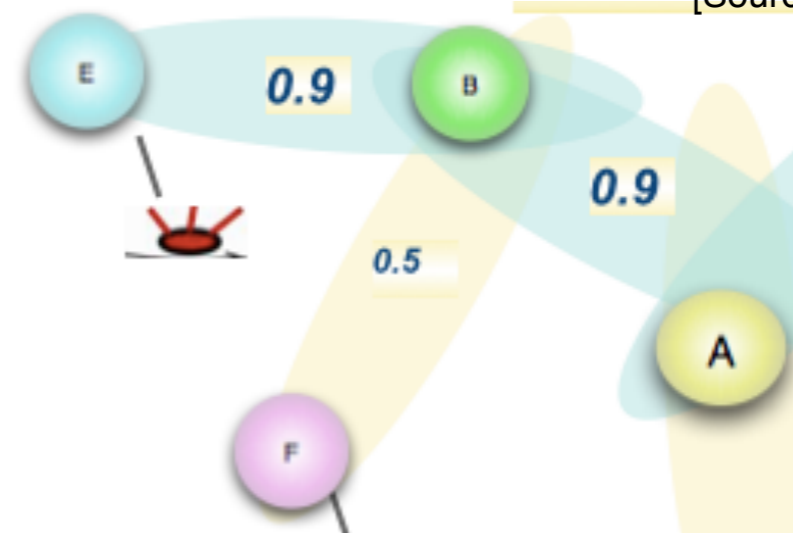


Conclusions

- Paradigm change in the Internet of Things (IoT)
 - Automated processes by 2020
 - measures of criticality
- Trust, Security, Privacy in the IoT
 - No trust without privacy
 - Novel privacy paradigm
- Measurable Security&Privacy
 - Trust entities
 - Methods for Measurable Security
 - Innovation through Measurable Security



[Source: Monique Morrow, Cisco]



SPD level	SPD vs SPD _{Goal}
(67,61,47)	(●, ●, ●)
(67,61,47)	(●, ●, ●)
(31,33,63)	(●, ●, ●)

My special thanks to

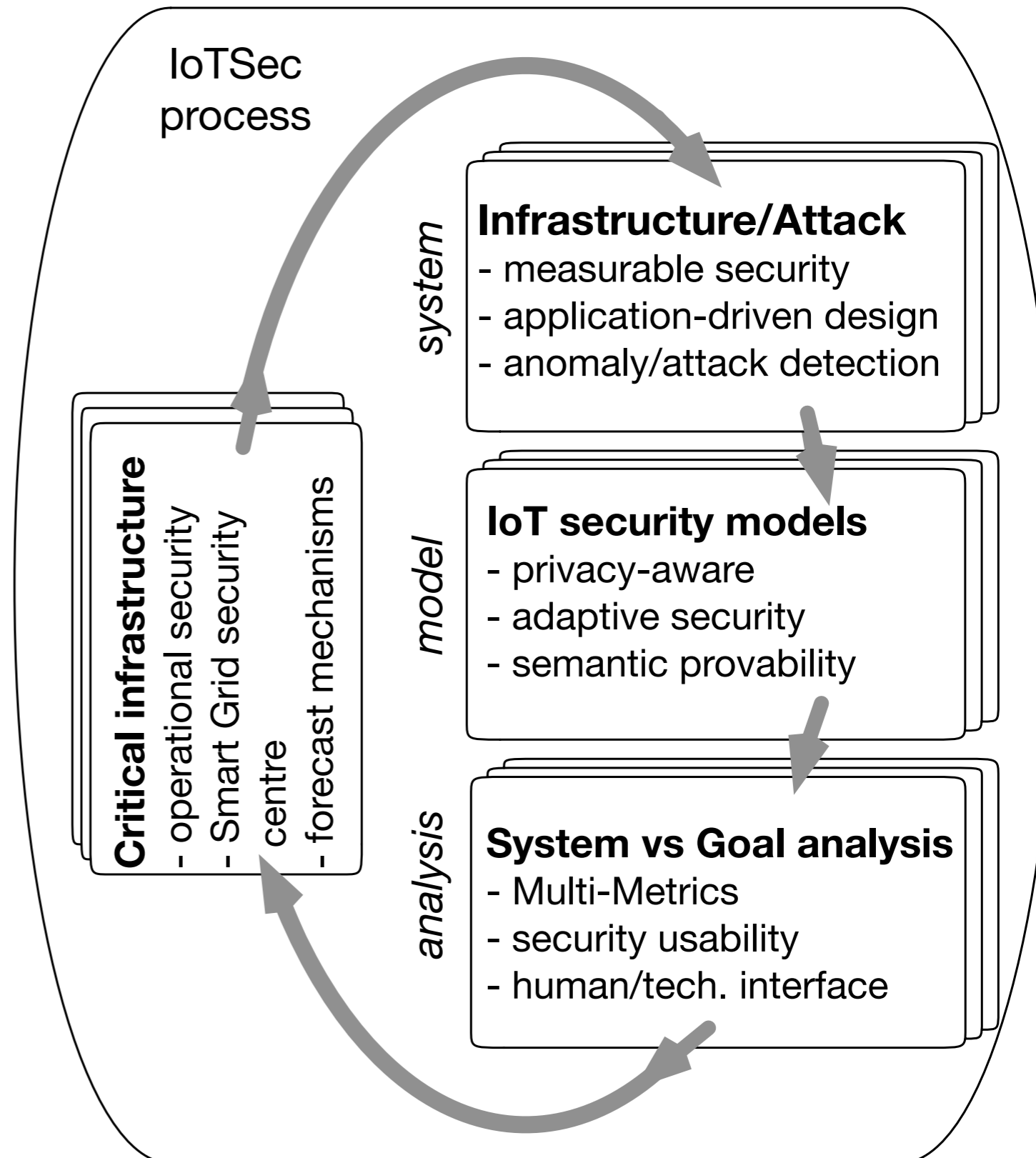


- Iñaki Garitano and Seraj Fayyad for the Smart Grid (SPD) analysis
- Erik Åsberg for the Risk Analysis and Infrastructure description
- Habtamu Abie and Dieter Hirdes for the input to IoTSec.no
- JU Artemis and the Research Councils of the participating countries (IT, HE, PT, SL, **NO**, ES)
- Bjarne Haugen for the IoT ecosystem for innovation
- Andrea Fiaschetti for the semantic middleware and ideas
- Inaki Eguia Elejabarrieta, Andrea Morgagni, Francesco Flammini, Renato Baldelli, Vincenzo Suraci for the Metrics
- Przemyslaw Osocha and Cecilia Coveri for running the SHIELD projects
- Cecilia Coveri (SelexElsag) for running the nSHIELD project
- Sarfraz Alam (UNIK) and Geir Harald Ingvaldsen (JBV) for the train demo
- Zahid Iqbal and Mushfiq Chowdhury for the semantics
- Hans Christian Haugli and Juan Carlos Lopez Calvet for the Shepherd ® interfaces
- and all those I have forgotten to mention

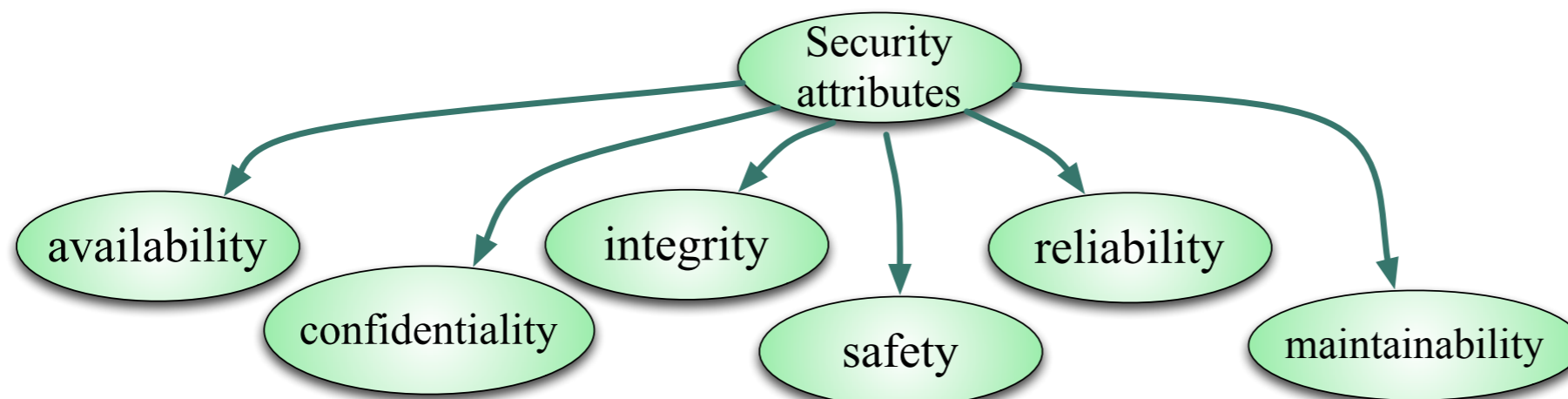
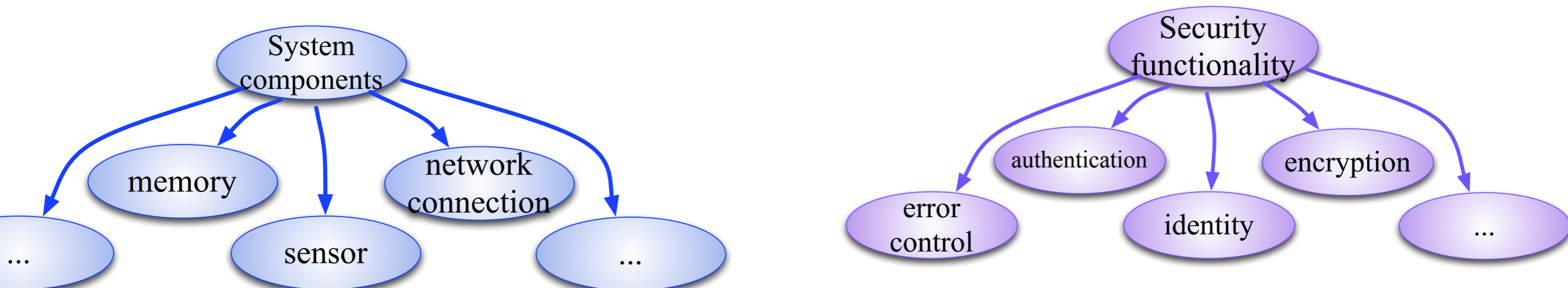
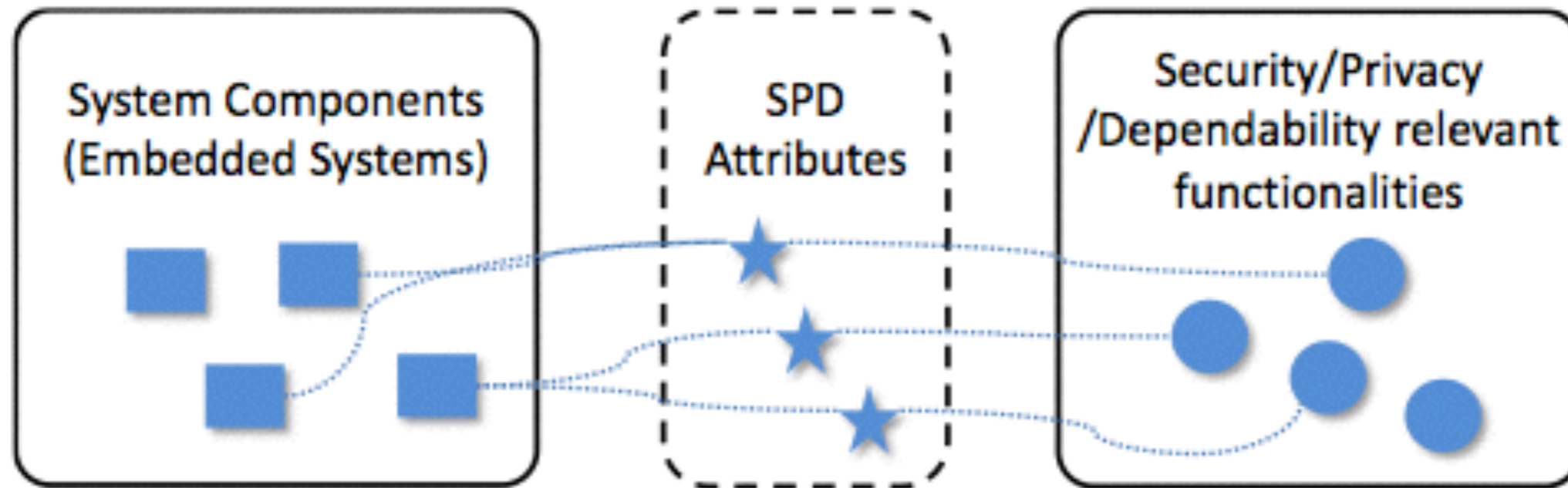
Additional information

How to measure?

- Framework (SHIELD)
- Application areas
 - Smart Grid
 - Smart Home
 - Health
- Research on
 - Risk analysis for IoT ecosystem
 - Semantic Security description
 - Adaptive Security
 - Privacy Negotiations
 - Measurable Security and Privacy
- Smart Grid Security Centre



Security description



The Smart Grid in the close future



- Smart grid with prosumers
- various control mechanisms
- attack scenarios
- critical infrastructure

