CLOUD ASSISTANCE STAGE OF POWER ENTERPRISE: CONSTRUCTION STUDY

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ABSTRACT

The current power system's automation and in formalization have a significant impact on how well power plants and systems operate. Building a stage for innovative cloud assistances could aid in managing a power company. To implement the functions of data sharing, intelligent management, and remote support, three components—a data center, a monitoring system, and a decision support system—have been built. The construction of the innovative cloud assistance stage can improve the power enterprise's overall efficiency and effectiveness, which aids in the efficient running of the power stations and systems.

KEYWORDS: *Innovation Cloud Assistance Stage, Data sharing, intelligent management, Construction of Innovation Cloud Assistance Stage, Monitoring system, Decision support system, etc.*

INTRODUCTION

The intelligent enterprise is a trend that will be important in the present and the future given the rapid development of information technology. The electrical power grid has a significant impact on how people live their daily lives. The innovative cloud assistance stage should be built and used for production, running, and management in order to ensure the smooth operation of the entire power system. Numerous artificial intelligence algorithms, such as data backup, information monitoring, fault diagnosis, anomaly detection, etc., have been used in past works to control the power system. [1] The development of the innovative cloud assistance stage should make use of cutting-edge artificial intelligence technology in order to further increase the level of automation of the power system. The stage for innovation cloud assistances allows for the storage and sharing of data from many power plants. In this approach, a more reliable model for managing the electricity system may be trained using more historical data. Automatic monitoring of the stored data is possible through information detection and classification. The innovation cloud assistance stage could notify the staff when there is an irregularity in the data flows. The innovative cloud assistance stage may offer some workable solutions to address the issues in the interim. Remote assistance was made possible for employees at several locations by the innovation cloud assistance stage. In order to preserve the power system's seamless operation, all the stations could be united. [2]

In this article, we investigate the development of an innovative cloud assistance stage for large businesses. As a starting point, the goal of building the innovation cloud assistance stage is first examined in light of the current power system's flaws. Then, the data center, monitoring system, and decision support system are discussed as necessary combinations of the innovative cloud assistance

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stage. The three combinations each have a unique role to play in ensuring the smooth operation of the entire power system. The data center houses all of the power plants' data flows. The monitoring system then examines the data flows to identify anomalies and errors, enabling quick identification of potential issues. The decision assistance system also offers workable solutions to the probable issues. Therefore, the robustness and efficiency of the entire power system may be improved based on the innovative cloud assistance stage. [3]

2. Aim of Innovation Cloud Assistance Stage:

The innovative cloud assistance stage is designed to increase the power system's overall efficiency and effectiveness. Data exchange, intelligent management, and remote assistance may be summed up as the major goals of the innovative cloud assistance stage. [4]

Data sharing:

There is a lot of data in the power system due to the quickly expanding number of power stations and power systems. As a result, it is important to share data from various stations and systems in order to considerably enhance the historical data already accessible. The innovative cloud assistance stage is designed to organize and manage data. Additionally, the data can be shared and used by many power plants and systems. Data sharing is hence the fundamental purpose of the stage for built-in innovative cloud assistances. [4]

Intelligent management:

The power system generates a lot of data, which needs to be managed wisely to increase efficiency. The first step is to categories the data flows into different groups, such as hardware information, software information, network information, etc. Each category's data flow is examined and identified so that any anomalies may be found and located right away. The system examines the discovered issues in further detail and determines their characteristics. [5]

Remote support:

It is challenging to get the power stations to function as a unit because they may be distributed across different places. The innovative cloud assistance stage is designed to integrate all the systems and power plants so they may work together as a single unit. Each power plant processes the data in its own manner. The station may notify other stations of an abnormality once it occurs. Additionally, many stations could assist one another in handling the issue. As a result, the discovered issue can be resolved effectively. [6]

3. Construction of Innovation Cloud Assistance Stage:
Data center:

Some functional components need to be constructed and run in order for the innovation cloud assistance stage to achieve its goals. The innovation cloud assistance stage's data center, which saves the data from various power plants and systems, is a crucial part of the stage. Additionally, all of the data has been divided into a number of categories to increase management effectiveness. The beneficial historical data for future use should be preserved apart from the effective data. [7]
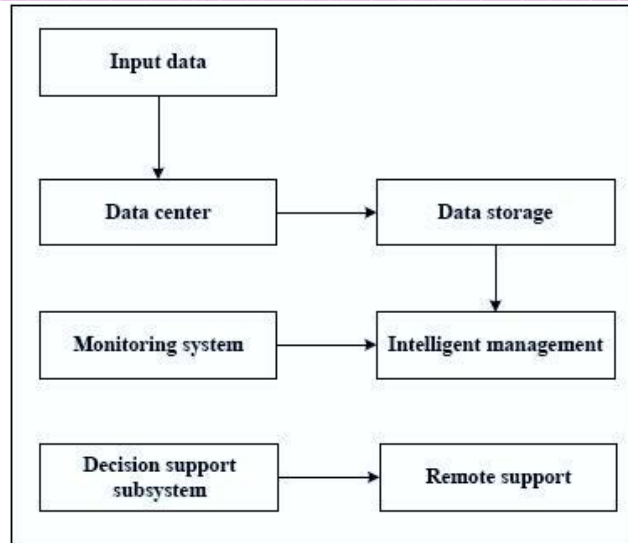
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Figure: Construction of the innovation cloud assistance stage

Monitoring system:

The innovative cloud assistance stage, which analyses data flows from the data center, also depends on the monitoring system. The data is analyzed and the anomaly is found using artificial intelligence algorithms. Additionally, the model developed using past data is used to identify the faults that have been found. Potential issues with the power stations and systems could be identified early thanks to the monitoring system. In the meantime, the data center is updated to improve its historical data using the issues that were discovered. [8]

Decision support system:

The innovative cloud assistance stage includes a decision support system to help manage any issues that may arise with data flows from power plants and other systems. The artificial intelligence that was used to construct the decision support system was capable of training itself using a vast amount of historical data. The monitoring system's detected problems can be quickly categorized based on the trained model. The system can then offer the employees the appropriate solutions in accordance with the problem's label. [9]

4. CONCLUSION:

The development of the innovation cloud assistance stage is examined in this research. Data exchange, intelligent management, and remote support can be used to sum up the key goals of the innovation innovation cloud assistance stage. The development of the data center, monitoring system, and decision support system is necessary to meet these goals. The seamless operation of the entire power system is achieved by the three systems working together. More high-performance technologies could be used to build the innovation innovation cloud assistance stage as artificial intelligence advances.

REFERENCE:

1. Lock, M., Managing Rapid Data Growth: A Trial by Firehose, Research Report, Aberdeen Group, March 2015. http://aberdeen.com (accessed on 12/07/2022)
2. Vargo, S.L. and Lusch, R.F., Service-dominant Logic 2025, International Journal of Research in Marketing, Vol. 34, 46-67, 2017
3. Zhu, F. and Furr, N., Products to Platforms: Making the Leap, Harvard Business Review, Vol. 94, No. 4, 72-78, April 2016.

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4. Wang Z, Jin N and Zhang J, et al. 2014 Fault information and diagnosis modelling of on-line communication monitoring system for digital substation in Proc. IEEE PES General Meeting | Conference & Exposition pp 1-5.
5. Koo J, Kin Y and Lee S 2019 Security Requirements for Cloud-based C4I Security Architecture in Proc. International Conference on Platform Technology and Service (PlatCon) pp 1-4.
6. Sun A, Zhou J and Ji T, et al. 2011 CSB: Cloud service bus based public SaaS platform for small and median enterprises in Proc. International Conference on Cloud and Service Computing pp 321-324.
7. Borlea I, Buta A and Dusa et al. 2005 DIASE-Expert system fault diagnosis for Timisoara 200kV Substation in Proc. EUROCON pp 221-224.
8. Topolsky D V, ToPolskaya I G and Topolsky N D 2018 Development of an intelligent measuring system for digital substations in Proc. pp International Multi-Conference on Industrial Engineering and Modern Technologies 1-4.
9. Ekman, P., Raggio, R., and Thompson, S., Service Network Value Cocreation: Defining Roles of the Generic Actor, Industrial Marketing Management, Vol. 56, 51-62, 2016

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