

Year 3 activity @ IFI

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Outline

Questions to answer – 10 min by each partner

- ▶ status of deliverables, scientific papers
- ▶ main focus
- ▶ other measurable achievements
- ▶ impact for Smart Grid Security Centre

Status of deliverables, IFI

- ▶ D0.10 Scientific Paper #7 **done**
- ▶ D1.2.2 Methods for measurable security (final) **done**
- ▶ D2.3.1 Semantic Provability Framework (draft) **done**
 - ▶ additions from Seraj/Josef about their work could be added

Scientific papers 2017 (IFI part I)

- ▶ Shukun Tokas, Olaf Owe and Christian Johansen. *Code Diversification Mechanisms for Securing the Internet of Things*. 29th Nordic Workshop on Programming Theory. Turku, Finland, Nov. 1-3, 2017. (*Invited for Journal Publication*).
- ▶ Toktam Ramezanifarkhani, Farzane Karami, Olaf Owe. *A High-Level Language for Active Objects with Future-Free Support of Futures*. 29th Nordic Workshop on Programming Theory. Turku, Finland, Nov. 1-3, 2017.
- ▶ Toktam Ramezanifarkhani, Elahe Fazeldehkordi and Olaf Owe. *A Language-Based Approach to Prevent DDoS Attacks in Distributed Object Systems*. 29th Nordic Workshop on Programming Theory. Turku, Finland, Nov. 1-3, 2017 (*Invited for Journal Publication*).
- ▶ Olaf Owe, Toktam Ramezani and Elahe Fazeldehkordi: *Hoare-style Reasoning from Multiple Contracts*. iFM'17 Torino, Italy, September, LNCS 10510, p. 263-278, Springer, 2017.

Scientific papers 2017 (IFI part II)

- ▶ Olaf Owe, Toktam Ramezanifarkhani: *Confidentiality of Interactions in Concurrent Object-Oriented Systems*. 12th International Workshop on Data Privacy Management (DPM 2017). Co-located with ESORICS, June Oslo, LNCS 10436, p. 19-34, Springer, 2017.
- ▶ Peyman Teymoori, Toktam Ramezanifarkhani: *Game-Theoretic Analysis of Markovian Play Order in Wireless Networks*, In proc. International Conference on Networked Systems (NetSys'17). Mar. 13-17, 2017 Göttingen, Germany, IEEE. p. 57 - 64
- ▶ Olaf Owe, Charlie McDowell: *On Detecting Over-Eager Concurrency in Asynchronously Communicating Concurrent Object Systems*. Journal of Log. Algebr. Meth. Program. (JLAMP) Elsevier, Volume 90, p. 158–175, 2017.
- ▶ two journal papers in review

Publications III (the activity of Christian Johansen) 2017

- ▶ Thomas Troels Hildebrandt, Christian Johansen, Håkon Normann: *A Stable Non-interleaving Early Operational Semantics for the Pi-Calculus*. LATA 2017: 51-63
- ▶ Sergiu Bursuc, Christian Johansen, Shiwei Xu: *Automated Verification of Dynamic Root of Trust Protocols*. POST 2017: 95-116
- ▶ Bjørnar Luteberget, John J. Camilleri, Christian Johansen, Gerardo Schneider: *Participatory Verification of Railway Infrastructure by Representing Regulations in RailCNL*. SEFM 2017: 87-103
- ▶ Sergiu Bursuc, Christian Johansen, Shiwei Xu: *Automated verification of dynamic root of trust protocols (long version)*. CoRR abs/1701.08676 (2017)

Main Focus I: Modeling IoT systems

- ▶ modeling/programming framework for Distributed systems
 - ▶ including **privacy** and **security** aspects
 - ▶ developing **IoT** friendly paradigms
 - ▶ developing language support (**SeCreol** - Secure Creol)
 - ▶ developing methodology and technology for **tool** support
 - ▶ static checking
 - ▶ verification
 - ▶ run-time checking and monitoring
 - ▶ diversification techniques
 - ▶ safe firmware updates
- ▶ **case studies**
 - ▶ smart homes
 - ▶ DDoS
 - ▶ Health
 - ▶ reuse case studies from SCOTT?

Main Focus II: Understanding IoT systems

- ▶ functionalities for IoT
 - ▶ ontology (new master student) NR?
 - ▶ adding life-cycle-aspects

Other Measurable Achievements

- ▶ more papers
- ▶ more projects/project cooperation
- ▶ project proposals
- ▶ exploit collaboration with **international partners** through
 - ▶ joint papers/supervisions/projects/proposals
- ▶ interaction/ with results from **Gemini Center** (1 PhD from IFI)

impact for Smart Grid Security Centre

- ▶ competence on modeling of IoT systems
 - ▶ modeling, including privacy and security aspects
 - ▶ model checking and analysis
- ▶ Possible cooperation:
 - ▶ **Pedro Barbosa**, from Federal University of Campina Grande, Brazil.
 - ▶ Privacy by Evidence: A Software Development Methodology to Provide Privacy Assurance
 - ▶ completing PhD, available for SGSC if funding