

## **E-governance & GIS, Worldwide Application for Optimizing Performance of Energy Sector**

**Pradeep Narayan Singh and Naveen Chandra Pandey**

*Department of Power & Information Systems Management  
University of Petroleum & Energy Studies (UPES), INDIA*

### **ABSTRACT**

At the beginning of twenty-first century, the challenge to ministry is to improve consumers trust in governments. The information and communication technologies (ICT) aid good governance by increasing transparency and consumer-oriented service supply. This paper provides how E-governance and GIS application can be proving to be boon for worldwide energy sector. This paper discusses the role of integration of E-governance and GIS application with power and energy sector, which is similarly an important function in energy quality and reliable based services movement. It also gives visions of opportunities for information and communication technologies (ICT) to enhance governance in energy sector along with the management and delivery of energy services. A major finding is that public sector player should speed up implementation of E-governance and GIS application in its operations especially to improve user-interface and to make sure competitiveness around the world.

**Keywords:** organizational e-transformation, power management, change management, customer services quality, technology led strategy, value chain, and competitive landscape.

### **1. Introduction**

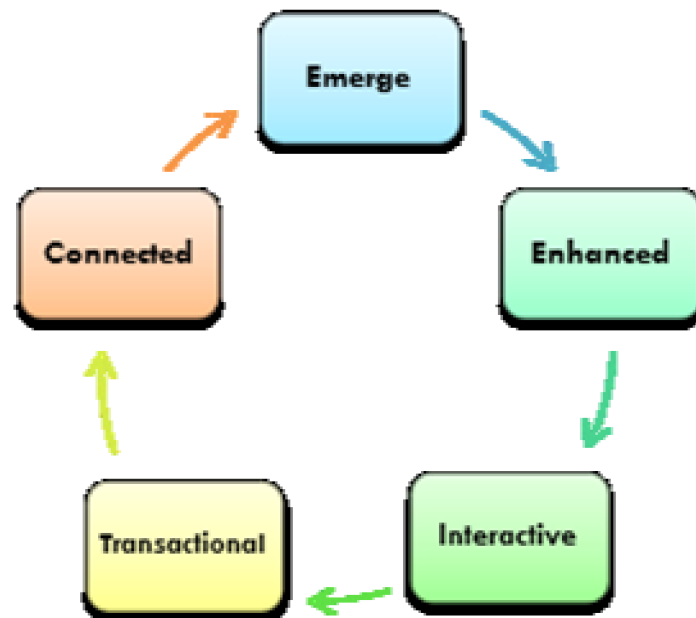
Introduction to E-governance and its allied applications, it becomes essential for power utilities to provide power reliable and quality based services to the end-consumers while simultaneously balancing demand and supply of energy. In current scenario end-users are not actively participating in the power markets. Addition of natural and renewable resources such as wind power generation and solar power generation are going at one end. Advancement in automation and power management system, energy policies, regulations and standards are influencing the integration of

small-scale energy sources such as wind and solar to the electrical grid. At this instance, the beginning of advanced energy applications such as Modular Integrated Distribution Automation System (MIDAS), Supervisory Control & Data Acquisition (SCADA), web based Outage Management System (OMS), on-line metering and billing system among various others. It is expected that in upcoming time power reliable and quality based services can be enrich to the end-users\consumers with help of E-governance. [1]

The integration of E-governance with advanced energy management applications for energy sector is key steps towards power quality and reliable based services movement. To achieve power reliable and quality based services requires advanced power system scheduling and planning, advanced power operation and control standards with effective communication protocols. Apart from these essential requests, there is a need for improving and upgrading the present power systems. In this scope, this research paper has been identified the need for introduction of E-governance and its allied applications for power quality based services to competitive energy markets. The reason behind this proposal is to increase focus on power quality and reliable based services that directly impact the end-users\consumers experience while increasing revenue of energy utilities. [2, 3]

## 2. Phases of E-governance

In this paper, the phases of E-governance development model for energy sector is described with five phases that are *Emerge*, *Enhanced*, *Interactive*, *Transactional* and *Connected*.



**Figure 1.** Phases of E-governance development model

### **3. Public Policy & Administration objective of E-governance in Power & Energy Sector**

- Improve value to public
- Improve cooperation with stakeholder
- Improve internal operations
- Improve decision support
- Improve service to consumers
- Supports organization strategy

### **4. E-governance Process Objectives for Power & Energy Sector**

- Speed up processes
- Streamlining processes
- Combining processes
- Reducing errors in inputs
- Reducing redundant outputs
- Improving integration of systems

### **5. Major Factors Responsible for E-governance Failure in Power & Energy Sector**

Major identified factors and reasons for E-governance failure include: [4, 5, 6]

- Late systems and services delivery
- Unclear requirements and Creeping scope
- Hardware and software not clearly and specifically integrated on reliable and robust level
- Improper delivery of output and functionality by designed software
- Effective user interface and Lack of integration with advanced power and legacy systems
- Lack of consultation with operators and users and lack of top management involvement.
- Information integrity and confidentiality issues.
- Lack of suitable training and Poor knowledge of the system.

### **6. The Global Restraints in E-governance Implementation for Energy Sector [7, 8, 9]**

- **Technical Education:** Developing countries are facing huge gap in technical education to meet up the right technical skills and knowledge needed for research and development of advanced automation and power management system.
- **Language Supremacy:** The supremacy of English on the E-governance and internet technologies is getting difficult for the access of non-English-speaking population.
- In the case of developing countries, major portion of the population does not

speak English. Because of this high level dependency on English over these applications, services and technologies creates challenge towards adoption of new and advanced E-governance and energy solutions.

- **Unfamiliarity:** There is tremendous lack of familiarity and awareness about benefits of E-governance and its allied applications in G-G, G-C and G-B projects.
- **Lack of Participations of People, Public and Private sectors:** It is necessary and essential for participation of people, public and private sectors while planning, designing and implementing E-governance in power and energy sector. This participation would bring effective modeling design, solution architecture and right requirement.
- **Infrastructure:** Absence of essential infrastructure like computers, internet technology and ways of information communications as it will affect the promptness, which delays the implementation.
- **Challenges in Re-Engineering process:** E-governance projects implementation in power and energy sector requires lots of restructure and reform in technical specifications, technical architecture, solution architecture and electrical process design.

## 7. The Prospect of GIS to Enhance E-Governance Services [10, 11, 12]

- **Integration of GIS and E-governance:** In recent scenario, adoption of smart devices such as smartphones, tablets, BYOD and handheld devices are growing at rapid pace as well as advancement in communication technologies forced energy and power utilities to integrate enterprise-based GIS applications, with E-governance and its allied applications that would end-users\consumers to participate actively in local and global decision-making through E-governance services.
- **Intentional involvement:** Considering recent industry and economic scenario, it becomes quite essential for international involvement in power and energy sector to optimize the performance of industry while engaging consumers in consultation process for better decision and policies making.
- **Government-led-active involvement:** In this global era, power and energy utilities becomes on a high scale competition to meet on international standard requires highly government-led-active participation for better decisions and policies making powers.
- **Consumers-led-active involvement:** Consumers are most important part of E-governance project. Designing and implementation of E-governance systems must actively engage the end-users\consumers. This active involvement would lead to enhance and better decision-making process.[13, 14]

## 8. Concluding Notes

This paper discussed the role of E-governance and GIS in managing and sustaining worldwide Energy and Power Sector through its diverse applications. It is a useful strength for the power and energy utilities for reducing the transmission and

commercial losses, which will improve cash flows, managing their operations effectively, and better planning and implementation of projects; reduce energy losses in contrast with increasing energy efficiency, transparency and many more. It assists in all round effective management of the Energy and Power through enhanced utilization of GIS and E-governance applications. These applications also supports in managing and analyzing processes and operations of Power and Energy utilities.

## **9. Acknowledgements**

The authors would like to thank Dr. D. K. Punia for their valuable guidance that improved the quality of this paper and University of Petroleum & Energy Studies (UPES), for their assistance.

## **10. References**

- [1] Pradeep Narayan Singh, Praveen Kumar Yadav. *Application of Business Analytics in Big Data of Power Sector*. Information on Website: <http://pmi.org.in/conference2013/updates.asp>
- [2] Information on Website, [www.iexindia.com](http://www.iexindia.com), June. 2013.
- [3] Information on Website, <http://powermin.nic.in>, June. 2013.
- [4] Information on Website: <http://www.cea.nic.in>, June. 2013.
- [5] Information on Website, Available: The Climate Group, <http://www.theclimategroup.org>, June 2013.
- [6] Information on Website, <http://www.encyclopedia.com/doc/1G1-196830172.html>, June. 2013.
- [7] Information Available on Website: <http://www.sei.cmu.edu/library/assets/sgmm.pdf>, June. 2013.
- [8] [Online]. Available: North Delhi Power Limited (NDPL) website. <http://www.cea.nic.in>, June. 2013.
- [9] Information Available on Website: Bangalore Electricity Supply Company (BESCOM) website. <http://www.bescom.org/>, June. 2009.
- [10] Information Available on Website: [www.powersector.com](http://www.powersector.com)
- [11] Information Available on Website: [http://en.wikipedia.org/wiki/Electricity\\_sector\\_in\\_India](http://en.wikipedia.org/wiki/Electricity_sector_in_India)
- [12] Information Available on Website: <http://india.gov.in/Egovernance/mission-mode-projects>
- [13] Information Available on Website: [http://negp.gov.in/index.php?option=cm\\_content&view=article&id=94&Itemid=667](http://negp.gov.in/index.php?option=cm_content&view=article&id=94&Itemid=667)
- [14] Information Available on Website: <https://egovstandards.gov.in/>

