



IoTSec

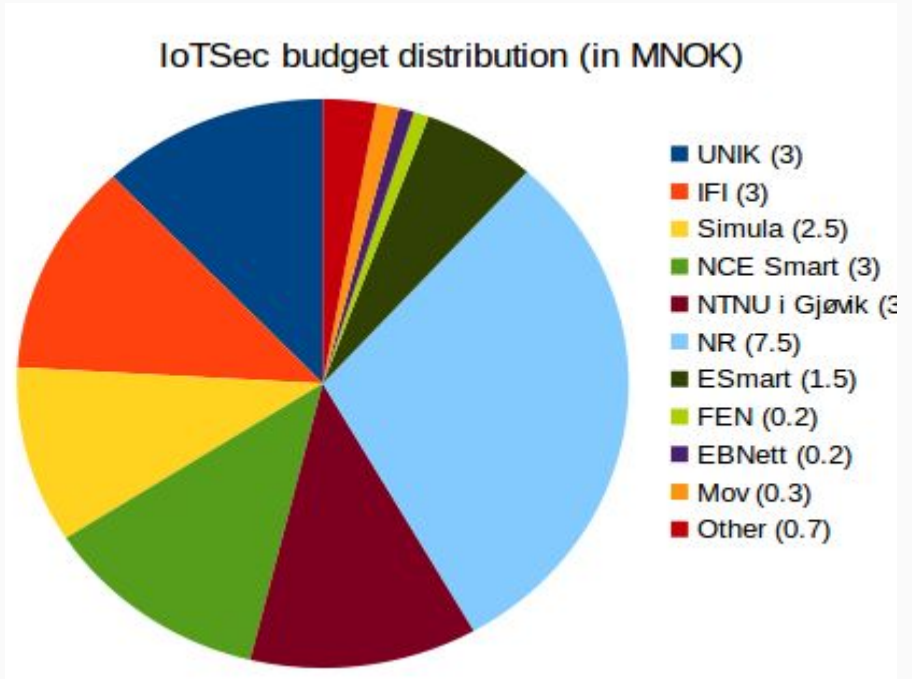
Major Achievements of Year 1

by Christian Johansen (COO)

Core Team and Resources



- UNIK@UiO (from 1Jan2017 Institutt for Teknologisystemer (Seraj Fayyad, Christian Johansen, Danica Radovanovic, MSc, ++)
- IFI@UiO (Olaf Owe, Josef Noll, Toktam Ramezani, Elahe Fazeldehkordi, MSc ++)
- Simula (Yan Zhang, Ming-Chang (Leo) Lee)
- NCE Smart (Dieter Hirdes, Heidi Tuiskula, Håkon Duus)
- NTNU (Einar Snekkenes, Adam Szekeres)
- Norwegian Computing Centre (NR) (Habtam Abie, Ivar Rummelhoff, Sigurd Eskeland)
- eSmart Systems (Davide Roverso)
- Fredrikstad Energi (Vidar Kristoffersen)
- Glitre Energi Nett (Otto Andreas Rustand)
- Movation (Seraj Fayyad)



- Public (and Admin) [wiki](#) with most of our work (a wiki can be edited by everyone, and the information is meaningfully managed)
 - Publications pages with links to all public documents, presentations, etc.
 - Research description of the project, with public deliverables available
 - Student corner, with MSc topics (open, ongoing, and finished)
 - Consortium and other collaborators descriptions and contact points
 - Meetings info with minutes and presentation materials, etc.
- Sharing platforms
 - Google Docs, OwnCloud server, mailing list,
- Disseminating together
 - Active Twitter account available to all members

Working together



Project info - Y1 highlights

- 2 PhD and 3 PostDoc positions are filled, offer for the final PhD position was accepted
- Consolidated plans for Smart Grid Security Centre are established.
- Extended Collaboration with Groups and Initiatives, grown from 11 to 19 partners
 - UiA joined, and 6 external professors (UiA, UiO/Simula, Chalmers, Univ Copenhagen)
- EU Horizon 2020 project INVADE accepted
 - coordinated by IoTSec partner NCE Smart, with 3 partners from IoTSec
- JU ECSEL project proposal SCOTT submitted as IA,
 - UiO as Technology Leaders and Norwegian consortium coordinator
- Strategic Research Partnership of UiO with the Virtual Vehicle Research Centre (Austria) on security and digital systems
- Personal Awards
 - Dieter Hirdes got membership in the Advisory Board for EU Energy Group of H2020,
 - Josef is Research Fellow at the Virtual Vehicle Research Centre in Austria

Networking, Dissemination, Collaboration



- **Organized** meetings and workshops to collaborate inside the project, but also with externals.
 - 17 physical meetings including workshops and face-to-face consortium meetings
 - 6 phone consortium conferences, supporting the face-to-face meetings
 - Industrial forums, with externals invited to present results from their institutions, e.g.:
 - KraftCert,
 - Eidsiva Energi Nett,
 - Datatilsynet and
 - Chalmers University.
- We **participated** in a variety national and international forums relevant to the topics of IoTSec; these include both industrial forums as well as research ones.
 - 10+ presentations in relevant events (international or national)
At e.g.: SmartGrid Conference, Nemko, Sintef, NCE partners forum, Energi Norge, LO IKT konferansen, 12th Int.Conf. Integrated Formal Methods, ACSAC Conference, NWPT.

Networking, Dissemination, Collaboration



- [Partners](#) overall increased to 19.
 - Ongoing discussions with NVE, Nkom, Oxford, TU Darmstadt.
- Dedicated face-to-face meetings organized with other actors :
 - Hafslund, Agder Energi, Eidsiva Energi, Kragerø Energi
- [Extended the collaboration](#)
 - Include 6 academic collaborators
 - Invited 6 associated international partners to strengthen our academic visibility
 - Extended IoTSec with 8 associated national partners to build the ecosystem
 - Great involvement of Public sector
 - Datatilsynet, Forbrukerrådet, and Norwegian SmartGrid Centre
- Teaching and Students
 - MSc (1 finished, 5+ ongoing, 10+ open topics) - see [Student Corner](#) on wiki
 - [New courses](#) : IoT Security (UNIK) and Energy Informatics (Ifi)
plus existing courses on security, networking, modelling, (now geared towards IoT)

Y1 goals and focus

- First year allowed the partners a more **exploratory work** so to investigate various aspects of IoT, Security and Privacy, and the Electricity grid.
- **Purpose** was to
 - analyse problems from the various facets of the Grid and IoT
 - identify the most urgent and with most impact.
- Their conclusions were fuelling the Smart Grid Security Centre (SGSC) topics and initial agenda.
- The **goal with immediate impact** was
- Establish SGSC
 - as a knowledge centre for the (Smart) Electricity Grid industry
 - offering services that would help the industry with the most stringent problems
 - help with the transition to the future SmartGrid and the IoT
 - expertise on business opportunities and novel services in SmartGrid and SmartHome

Arena for students/industry



- **CPS Lab** at UiO (for Cyber Physical Systems) starting in 2017.
 - **Applicants:** Christian, Josef, Olaf, Josh (from IoTSec), and Frank Eliassen, Amir Tahercordi (close partners to IoTSec managing the Energy Informatics at UiO), and Gyorgy Kalman (from Mnemonic)
- **Purpose:** create a meeting point for Industry and Students, working on practical problems coming from IoTSec domain (i.e., IoT, Energy, Privacy, and Networks).
 - Students (MSc and BSc) get hands-on and practical problems, + the necessary lab material, e.g., IoT devices to hack, SmartMeters, software licences, etc
 - Industry get a point to meet (and select) students, to interact with experts (researchers) and to test their devices and ideas.
- Will be **provided to the Smart Grid Security Centre**.

Scientific achievements



- Semantic system description
 - Understanding the system and describing security through semantic modelling
 - [Measurable security](#) - the [novel](#) security concept
- Security modelling
 - Development of privacy-aware models and measures
 - Adopting and enhancing adaptive security for system of systems
 - Formal languages for semantically proving security/privacy
- System versus Goal analysis
 - [Application-specific](#) security/privacy, e.g. billing vs privacy and profiling
 - Human/technical interface, security usability
- Operational security for IoT-based critical infrastructure
 - IoTSec ecosystem -> [extended network](#) of collaborators
 - [Roadmap](#) for [Smart Grid Security Centre](#) (SGSC)
 - (Gap Analysis of security methods for critical infrastructures)

Challenges



- Scientific challenges
 - missing descriptions of distribution grid
 - “security by obscurity”
 - different security viewpoint
- Collaboration challenges
 - Academic versus industrial viewpoint
 - “language mismatch”
 - Academic: long term, open available information, e.g. Smart Home focus
 - Industry: current challenges, e.g. focus on grid
 - Focus on Smart Grid Security Centre (SGSC)
 - Different expectations about contributions into the SGSC
 - Academia wants focus on science

Increasing visibility through active participation in international proposals.

The **accepted grants** are:

- **INVADE** (Horizon 2020)
 - NCE Smart are Coordinators (Dieter and Heidi)
 - Budget ca. 16 M€ for 12 European partners (including eSmart Systems)
 - In the field of SmartGrid & Storage.
- **SCOTT**: Secure COnnected Trustable Things (ECSEL-Joint Undertaking)
 - VIF in Austria are overall coordinators for 56+ partners from 12 countries.
 - UiO (Josef and Christian) are overall Technology Leaders and coordinate the seven Norwegian partners.
 - Overall Requested funding ca. 34 M€ with Norwegian requested funding ca. 3 M€.

New Grants



- Excellent growth of scientific network
 - from 11 to 19 partners
 - extended both towards industry, public entities, and international collaborations
- Good Scientific outcome
 - PhD students hired
 - PostDocs in operation
 - Topics identified, future work addressed
 - Key concepts, a.o.
 - “Measurable Security” adapted in SCOTT (54 partners from 14 countries)
 - “Privacy labelling” suggested in collaboration with Consumer Services
- Good involvements of students and teaching
- Excellent success rate of novel projects
 - H2020 Invade, JU ECSEL SCOTT

Summary of Y1

Major Achievements



More organization matters



Steering representatives:

- UiO: Olaf Owe
- UNIK: Stian Løvold
- NTNU: Nils Kalstad Svendsen, Sofie Nystrøm
- NR: Åsmund Skomedal
- Simula: Yan Zhang
- NCE Smart: Dieter Hirdes
- eSmart Systems: Davide Roverso
- Glitre Energi Nett: Otto Andreas Rustand
- Fredrikstad Energi Nett: Vidar Kistoffersen
- Movation: Bjarne Haugen

Project leadership:

- Josef Noll
- Christian Johansen, COO
- Stian Løvold, Project owner

Steering Board leader:

- Bjarne Haugen

Security Officer:

- Otto Rustand

Confidential and security-critical material



Information available on the wiki

http://cwi.unik.no/wiki/IoTSec:Secure_and_Confidential_information



Confidential and secure information

The steering board has decided on the [Steering board meeting 27Oct2016](#) to adapt the following guidelines and continues work on these topics.

Confidential information

- Documents which are given to the project being confidential to the project shall be watermarked by *IoTSec confidential, shall not be distributed outside of the project without consent*¹
- Deliverables being confidential shall be stored on the project server, e.g. owncloud.unik.no

Security-critical information

Each project participant is asked to not publish security-critical information. If a participant regards information as potentially security-critical, he shall ask IoTSec's security officer for

