

**SPECIAL REPORT FOR GROUP C5\_D2  
(SC C5-Electricity Markets and Regulation)  
(SC D2-Information Systems and Telecommunication)**

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**Special Reporter**

## **1. Introduction**

The SC C5\_D2 common Paris session is organized around one preferential subject, with a total of 11 papers. This session is a common initiative of the two CIGRE study committees C5 for “Electricity Markets and Regulation” and D2 for “Information Systems and Telecommunication”, that wanted to underline that no market can exist without information system and that information systems are permanently challenged by new market needs.

The Preferential Subject deals with Information and Communication Systems in the deregulation of the electric sector:

- ✓ Impact on the information and communication systems of the unbundling of vertically integrated companies,
- ✓ Implementation of the new market oriented services,
- ✓ Integration of the new Information and communication system.

Markets and information systems have been the two faces of same evolution of the power sector for a little less than twenty years; this could be the main conclusion of the presented papers.

Unfortunately all these papers come from North America and Europe that is why during the session, contributions from other parts of the world would be particularly welcome. Nevertheless as the topic of this session is permanently evolving, new information from Europe and North America will be also very interesting.

New information systems were developed and are still under development to create wholesale and retail markets, it goes from dedicated IT for new actors such as independent TSOs or organized power markets to all automated communication means between different market actors of different former separated electrical areas, as it particularly appears in Europe.

Control centres information systems are key elements to develop a successful market, as large as possible, as efficient as possible, throughout two key elements:

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- ✓ The first one is an adequate design of Market Management (MMS) and Energy Management (EMS) Systems. They have to be designed with keeping in mind that they must be able to match as much as possible all possible uses of system by market actors, in the respect, of course of a reliable and safe operation of the electric system.
- ✓ The second one is a correct balancing IT, especially today with the integration of customers as entities able to lower their demand.

## **2. From old single integrated company to multi-zones competitive markets,**

**Paper C5/D2-101** from France develops all the steps followed by a TSO set up from an integrated company to get effectively to its independence in terms of information systems for all its activities towards external towards customers for having an effective access to the network (invoicing for instance), towards other TSOs (access to interconnections) or towards generators and balance responsible entities (for the real time balance of the system).

In electricity markets, another common subject is the integration of different market zones into a single one, first of all for the wholesale power market. Of course, it leads to some discrepancies between information systems. **Paper C5/D2\_106** is an example of how to solve this question: it is presented by several European associations, such as ETSO (for European TSOs) or EFET (for European traders) and focuses on common accepted standards that are developed step by step to facilitate data exchange between different wholesale market processes of the different Member-States of the European Union. **Paper C5/D2\_108** from Japan underlines the necessity of enhancing communication between the different power companies and with customers to increase the whole efficiency of the deregulated system.

After an evolution of the information systems of the wholesale power market, what is needed is a harmonized approach of the retail markets between the different areas because the same suppliers will want to be active in the different market zones. **Paper C5/D2\_109** from ten European countries, all members of the European forum for energy Business Information eXchange (ebIX) emphasizes standardised solutions for the retail market, especially for two aspects, the customer switching and the exchange of metered data.

**Question 1: Very often TSOs or ISOs were or are created from former integrated companies, which type of information system is necessary to insure a satisfactory activity of these new companies? Practical examples would be particularly interesting.**

**Question 2: Integration of different market areas initially separated into one single market area will obviously reveal incompatible information system, which solutions have been developed to really achieve as quickly as possible to merge the different market areas into one? What is the status of standardisation on electronic data interchange? Could software suppliers or TSOs provide information on the way they have handled the unbundling? This question is relative to wholesale and to retail markets.**

## **3. Energy Management Systems**

**Paper C5/2\_111** from Norway, Sweden and USA is an interesting presentation of a new EMS installed in 2004 at the Statnett Control Centre in the context of a high pressure of market needs on the information system of a TSO. This new system, hard to develop as it appears with project delays, is highly appreciated one hand by TSO operators and on the other hand by market actors, by allowing an increase of the power system utilisation.

Since 2004, first included in the VLPGO (Very Large Power Grid Operators) group, then as CIGRE WG (WG D2.24), an initiative about EMS architectures for the 21<sup>st</sup> century has been under development. A description of this large initiative is made in **paper C5/D2\_105**: the aim is to develop a shared and common approach of all real-time and near real-time information systems in order to standardize mechanisms what would certainly lead a global cost reduction helpful for everybody. **Paper C5/D2\_107** from France underlines the approach of Areva to the technical needs of TSOs and ISOs especially with the need of greater harmonization and lower costs.

**Question 3: How can evolution or new Energy Management Systems help to develop the market opportunities? Could some recent examples be presented of new opportunities for market actors given by new EMS?**

**Question 4: information systems are costly but there are also the engines of the markets, how can regulation on IT costs influence the development of competition on markets?**

#### **4. Integration of demand response and balancing markets.**

Response of residential customers to electricity prices is a difficult subject, because usually these customers have a limited knowledge of power markets: a Norwegian experience (**paper C5/D2\_102**) describes a possible innovation under research based on a new type of selling price to residential customers based on a combination of the spot price with a price hedge of a predefined yearly fixed volume. It could be particularly interesting in 2014 when all customers will be equipped of smart meters by giving an incentive to domestic customer to adapt their load to the price.

**Paper C5/D2\_104** develops an example of a successful integration of demand response integration in the synchronized reserve market, which is one of the two PJM ancillary services markets. Demand response customer must be able to lower their demand within 10 minutes upon request from PJM. As PJM usually uses the reserve market every 3 days, demand response customers had to develop investments in their infrastructure in order to be able to correctly react upon PJM demand.

Another Norwegian paper (**C5/D2\_103**) describes the successful integration of as many participants as possible in reserve and balancing markets by the development of the NOIS (Nordic Operational Information System). A specific focus has been made on getting many especially small participants by developing different interface solutions (web and EDI).

**Question 5: integration of demand response into balancing markets is still a recent innovation. It is also the case for demand response of domestic customers on spot markets. Could some examples be presented with their impact of the market? What types of specific IT must be developed?**

**Question 6: Reserves are necessary for the balancing of the electric systems, what IT systems have been implemented to make them competitive? Is it possible to have solutions without large information systems?**

#### **5. Conclusion**

Today it appears that market needs are quickly evolving and that market actors are naturally waiting for a quick, not to say immediate implementation of these evolutions. Moreover, it often happens that these needs are highly diversified and can lead to specific developments.

**Question 7: Would it be possible to have examples of specific TSOs organizations (human resources, budget, relations with the suppliers...) to cope with these quick**

**demands of the market ? Are there any (on a temporary basis) unadapted systems? How is it possible then to integrate in one IT system all specific developments ?**

**Question 8 : As market needs quickly evolve, how is it possible to anticipate on market needs ? What type of services are still missing ?**