

inside newsletter



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managing external assets with gis



Everett Gay is Queensland University of Technology's Facilities Management Geographic Information

System (GIS) Administrator. His past experience spans engineering and topographical surveying, photogrammetry, asset management (water infrastructure) and geographic information systems. Everett has been responsible for migrating the GIS dataset from a local coordinated system to the Australian Standard – MGA94 system 56, as well as the implementation of the interactive web-based GIS System.

Queensland University of Technology Facilities Management now makes good use of the strengths of two Geographic Information System (GIS) platforms in the management of its external assets.

Initially Autodesk – AutoCAD Map 3D was the sole GIS tool. However, with the need to provide efficient access to asset information via web-based mapping solutions to the entire Facilities Management Division and consultants, other options were explored: ESRI ArcIMS web-based GIS was the chosen solution.

What is GIS?

Geographic Information System platforms provide a way of mapping above-ground and underground assets. With the new web-based mapping system, it is possible to locate and track underground services and actually control utilities, as well as update data on a regular basis. And being

web-based it allows access to information about the university's assets to QUT staff as well as contractors – for many purposes, including maintenance, security and design.

Some technical details

The master GIS data sets are housed within Autodesk – AutoCAD Map 3D GIS. The prime reason for this is the powerful editing function that is offered by Autodesk. In addition to this, the internal space management system is also reliant on Autodesk – AutoCAD and most of As Constructed data is also delivered in the AutoCAD dwg format (a file format used for storing two- and three-dimensional design data and metadata).

AutoCAD Map 3D also has a powerful export utility that enables 'attribute data' from a magnitude of sources to be exported to ESRI GIS Shapefile format. These attribute data include:

- physical properties, such as horizontal lengths of assets, computed area, point coordinates
- AutoCAD Block Attributes
- AutoCAD Map 3D Object Data (asset type, diameters, material, installation dates, elevations, reference IDs etc.).

The Shapefiles generated from AutoCAD Map 3D are then imported to ESRI ArcIMS Author and published in the form of an interactive GIS WebMap using the Java and Apache web server software accessories.

The website is hosted on a virtual server and is available to all on the Facilities Management intranet.

The functionality of the interactive WebMap is very user-friendly and offers the user direct access to all external asset data on all three QUT campuses.

Asset information and control points

Asset data covers the following:

- piped assets such as sewers, potable water, storm water, chilled water, gas
- cabled assets such as electricity, communications
- buildings
- surface topology
- signage
- trees
- survey control
- orthophotography.

The available attribute data is comprehensive and covers aspects such as: installation dates, material, diameters, elevations, lengths, areas, reference numbers (for meters, wayfinding signs, light poles etc.).

The ESRI ArcIMS online query function permits one to easily locate shut-off points for potable water supply to buildings as well as electricity isolation locations for specific buildings.

Statistical information is also easily accessible via the query function, which returns information such as:

- total length of assets (e.g. sewer pipes, potable water supply)
- gross floor areas and footprint areas of buildings
- surface use areas.

There are numerous other useful functions such as measure, zoom, pan, overview pan and the switching on and off of data not relevant to the viewer.

The updating of the Shapefile data is currently undertaken on a weekly basis. Automation of this process is currently in the development stage and will enable these updates to be carried out on a daily basis keeping the WebMap up to date.

New system easier to use

QUT's Maintenance Services Manager, Harvey Baldwin, appreciates the ease of use of the new web-based GIS mapping system. "This system greatly enhances ability in locating underground services and in controlling utilities, with the benefit of being simple enough for everyone to use it," he says.

And QUT's Engineering Services Manager, Geoff Woods, is full of praise for the GIS mapping system. "The web-based GIS mapping system is an extremely user-friendly front end enhancement to QUT's GIS database," he says. "Accessibility to in-ground services information is now readily available to both in-house and external service providers involved in maintenance, design and investigatory activities."

Future development of the GIS will embrace:

- **Tree management function.** This will provide GIS data on significant tree statistics such as: biological name, common name, base diameter, heritage status, height, canopy spread, condition, special needs, etc.

- **Parking management function.** This will include parking type (university vehicles, staff, general pool, paid, special, visitor, loading, mobility impaired), number of bays, area, etc.
- **External lighting management function.** This will include isolation switch locations, light type, illuminator type, voltage, status (e.g. emergency), etc.

The aim has been to allow a variety of users to easily find the one bit of information they may want out of the huge collection of data that we have covering above-ground and underground assets. With our new web platform we are now well on track to have the best of both worlds. ●

