

THE SURVEYOR'S ROLE AS GEO-DATA MANAGER

Surveyors have been a fundamental part of human societies for centuries. They have met the need for demarcating property boundaries, making maps for planning etc. They have planned, monitored and archived details of construction projects. Ultimately the profession would develop to provide a host of services and products that measure and depict the earth's surface with the natural, built and planned environments.



As we evolved, higher standards of living demanded more from the professionals that served them. Surveyors have responded to demands for broader knowledge and higher accuracy, becoming part of a skilled and knowledgeable workforce known as “design professionals”. Today’s advanced technologies – including measurement and positioning, computing, communications and geospatial data management – have made geographic information more accessible. As a result, demand is increasing for accurate, user-friendly geospatial information.

Beyond Positioning

Over the last fifty odd years, technologies such as EDM, electronic data collection, robotic total stations and GPS have transformed surveying fieldwork. Advances in computing technology have at least matched the changes in the field. The surveyor’s new role is that of

geo-data manager: gathering, managing and applying positioning-based information across numerous applications. Among the most evident is construction, where automated machine control has changed the surveyor's role. Rather than being pushed off the construction site, surveyors continue to play an essential part in the project success. The surveyor verifies site and design models, established control points for construction activities and provides quality control.

A key technology for surveyors is GIS. Modern GIS is far more than 'mere' mapping or providing survey data to develop a GIS base map. The surveyor's activities in GIS data collection are not just position measurements. Surveyors manage attributes about elements they geo-locate, using sensors and data collection technologies that extend beyond the normal surveying instrumentation. Not all but most 'forward thinking' surveyors are embracing GIS, and their involvement is shaping GIS applications and technologies.



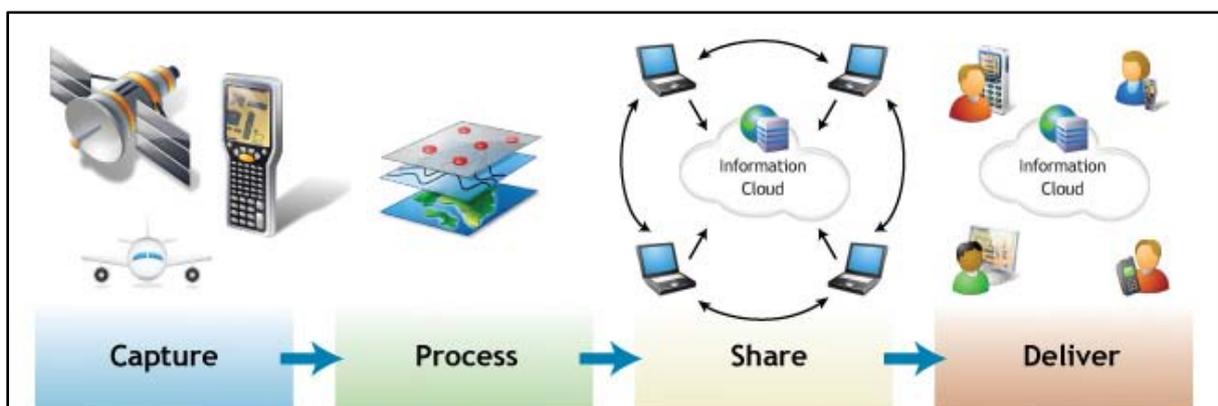
Technology will continue to play an increasing role in the future of the surveying profession. Developments such as terrestrial, mobile and airborne scanning, digital photogrammetry and remote sensing enable surveyors to collect more complete data. Fieldwork can be completed in less time, and data analysis is nearly instantaneous. Applications software is constantly improving to provide more solutions to certain applications. For example, surveying instruments can be coupled with wireless internet access, geo-databases available online and cloud computing. This combination of control data, airborne and satellite imaging, cadastral information etc. can be accessed in the field. As a result, the

surveyor (now the geo-data manager) can combine information and techniques to meet the needs of the entire project or part of it.

Surveying has become so user friendly that many non-surveyors – who formerly relied on surveyors - can now use these technologies themselves, as if to bypass the surveyor. However, even in these situations, the surveyor’s role is not eliminated because operators lacking the surveyors training and knowledge will not be able to spot errors or mistakes and flaws in the information. This need gives the surveyor the opportunity to provide services that enable best practices in data collection and quality assurance.

Opportunities

One of the most important new areas for a changing role for surveyors is GIS. Because it enjoys a high level of acceptance by planners, construction professionals and engineers, GIS will be a growth area for surveyors as well. The well prepared surveyor can offer expertise and services in several areas such as providing backdrop data from ortho-photos to DTMs and data collection for populating and updating the GIS. The surveyor can offer additional services such as quality assurance, data management and analysis. And GIS data, combined with survey grade field data, is a superb vehicle for cadastral data. Surveyors can play a core role in extracting new information and knowledge from existing datasets and providing it to people who manage the land and what’s on it. As these consumers insist on faster collection and generation of information, the surveyor must be prepared with powerful tools for managing, verifying and interpreting this vast volume of data.



Even with the technology, a key challenge for the surveyor will be communicating the information to the users. Surveyors can present information using a variety of media visualisations such as 3D representations.

The Future

In order for the surveyor to be an essential part of the building process, tomorrow's surveyor must demonstrate broad multidisciplinary skills. The surveyor must have the skills to navigate across different knowledge fields and work effectively with other disciplines and local processes. The world of today's surveyor is evolving from data collection into geo-data management and information and knowledge extraction. Such a change does not diminish the surveyor's role, rather it expands the way in which surveyors contribute to a project. While survey data collection remains the core of the surveyor's role, it now serves as the foundation for a larger set of skills and services. These broader capabilities call for tomorrow's surveyor to be a data professional, providing analytical tools and results for clients who require increasingly complex location based information.

Individual surveyors and their professional societies must work together with educational institutions, government and industry to achieve common goals and benefits. Thus, reinforcing that surveyors are geo-data managers of the future and are prepared for the challenges ahead.



[Prepared by : M.Seedat (Project Survey Technician, Surveying & Land Information Dept) – June 2014]