ETIP SNET WG4 Update

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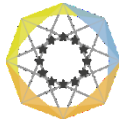
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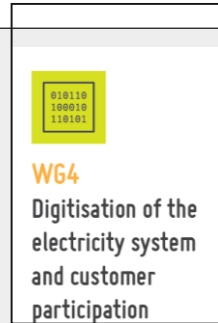linkedin.com/groups/8208338

ETIP SNET WG4 : Digital Energy

WG4
Digitisation of the electricity system and customer participation

Maher Chebbo (Chair)
Esther Hardi (Co-Chair)
Miguel A. Sánchez Fornié (Co-Chair)

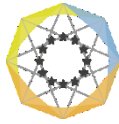**Task Force 1**
Antonello Monti
George Huitema

Task Force 2

Elena Boskov-Kovacs

Task Force 3

Marcus Meisel

Digital Technologies (enablers)

Digital Use Cases (services)

Digital Cyber Security (Robust)

Technical Position Paper WG4 – TF1

ETIP SNET PLAN. INNOVATE. ENGAGE.

Digitalization is affecting the energy system at every level. In particular, the transformation from an electromechanical system to an electronic system is a fundamental change that will transform the fundamental principles around which the energy system is operating.

Recommendations:

- Need for new principles of operations in a power electronics driven grid

- Enabling sharing of infrastructures such as 5G to support joined investments schemas

- New and overarching architectures able to include customers and the interactions with other verticals

- Creating a culture of open API to exploit the strength of open source in the energy sector

- Development of open platforms for a data economy

- Need for trust technologies such as, e.g. Blockchain

- Need of adequate service management and operations exploiting modern data analytics

- Need of adequate education breaking barriers between energy and ICT

- Adaptation of legislation and regulation to better support investments in software solutions

Immediate Action:
- Organize meetings for preparing proposals in all urgent to midterm-future areas

Upcoming dissemination activities:
- Preparation of at least one journal paper to disseminate the key results of the position paper
- Presentation at the Workshop on 15-16/10 in Brussels on the topic data platforms

Outlook – increasing visibility in scientific community as well as industry representatives
- Participation at events with speaking engagement
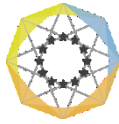
Technical Position Paper WG4 – TF2

With respect to the traditional concept of a Smart Grid and Smart Networks, the digitalization process involves other new factors such as Customer involvements and possible disruptive new business models that could emerge from this involvement

Recommendations for Research:

- Enabling monitoring, visualization, and analytics for every stakeholder group
- Building data hubs with new data sets
- Cross-sector coupling – needed to offer complete service to customer
- Local energy communities – offer benefits but need further work on regulation and ownership structure

- strong collaboration between industry leaders and utilities
- Existing infrastructure such as smart metering should be further exploited and utilized
- Establishing Innovation/Expert centers – case in point for EV penetration
- Data transformation – digital twin

- Decomposing blockchain challenges through research
- Customer empowerment – needs not only technology but behavioural change
- TSO-DSO cooperation and coordination

Immediate Action:
- Organize meetings for preparing proposals in all urgent to midterm-future areas

Upcoming dissemination activities:
- 6-8 November 2018 – as part of European Utility Week, Vienna there will be an Austrian held event related to R&I actions in Austria and ETIP SNET presentation will be given to the community
- 29 November 2018, Portoroz, Slovenia – CONFERENCE OF ICT PROFESSIONALS IN ENERGY SECTOR, Slovenia and ETIP SNET presentation will be given

Outlook – increasing visibility in scientific community as well as industry representatives
- Participation at events with speaking engagement
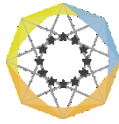
Technical Position Paper WG4 – TF3

Cyber-security is a crosscutting issue enabling the safe and secure use of new products, services, and technologies, in an increasingly more distributed energy system with a tighter inclusion of customers as prosumers.

Recommendations for Research:

Technology (now)

1. AI helps cybersecurity industry monitoring sophisticated threats
2. Blockchain promising: authentication, authorization, consensus, immutability
3. Blockchain offers secure decentralized guarantee of veracity of transactions
4. Digitalization relies on massive deployment of sensors for analysis
5. IoT enabled devices make energy system more transparent and efficient
6. Highly networked components: safety is not reachable without cybersecurity
7. Machine Learning enables predictive analytics, helps detecting cyber attacks
8. OT/IT cybersecurity raises question of on-premise vs cloud-based calculation
9. Grid optimization applications require decentralized grid asset deployment

Policy (now-midterm)

1. Metrics and frameworks to be developed for decision making of risks
2. Stakeholders operating in isolated silos need a communication platform
3. Cybersecurity research at a meta level should be stimulated
4. Transparency of data flows & standardized data models required for GDPR
5. Cost benefit analyses shall be considered (e.g., black out simulators)
6. Research on regulation securing cybersecurity investments recommended
7. NIS good but go further, large-scale interdisciplinary attack scenarios
8. Knowledge databases should be shared to access known vulnerabilities
9. Regular trainings are key for our critical infrastructure resilience

Future challenges (midterm)

1. Society and energy users need awareness about cybersecurity in energy
2. Involvement of energy users necessary to achieve desired risk protection
3. Quantum cryptography is a promising disruptive computing technology
4. Simulation is promising to quantify cyber-attack impacts on energy systems
5. In field demonstrations cryptographic open protocol solutions preferred
6. New communication technologies (5G) need new methods to guarantee SLAs
7. Bio- and nano-technologies raise cyber threats; Tools, education etc. needed
8. Robotics introduces new threats , which requires research e.g., identification
9. Autonomous vehicles, such as drones, cars, require new mitigation strategies

Immediate Action:
- organize meetings for preparing proposals in all urgent to midterm-future areas
- create standard ETIP SNET framework context content to include in proposals

Upcoming dissemination activities:
ICT 2018, 4-6 December 2018, Vienna, Austria – 2000+ participants
https://ec.europa.eu/digital-single-market/events/cf/ict2018/item-display.cfm?id=21971

Outlook – increasing visibility in scientific community
- Special issues of paper chapters, magazines, journals
- Cybersecurity events (speaking engagements)

WG4 Deliverables

- Feedback vision 2050, R&I roadmap & Implementation Plan

- Participation in the Regional Workshops

- Communicating the activities of the WG4 in public events

- Active participation : on average 45 out of 60 participe

- Calls and physical meetings focus 100% on content (Innovations) !

- New experts welcome to join (e.g. Blockchain & CyberSecurity)

- **A TECHNICAL WG4 white paper (170+ pages) ready to be published NOW**

- **An Executive WG4 white paper (20 pages max) ready early November**

Roundtable discussion
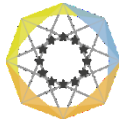
- What's the role of Digital within the vision 2050?
- What's the definition of Digital versus ICT?
- Is the digital technology ready for the Energy transition?
- What digital use cases will make SmartGrids happen?
- Is Blockchain an opportunity?
- Is CyberSecurity still a big risk? What are the challenges?
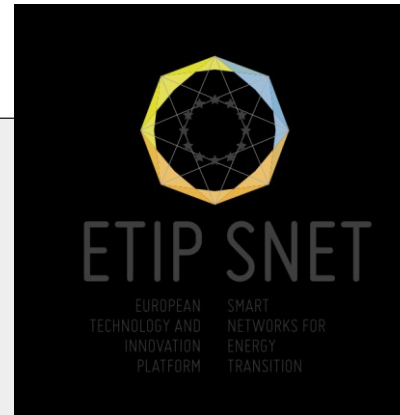
Thanks for your attention

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