



EXECUTIVE SUMMARY

TENAGA NASIONAL BERHAD GIS PROJECT

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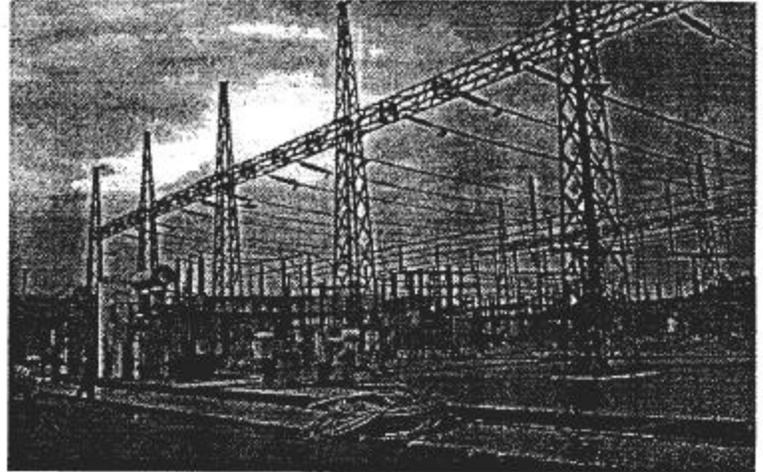
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Executive Summary

Since 1988 Tenaga Nasional Berhad (TNB) has recognized the value of geographic information systems (GIS) and has pursued their use. In 1989 the Automated Mapping/Facilities Management (AM/FM) project was initiated in Klang District. Inadequate hardware and manpower coupled with ambitious expectations resulted in the project being abandoned. In 1991/92 TNB took a different approach, concentrating on distribution management applications including



the Customer Restoration Management System (CRMS), the Engineering Database Management System (EDBMS), and Drawing Office Automation (DOA). In 1994/95 TNB began extensive data conversion efforts, digitizing cadastral maps (1:8-chain standard sheets, commonly referred to as the "eight-chain maps"), electrical network schematics, and line diagrams. To further test GIS potential, in 1996 TNB initiated five pilot projects in Rawang (Smallworld), Port Dickson (ReGIS), Melaka (Enghouse CableCAD), Ulu Kinta (Tekla Oy), and Bangi (Sysdeco).

In 1998 the Ministry of Energy, Telecommunications and Multimedia issued a directive to all of the nation's utilities to address issues of third-party damage by using GIS, among other strategies. -Meanwhile, the government began restructuring the electricity supply industry to encourage competition, thereby improving services and lowering costs to customers. To remain competitive, TNB responded by unbundling its vertically integrated organization. The Customer Services Division (CSD) is transforming into "wire-" and "nonwire--based franchises. The restructuring of CSD - which, as of 1 September 1999, is TNB Distribution Sdn. Bhd. (TNBD) -is intended to reduce costs, improve profitability, retain good customer relations, and improve planning and operations.

While the Ministry is requiring GIS to address issues of third-party damage, the use of GIS will benefit the new TNBD in many other ways. The previous attempts to implement GIS together with the pilot projects have convinced TNBD of the value of GIS as a tool for analyzing geographically referenced data and information and for allowing fuller exploitation of existing data on customers and distribution infrastructure. At the same time, TNBD recognizes that successful implementation of GIS requires more than simply the procurement of software and the collection of data. It requires reengineering work flows both to support GIS data development and to ensure that that work processes fully benefit from OIS.

In recognizing this need, TNB management appointed CSD as the coordinator for GIS activities within TNB. CSD established a GIS Steering Committee as an interface group to coordinate the development of GIS for TNB to the Executive Committee. CSD also initiated the *Feasibility*

Study for a Geographic Information System for the Customer Services Division of Tenaga Nasional Berhad with sponsorship from the United States Trade and Development Agency (USTDA). The objective of the study was to evaluate the technical and financial feasibility of developing a GIS implementation program for CSD, now TNBD, specifically to identify the value of GIS applications, document requirements for applications, evaluate cost-benefit, and prepare documents for procurement and project management. This report documents the findings from that study.

Feasibility study activities included site visits and interviews, revealing to the study team that TNB has many useful independent computerized applications and data systems. However, working in isolation, they achieve significantly less than if they worked together. The challenge is to integrate these applications in order to enhance the analytical use of their data. They all share a common attribute, the geographic nature of their data. GIS is, therefore, the ideal integration tool-- the "glue" that will hold them all together into a comprehensive Distribution Information System (DIS).

The study also found that there are no significant technical restraints to the implementation of a comprehensive DIS throughout TNBD. A decade of growth and prosperity in Malaysia since the AM/FM project has given TNBD a solid foundation of hardware, software, computer network infrastructure, and personnel skill resources.

The question that TNB faces is not, Is it feasible to use GIS? The use of GIS by TNB, and in particular TNBD, is inevitable. The increasingly competitive market under the continued deregulation of the industry will require it. At the same time, the serious problem of disruption of service from third-party digging has prompted the government to require the application of GIS to better manage all of the country's infrastructure. So, the real question is, How can TNBD implement the use of GIS in a manner that will optimize the return on its investment?

The answer is in a full and comprehensive implementation and integration of GIS into TNBD's day-to-day operations - a DIS that is based on GIS-compatible applications. Partial measures will not provide optimum benefits. It is critical to re-engineer the core business processes to be affected by the DIS. The pilot projects revealed that users and beneficiaries of GIS applications must be involved in and committed to implementation, and in defining how best to reengineer their work. Furthermore, the GIS applications themselves must be clearly defined as a prerequisite for successful implementation.

The study team recognizes therefore, that TNBD's needs are not just for hardware and software, but for an enterprise-wide, comprehensive, fully-integrated, reengineered business process that appropriately applies spatial technologies in all service regions throughout the organization - a Distribution Information System. The study team recommends that TNBD's upper management demonstrate an irrevocable commitment to achieving this ambitious goal through a clear policy statement, and that implementation be carried out using participatory approaches to business process reengineering and through an organizational structure that supports strong TNBD-vendor partnership. **The study team further recommends** use of common data collection, conversion, and migration strategies and methodologies, data storage standards, and data exchange protocols.

In the short term, while preparing for full implementation of the Distribution Information System, the study team recommends that several steps be taken. Specifically, TNBD should

Step 1 -Review the collection and conversion of data in the EDBMS to ensure compatibility with GIS.

Step 2 -Hold a participatory workshop, involving representatives from all the affected offices, departments, and functional sectors, to select and prioritize applications for integrating into the DIS.

Step 3 -Hold separate reengineering workshops, one for each of the highest priority application areas, to reengineer effected work flows and business processes to incorporate and support GIS technologies.

Step 4 -Identify data requirements for the priority applications and, based on the data requirements, define appropriate data structures.

Step 5 - Develop a data collection, conversion, and migration strategy.

Following these steps will lay a firm foundation from which TNBD can build a comprehensive, fully integrated, enterprise-wide, Distribution Information System.