

Research on Computerization of Distribution Construction Auxiliary Design

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I. Introduction

Taipower has been developing computerized operations related to power distribution for more than 20 years and has successively developed various equipment management systems such as the Distribution Mapping Management System (DMMS), the Distribution Field (Room) Data Card Management System, and the Manhole/Handhole Data Card Mapping System to establish an information mapping standard. The New Distribution Construction Information System (NDCIS) also includes functions for project materials, case status, and construction management. Therefore, in the development of power distribution engineering maintenance, continuous updating of map data through planning and design, on-site construction, and computerized map management is the only way to ensure that computerized maps are the same as those on-site. Therefore, the development of auxiliary drawings and computerized management for power distribution engineering design is also an important part of information-based maintenance of power distribution.

II. Result

This research has been initiated to build a Distribution Construction Auxiliary Design system (DCAD system). Considered minimizing the cost that may incur from map data software licensing, this system was developed based on the open-source, web-based geographic information system (GIS) framework. An exploration of the electrical power distribution design process and mapping principles was also carried out to set up templates for each category of the distribution equipment, as well as a management system for design version control and operational procedures. The functionalities developed from this project were then integrated with the NDCIS (New Distribution Construction Information System) to enable design-related processing on the DCAD system and provide the design personnel with various DMMS themes for overlay. Several functionalities were also developed, including web-based distribution design editing, electrical power distribution facility data card, hand (man) hole data card, and related auxiliary design tools, to meet the

needs of distribution construction design operations.

Overall, the establishment of an electrical distribution system starts with distribution design. This research autonomously developed an easy-to-use distribution design drawing and mapping tool to integrate into a company's existing DMMS layers and NDCIS design projects. This computer-aided design tool is equipped with overlay capabilities that enable design personnel to edit distribution routes directly over the existing maps. This effectively enhances the integrity and accuracy of the new designs and the overall efficiency of the distribution construction operations. The process is shown in Fig 1.

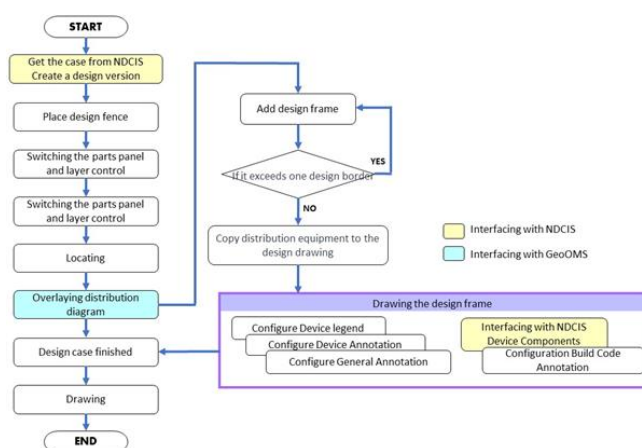


Fig.1 The process of computerization of distribution construction auxiliary design

III. Recommendations for Future Research

The system proposed in this research is developed with Open Source software, requiring additional programming to implement all functionalities. Therefore, after its deployment, it can gather more colleagues' drawing habits and suggestions to improve user-friendliness for users. It even considers directly using well-drawn design diagrams for diagram designers to expedite the process. However, it should be noted that the design diagrams in this research are in Cartesian coordinates and not in standard geospatial data format, so improving it is a future goal of this research.