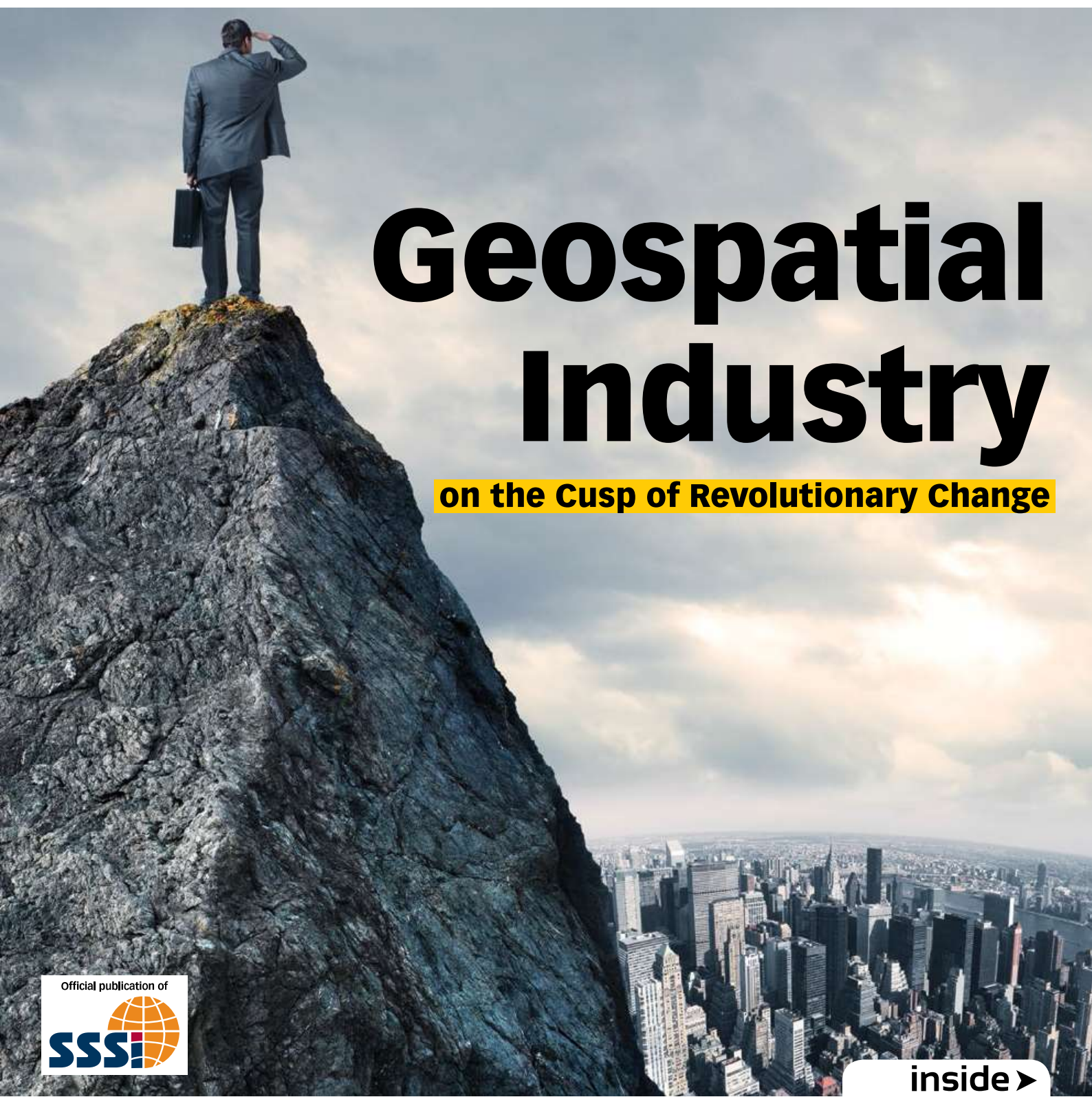


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Locate17 Guide
The must do's for the event of the year

Geospatial Industry

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Adjustments to workflow and automated validation solutions radically improve data capture from as-constructed plans

If you've ever wondered why in this day and age asset and geospatial information collection for new construction projects is not an efficient process, you are not alone. While the majority of new asset management infrastructure information is in digital form in CAD systems (that are quite capable of including attributes and other key information), this data is often missing, provided in PDF files, or even worse, needs to be recaptured after the project is completed.

The status quo is however changing

Increasing pressure to have accurate infrastructure data and the start of mandated digital submission like in Victoria and NSW are worth noting. With current extract, transform, load (ETL) products and off-the-shelf solutions like As Constructed Design Certification (ACDC), www.asconstructed.com, the geospatial industry is on the cusp of a revolutionary change in workflow and the way as-constructed submittals are validated and integrated into GIS and asset management systems.

In architectural construction projects the use of Building Information Modeling (BIM) and modern design software is becoming standard practice and has opened a new era of data capture, transfer, and construction management. BIM is a digital 3D model of a building and includes a process that integrates data during the design, construction, and maintenance of a project to be shared with all partners. While some designers, contractors and consultants still rely on two-dimensional plans, those at the forefront of BIM use 3D modeling, 4D - adding time or staging data, 5D - adding cost information, and 6D - where the 3D data is populated with future asset information. This happens through the mutual exchange of data and results in a complete digital description of a project. When a building is finished, information is up-to-date and orders of magnitude more complete, saving organisations millions of dollars.

Why is this not the case for geospatial data and asset infrastructure projects? What are the issues? What would it take to change the data flow and data

validation relating to as-constructed plans and the transfer of information? What are the benefits?

We've always done it this way

Typically, the current workflow of as-constructed plan submittals, and the data associated with them, has developed over time. The process involves many steps and input from various groups, depending on the stage of the project. Resistance to change is exacerbated by lack of ownership of the entire process by one group, multiple requirements along the way, and a lack of appreciation of the cost and impact of poor and incomplete asset information. The delay and cost of recapturing information after the fact, is substantial and instead of being included into the original cost of the project, it is often paid for with internal funds.

We have a CAD standard

In an effort to streamline plan checking and make submittals consistent, many organisations have a CAD standard. While this is an important start, it doesn't go far enough for the data involved and manual checking is still required. CAD standards are focused on presentation within a structured set of layers, line styles and blocks, but the standards usually don't include sufficient information on the attributes required and don't include techniques for checking mandatory information. Using a CAD standard doesn't ensure that all entities are fully attributed. Point data in CAD drawings can easily be attributed but assigning

attributes to linear and polygon features is difficult and seldom done.

What's involved?

Data standards are more extensive than CAD standards. More comprehensive infrastructure data standards like ACT Ref-11/A-SPEC /ADAC/FNOROC/SUI deliver a vital focus on the data captured during the design and drafting phase and provide greater depth to the data needed at the end of the process — during the final data capture and conversion stage.

On many levels, the biggest change is a process change. For instance, switching the entering and checking of data from the end of the process to the beginning—during the design and drafting stage—allows accurate data to be captured from the get go by the group doing the design. Other process adjustments such as providing tools for designs to be pre-validated before submittal and enhancing validation techniques to include location, geometry and topology can ensure correct information such as diameter, depth, manufacturer, and project number are incorporated. Further, linear features like pipes can be snapped and segmented from node to node to form topological networks.

So while it is good to provide a CAD template, the template should highlight mandatory entries and be connected to

an automated validation system such as ACDC. Open Spatial's ACDC supports multiple standards and easily validates and transforms design information stored in as-constructed drawings to GIS and Enterprise Asset Management information without recapturing the data.

In this way, drawing submittals can be pre-validated before the design is approved. The other key change in the process is ensuring the as-designed drawings are updated to reflect the as-constructed conditions and information before final acceptance. ACDC manages submitted data, validates its quality against organisational and industry standards and transforms it into geospatial and asset management information which can be automatically loaded into GIS and AMS/CMMS systems with minimum disruption to current workflows. These process changes help bring geospatial data and asset infrastructure projects more in line with architectural construction project data flows. Updating the process may require a more holistic approach across organisations and could include advocacy to update some legislative guidelines and requirements like requiring automated validation before submittal. Such changes save time and money and, most importantly, improve data quality. ■

Why change the process?

Changing the process provides crucial benefits in today's digital age including:

- ✓ Automated validation saves time and ensures standards and required data is provided
- ✓ Data entered during design and validated at the construction phase provides complete, accurate data that is delivered as part of the project and not later during the data capture and conversion stage
- ✓ Submitted data is managed and validated against organisational and industry standards. Geospatial and asset management information can be automatically loaded into GIS and AMS/CMMS systems
- ✓ Minimum disruption to current workflows
- ✓ Staff can prioritise more important aspects
- ✓ Plan submittal approval turn-around time can be changed from days to minutes
- ✓ Clear requirements and checking items in a consistent and comprehensive way regardless of size of the project

A New Era of Data Capture

