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Analysis of Current Status of Development of Information Systems for the CAR Electricity Sector

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Experience of Deployment of Information Systems in Kazakhstan

- Kazakhstan is the leader in the deployment of Information Systems in the Region and its experience is extremely important for other countries.

- The largest IS projects were implemented by the System Operator – KEGOC

- Despite the fact of successful deployment of large-scale projects, such as Automatic Metering System (AMR), Enterprise Resource Planning (ERP) and Balancing Market (BR), the Company's representatives have flagged some difficulties, namely:

  - Delays in implementation and increase of project budgets
  - The functionality of the systems adopted didn't fully meet initial expectations
  - Insufficient interaction between the system suppliers and the poor level of intersystem interconnection

Development of AMR System in Kazakhstan

- Development of AMR system as the principal source of data for operating an electricity market is of extreme importance in Kazakhstan

- The basics of development of the national AMR system was established by JSC KEGOC as a result of adoption of ELIOP system in 2005 at all substations of the Company

- Unfortunately, some parameters of this system did not satisfy the Company's requirements of the Company. As a result, the system had to be refined several times. At one point an entire upgrade of the system was performed, including replacement of equipment and software from another supplier.

- At present, AMR system continues to be actively deployed by market entities in Kazakhstan .

- A wide variety of solutions from various suppliers have been applied, and the main requirement for information interconnection with the System Operator (SO) is through an FTP protocol inherited from the ELIOP system.
Today, this decision is out of date.

Experience of Deployment of Information Systems in Tajikistan

- Construction and upgrade progress for high voltage lines and substations in Tajikistan included deployment of SCADA and AMR information system

- The systems introduced were of Chinese manufacture and were implemented in the Chinese language, including documentation, signs and marks on equipment

- The quality of translation of the documentation into Russian, as requested by the Tajik party, was poor. The documentation was found to be unusable

- The Chinese company involved has not demonstrated much interest in integrating its equipment with other information systems. This limits the options is no possibility for further system development to only the further introduction of this Chinese company's solutions.

Outcomes of IS Deployment in Tajikistan

- Presence of two separate and incoherent systems of SCADA and AMR
- Impossibility of independent servicing and severe limitations on options for further system development
- Difficulties with search for supplier of solutions for system development
  - New suppliers offer to replace everything with their own products
  - Suppliers of new systems face lack of documentation on existing equipment
  - Some suppliers do not consider the possibility of cooperation with other suppliers
- Difficulties of integration with lower level systems
- Dependence on Chinese personnel for operation and maintanance
- Loss of operational control over the new systems
- Loss of intellectual capacity within the Company in IT area

Ways for Evolution of the Current Situation in Tajikistan

- Working out concepts of further development of information systems
- Digital meters are purchased and installed at most substations but the process of data collection was not planned
- Independent development of systems for data collection turned out to be a difficult task
- Integration with existing Chinese-manufactured systems is not possible
- Three options for the future:
  - Deployment of all information systems from Chinese manufacturers; Chinese language training for the personnel and deep learning of Chinese technologies
  - Replacement of installed Chinese systems
  - Use of two separate groups of systems

Deployment of Information Systems in Kyrgyzstan

- Kyrgyzstan is at the initial stage of deployment of large-scale information systems, and considers the experience of neighbors should be of great help

- Two large projects are currently being implemented at NESK JSC:

  - Construction of substation and transmission line "Datka-Kemin" that include both technical and commercial metering systems

  - Project of ADB-funded AMR system

- Representatives of JSC NESK place importance on coordination in the introduction of projects and are undertaking measures to implement the interconnection of the information systems being installed to assume the possibility for further development from various suppliers

- Severelectro Distribution Company has also commenced deployment of an AMR system in Bishkek City

Pilot Projects

- Both in Kyrgyzstan and Tajikistan, several donor-funded pilot projects have been implemented to introduce new information systems.

- Unfortunately, in many cases these pilot projects were implemented as isolated solutions and were not "scaled up."

- Due regard was not given to the subsequent funding for full project development even the pilot project proved successful.

- Little attention was paid to the integration of the pilot systems with existing systems, as well as the necessary flexibility possible further integration with future systems

- As a result, the efficiency of introduction of pilot projects has been low

Opportunities to Mitigate Negative Consequences of Deployment of Information Systems

- Strict and clearly defined requirements for systems to be deployed, documentation and training of local staff on further operation and development of systems

- Guaranteeing the possibility for permanent participation of local technical specialists in the deployment process.

- Implementation by local specialists, when possible.

- Increase the role of the IT Department and participation of IT specialists at all stages of project planning and implementation.

- Implementation and optimization of standardized interfaces of intersystem interconnection at the deployment stage.

- Utilization of modern concepts of system development and architecture.

- Strict discipline in project management at all stages of deployment.

Implementation of Standard Interfaces of Intersystem Interconnection

- Tasks in the IT area are becoming increasing complex and the number of information systems required to create new mechanisms for intersystem interconnection continues to grow.

- Service Oriented Architecture (SOA) has been used with great success as the basis for new mechanisms for interconnection of information systems.

- The systems are presented as a set of standardized services available via different information channels

- The most widely used are Web-services, which interact under the information service bus of an enterprise, an enterprise local area or through Internet channels.

- It allows uniting various systems from different producers or territorially dispersed copies of one system

Benefits of Using Web-services

- Capability to unite systems without involving system manufacturers, or with their limited participation, but without the need for interaction between developers of different systems

- Capability to create composite systems to increase their functionality and efficiency

- Flexibility of the process of migration to new versions of applications in use and adoption of new applications

- Generic and simple interconnection regardless of the language and platform of each system

- Self-documenting and lack of strict requirements to data structuring.

- Capability to use various channels and protocols

Examples of Successful Use of SOA

- Telecommunication companies and banks

- PJM – the largest System Operator and Market Operator in the US

- SOA is necessary for Smart Grid. There is no alternative.

- Cognizant – the best company to supply Smart Grid solutions; platinum award in 2011, supplier of solutions for 8 out of 10 largest utility companies in the world.

- Sigma Telas – using Web-services for own needs, rendering existing services for clients upon request with no additional fee

- Severelectro, Kyrgyzstan – using Web-services for own needs in the company's billing system.

Creation of Web-Services

- Most advanced systems are supplied with Web-services included upon preliminary request by the customer with no additional fee or for only token fee

- Large suppliers provide adapters for simple creation and setting Web-services required

- The process of formation of additional elementary Web-services by a manufacturer at the customer's request takes minimum of resources and time (1 man/hour)

- Some up-to-date hardware resources provide Web-services

- There is a rich variety of tools and technologies for creation and posting Web-services

Implementing Interconnection of Web-services

- Direct reference to Web-services from applications

- Interaction through middleware – integration platform which:
  - Simplifies interconnection process of systems, including graphical representation
  - Implements a logic of interconnection
  - Performs data transformation for data interface of different types
  - Implements intermediate calculations
  - Provides the capability to track the system interconnection process in details
  - Provides the capability to implement rules and policies

Possible Cooperation with RESET

- Participation in drafting requirements for provision of Web-services

- Organization of testing Web-services for compliance with requirements and standards

- Demonstration and training on creation, posting and use of Web-services

- Demonstration of capabilities of integration platform and its components

- Consideration of possibilities for pilot project on introduction of integration platform to ensure intersystem interconnection

Thank You!

Questions???

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