

GIS FOR WATER UTILITIES

Implementation of Enterprise GIS system and Web Dashboard Application Development for Standardisation of Operational Platform and Enhancement of Customer Service Level

Highlights

- Achieving data accuracy through standardisation of the Water Distribution Data Model
- Using GIS in enhancement of critical information management, operational asset management
- Benefits of implementing GIS-Based Asset Management System
- The future works in GIS

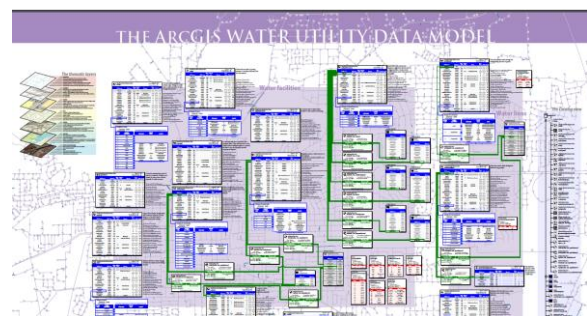
Background

PENGURUSAN ASET AIR BERHAD (PAAB) or Water Asset Management Company (WAMCO) was established in 2006 as a wholly owned company under the Minister of Finance Incorporated. PAAB forms part of the Government's efforts to restructure the water services industry in the country to achieve better efficiency and quality, as well as to ensure sustainability of the industry.

PAAB's primary responsibility is to develop the nation's water infrastructure in Peninsular Malaysia and the Federal Territories of Putrajaya and Labuan in line with the Water Services Industry Act 2006 (Act 655). PAAB is also tasked to restructure the nation's water industry to achieve the Government's vision for efficient and quality water services.

Achieving Data Accuracy through Standardization of the Water Distribution Data Model

One of the main difficulties with data sharing in PAAB is the lack of standardization of the various GIS spatial data model from different sources/states. Each state has a slightly different data management method which resulted in differences in data feature types, accuracy, and completeness.



ArcGIS water data model

To obtain accuracy in the data, PAAB has set the priority on its data model, and decided that the newly designed PAAB data model should scale and handle the most complex system without any modifications of the data model. The new data model should address both the short-term and long-term needs of PAAB and its stakeholders.

The Esri water data model was used during the preliminary gap analysis study with the primary intention to highlight the key differences of its current PAAB data model with the standard Esri water data model. During the analysis study, the results showed that there are missing components from the state's GIS data when compared using the Esri data model. With the results, PAAB embarked to define data conformity for the project delivery. The conforming data in supporting GIS and asset management would comprise of the conceptual model that include – data schema, data features and attributes, relationships and functional capabilities.

Using ArcGIS technology, it provides PAAB a standardised platform for spatial analysis, data management, and digital mapping, PAAB set to employ on ArcGIS desktop, web and mobile applications. Upon full implementation, the PAAB GIS system will be integrated with the work order management, business intelligence and other enterprise systems within the organisation.

Using GIS in Enhancement of Critical Information Management, Operational Awareness and Asset Management

With the standardisation of the Water Distribution Data Model, this has led to further development for a Web Dashboard Application for PAAB. This application provides a high level view into the operations and asset handling of PAAB. PAAB leverages on the capability of the Esri technology to handle basemaps and operational layers from several sources. The dashboard is set to enable better asset management and decision making through a series of information popup and reports so that concise map-centric content can be visualized.

In addition, the PAAB web-based dashboard application takes care of security issues by implementing a secured login and access to the PAAB's central Geodatabase HQ with the following functionalities:

- Retrieval of operational and maintenance information relating to assets;
- Query for customer consumption and customer service information;
- Report plant breakdowns, service disruptions, and interventions;
- Provide capability to quickly produce high quality maps, technical drawings for repairs and maintenance, business presentation over the Internet.

Benefits of implementing GIS-Based Asset Management System

PAAB anticipates the return of investment made for this project initiative in multiple folds. With a long-run vision, PAAB is looking at the value GIS has made in enhancing the business process management, thereby resulting in some benefits as namely below:

Benefits of GIS Implementation

1. Cost savings from duplication of efforts through standardisation of data model
2. Timely and well-informed decision-making process
3. Better asset management with the integration of asset spatial-enablement
4. Easy sharing of information to external parties (external partners, public bodies and government departments) through greater flexibility of integrating map feeds via the internet

The Future Works in GIS

PAAB is working toward service excellence to the mass public by providing more accurate and available information with the greater use of internet capabilities and the ArcGIS Online solutions. With the public's accessibility of information via the internet, an online community portal from PAAB will enable better information sharing to the public. In the pipeline, PAAB plans to extend and integrate the use of ArcGIS with critical business applications, such as systems for managing underground assets, finance, customer information and social networking capabilities.

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