

## GIS FOR WATER UTILITIES

GIS purports higher productivity, information sharing and better management for the Public Utility Board

### Highlights:

- Managing the water cycle – the Public Utilities Board
- Delivering greater organisational efficiencies with the set up of enterprise geographical systems
- Benefits from the drive of operational efficiency
- The results

### Managing the water cycle – the Public Utilities Board

Public Utilities Board (PUB) is the national water agency in Singapore and is responsible for the collection, production, distribution and reclamation of water in Singapore. The 3 departments in PUB that utilizes Geographic Information System (GIS) include Water Supply Network (WSN), Water Reclamation Network (WRN) and Catchment & WaterWays (C&W).

WSN is responsible for the provision of a reliable and wholesome water supply – to improve and extend existing supply and distributing systems, plan and develop new water resources projects and expansion of the water system to meet projected demands.

WRN regulates the provision of sewerage and sanitary facilities in Singapore, and also provides a comprehensive and reliable sewerage reticulation system to ensure that all used water discharged is collected and channelled to designated water reclamation plants for treatment and/or reuse.

CnW is responsible for managing an extensive network of drains and canals across Singapore to channel storm water from designated catchment areas into fresh water reservoirs, discharge and collection points. It also ensures that there is an effective drainage system to protect Singapore against flood and public health risks.

## Delivering greater organisational efficiencies with the set up of enterprise geographical systems

For several years, each of these departments had individual systems that were scoped to meet their individual areas of deliverables as decision-makers then, were limited by the available technology options available. Overtime, PUB's needs soon outgrew the capabilities of their systems for greater productivity gains.

PUB sees a need to improve their capabilities for greater organisational efficiencies and several new objectives were set out to achieve this. Some key areas identified include:

- To share data across the three mentioned departments in a more efficient manner.
- To be able to publish spatial data to more parts of the organisation efficiently.
- To increase the importance on data analysis.
- To automate processes
- To enable integration of operational systems
- To equip the mobile workforce with better information
- To view assets in different perspective (e.g. network against other layers of roads, buildings, property)

### Benefits from the drive of operational efficiency

The enterprise geographical information system (eGIS) was embarked to undertake the improvement for an enhanced efficient organisation. To enable the eGIS project, the Esri software is used. It includes use of the ArcGIS Desktop (ArcEditor) to ArcGIS Server (ArcGIS Enterprise Server) to ArcGIS Mobile (ArcPad) as well as the ArcGIS Desktop Extensions that is used widely.

#### **Esri Software Used:**

- ArcGIS for Desktop (ArcEditor)
- ArcGIS for Server (ArcGIS Enterprise Server)
- ArcGIS for Mobile (ArcPad)
- ArcGIS Desktop Extensions

These new tools provide PUB the ability to support the various domains of a water utility responsible for designing, building, managing and maintaining its water system and facilities. Some of the business benefits that PUB gained include:

- Physical job quality
- Accuracy of data
- Consistency of data
- Completeness of data
- Timeliness of receiving data
- Faster access to information
- Productivity gains
- Elimination of departmental silos of information
- Compliance with regulatory requirements
- New tools for more effective workforce management

## The results

Pub's eGIS has greatly helped to provide efficient and timely access to relevant asset information with accurate location context. This greatly aided the mobility of field-staff in carrying out their operational duties more efficiently. Furthermore, eGIS has also provided senior management a more comprehensive overview of the organisation's assets and network to support clearer and better coordinated decision making.

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