

SECURING THE SMART GRID TOWARDS UP TO 100% RENEWABLES

SUCCESS Project Open Day

Panel 3:

- a. Cost of service vs. cost of investments;
- b. Properly tracking KPIs and minimizing penalties;
- c. New business model opportunities;
- d. Regulation on prioritization of the data traffic to ensure optimal operation of critical power distribution infrastructure

Romanian Energy Center organized in Bucharest, during 28th and 29th of June 2018, the conference “Securing the Smart Grid towards up to 100% Renewables”. Attended by more 70 energy specialists, decision and policy makers from Romania and several European countries, the event bridged eight research projects consortia: SUCCESS, RESERVE, SOGNO, NRG5, CROSSBOW, WISEGRID, NOBERGRID and DEFENDER.

The first day of event comprised of three panel discussions and eight specific projects and technology presentations, grid codes and the regulatory and legal issues for RES.

The second day of event included a trip to two pilot sites as part of the SUCCESS Project Romanian trial, one in Stalpu – Buzau County and the other one in Ploiesti – Prahova County.

The panel 3 focused on the **SOGNO project** and it was attended by a group specialist including project partners representatives having complementary expertise, from DSOs environment, academic and ICT.



Moderator: **Fiona WILLIAMS** - ERICSSON

Panelists: **Mirela DIMA** – CEZ, **Emil CONSTANTINESCU** – ELECTRICA, **Karen McGEOUGH** – ESB, **Kai KLOECKNER** – RWTH, **Paul PASCHIEVICI** – TELEKOM, and **Adrian TANTAU** - ASE.



The energy systems of 2025 will be based on increasing levels of RES penetration and DSO's will need new insight into how their networks are performing to optimize their operations financially. At the same time, the 5G mobile networks will be deployed by 2025 offering low latency, high availability services enabling data driven control. The evolution of the energy sector is increasingly focused on energy as a service. What DSOs now need is to accelerate their ability to introduce innovations, such as those based on the sharing economy, by themselves using services increasing their flexibility to adapt and reducing their need for fixed investments. SOGNO is addressing this challenge by combining the application of deep intelligence techniques, industry grade data analysis and visualization tools, advanced sensors, an advanced power measurement unit and 5G based ICT to provide fine grained visibility and control of both MV and LV power networks using end to end automation in a virtualized environment.

The lack of automation and of efficient and appropriate services at the DSO level can generate (for example in case of extreme weather phenomena) situations in which the interruptions of electricity supply to consumers are lately reported and remediation also occurs with significant delays. Nowadays, such situations are becoming more and more common and are generating great discomfort to clients.

The solutions and services that will be analyzed, tested and implemented in SOGNO, as "SOGNO power network management software services" refer to: Fault Location Identification and System Restoration (5G needed), State Estimation (NIIoT or LTE or 5G), Load Forecasting (NIIoT or LTE or 5G), Power Control (NIIoT or LTE or 5G), Power Quality Evaluation (NIIoT or LTE or 5G), and Utility KPI evaluation for QoS evaluation (LTE or 5G needed). These services will be supported by Deep Learning data-driven control algorithms and a low-cost PMU (Phase Measurement Unit) developed in the project.



The implementation of these services aims to validate the following use cases:

- Operations optimisation for utilities
- Condition based preventive maintenance
- Automated predictive maintenance
- Safety and security from a restoration perspective and grid resilience perspective
- Green Energy and Smart Cities



Considering the context of the SOGNO project presented in the introductory phase of panel discussions by the moderator Fiona Williams from Ericsson, as well as the panelists' own experiences and perceptions, the following information and points of view were highlighted within the panel discussions:

- The representatives of three DSOs (CEZ, ESB and Electrica) appreciate to the same extent that improving the quality of the service provided to the customers is a major concern, and especially reducing interruptions alongside other important issues in the customer-DSO relationship will allow the provision of a better-quality service.



- DSOs have this preoccupation and even openness in assuming costs to allow such services to be contracted, but they are also concerned about regulatory context: clear rules on costs recognition by the regulator are more than necessary; it has also been pointed out that managing the relationship with regulators in this regard is not a simple process, it involves going through a series of steps that will produce a change of mindset in regulations.

• The technical benefits of using 5G technology compared to existing technologies have also been discussed, and it has also been mentioned that this technology with superior performance to the existing technology is well suited to urban areas, but difficult to implement (involving significant costs) in non-urban areas where users are very widespread.

- A question mark was raised as to whether regulations should allow DSOs to provide only regulated services or not; the panelists thought the answer was "yes," the services need to be regulated, but this "yes", quite categorically, raises a second question mark, "when?"
- Even though national regulatory authorities in different European countries have a very good understanding of the context and are well intentioned to support the issues discussed, regulations that can be adopted by themselves (classified as secondary legislation) are blocked by the lack of a favorable framework on the primary legislation; from this perspective, the unlocking of the situation can take place through an improvement in the primary legislative framework, allowing regulators to go further with necessary changes



- The network codes were also discussed, as well as the fact that in the new context of increasing the percentage of RES in the energy system, and of increasing the prosumer's role in this equation, the energy market is facing some deep changes; having this new context, ITC's role exponentially increases in the new market configuration and will require a dedicated ICT chapter within network codes



- Increasing self-sufficiency (e. g. due to the increasing number of prosumers) in micro grids or small energy communities leads to less consumers financing the rest of the grid and could result in higher electricity prices for non-prosumers in case that regulations will not change accordingly

