

Asset Management System for Water Supply Network - WAMS

Written by VidaGIS

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Water supply companies have an enormous volume of asset that is need a careful management, continuous operation & maintenance all life cycle of equipment. Moreover, the tremendous working condition makes the condition of equipment change overtime. Therefore, building an asset management system for each firm is the necessary demand.

WAMS is asset management system for water supply network based on the newest GIS technology come from ESRI Company. The system allow different users from different PCs, departments or higher level user, at the same time board of management could access to the system because the system could manage a big asset database to help users update, query, report, map, make decision and so forth.



Database Management Module

- Design organization of the database by themes (Hydrology, administrative boundaries, water supply, etc.) and then list all the data contain in each theme. It also gives detailed information like description of the attributes, type of data, domains, etc through dictionary.
- It is easy to create database whatever the RDBMS is (Oracle, SQL Server, MS Access, ...)

GIS Core application module

- Open a connection to the database and load data
- Visualize/Consult his data or map,
- Update the Base Map layers (data stored in the Base Map databases like Hydrology, Administrative boundaries, Topography, etc.) in term of geography and attributes,
- Do the backup and restore the database for safe and exchange purpose,
- Select his data using spatial or alphanumeric query,
- Print his current view (page with the map, title, legend, scale, date, north icon, etc.)

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- Save the current map into a file (map document) which stores the visible layers and all the properties, current scale, current selection, etc. Then the user can load a map document.

Asset management module

- Monitor detailed information, value, activity situation...
- Asset development plan, replacement, upgrading plan...
- Register and maintain information. The user will be able to add and delete each feature and modify the Geometry and Attributes.
- Use attributes to store history of objects
- User pre-defined symbology for the layers (so it will be easier to understand the map)

Inventory management module

It enables managers to systematically categorize the materials, contractors, tools and facilities...used for the business. The management of a system will increase work efficiency and better control for inventory system such as equipment, materials because of each device that can define and categorize at the first time. This module will allow the user to update list of materials, providers, and inventory needed to store; import equipment, materials; export according to repair requirement, replacement and maintenance; monitor a number of inventory materials, trace of materials; report in material statistics.

Operation and maintenance module

- Preventive maintenance & Operations management for each feature, the system can show some analysis and automatic alert to inform the team of the preventive maintenance to do this week
 - Real-time schedule management for: checking, flushing, replacement, leakage detection, reparation, etc.
 - Definition of the costs and team resource

Operation & maintenance planning module

- Operation and operating financing plan
- Maintenance and maintenance financing plan

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- Monitoring statistics of plan implementation
- Monitoring planning information
- Updating results of plan implementation
- Warning user to ensure the implementing progress.

Each asset item has separated for monitoring, maintenance plans that will be developed to assist managers making timely and suitable decisions. The role and responsibilities of each department, group and individual will be included in asset monitoring and management report system. Since then, operation plan will reflect clearly the scope of work, time, and resources for operation.



Data reporting & statistics module

- Thematic maps (pre-defined maps)
- Basic Print
- Advanced print (with options and design templates)
- Statistics analysis
- Spatial analysis (by administrative boundaries for example)
- Basic Reports like detailed information on one selected features (location and information), summary list of selected features by query (list all new pipes since 6 months), etc.
 - Advanced Reports (for decision-makers) like management indicator panel: a monthly report with give the Key Features to the Chief engineers and Chairman.

Data sharing module

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- Import GPS data like Survey points...
- Import other data formats (MIF/MID, TAB, DGN, etc.)
- Export the database to an Hydraulic Modeling System
- Export the map to an image (BMP, GIF, JPG, etc.)
- Export a selected layer to another data format

User Management module

For a powerful Data Security on the Water supply system, the Company needs to manage the users of the Water supply GIS Application using:

Groups: can be compared to department in an organization,

- Roles: can be compared to position or responsibilities of each user,
- Users: manage all the users with password and personal information,
- Access Rights: give to the user the appropriate rights by module or sub-module.