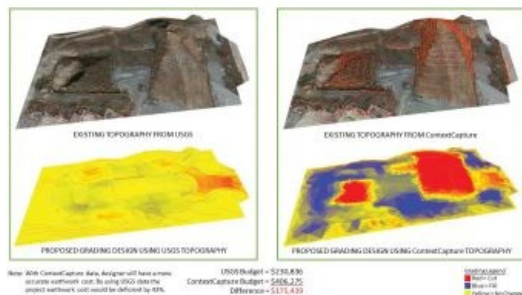


Bentley Puts Modelling in the Cloud



Is the 3D model becoming the only deliverable? For construction, is photogrammetry a better option than LiDAR? How long before modelling software can calculate costs? When should you start mentioning BIM? Richard Groom reports from a day of insight.

It was only near the end of a morning of presentations at Bentley's London offices that the acronym BIM was mentioned. The reason, I was told, is that the meaning of BIM develops with people's understanding as they progress through Levels one to three and that for those just starting out, talk of BIM as a process can be a step too far. The purpose of the day was to introduce the Press to the latest developments in the Bentley family.

Open Road

Proceedings kicked off with 'Open Roads'. We normally relate the word 'Open' with creative commons licences and the like. Those who might be anticipating free software would alas be sadly disappointed. Instead, we were shown some software which is indeed impressive and takes in the full lifecycle of projects.

Concept Station sits at the start of the design process. It is a tool for outline design. You can design centreline horizontal and vertical geometry against a DTM – probably taken from LiDAR. The software can also take imagery and DTMs produced from aerial photography flown by drone and processed using ContextCapture software. Concept Station has been developed to go deeper into the design process than when it was first released in 2015 and now, as well as being a useful tool for conceptual design and visualisation for stakeholders, it is also being used as a tool to support pricing at tender stage.

Detailed Design

The road centreline from Concept Station can be imported into Bentley's detailed design software. It can also be transferred back to Concept Station from detailed design, should that be necessary. We were given a live demonstration of the detailed design software, which has in its pedigree Bentley's INROADS, GeoPak and MX. INROADS has dominated in the USA whilst MX, itself descended from MOSS, has been the leader in Britain.

Back to the Drawing Board

Bentley argue that there is a general drift towards the 3D model being the only deliverable, but we are not there yet. Paper is still the legal document and so they have concentrated on improving the efficiency with which design documentation can be produced from the 3D model – specifically reducing the three paths to print available through INROADS, GeoPak and MX, to one. The new design package will be released in April as part of Bentley's Connect edition. This allows for design work using federated models. One expects design changes to ripple through the model and indeed they do, slickly. The model can be used to extract quantities for pricing but cannot yet be used to calculate cost of construction.

Reality Modelling

Reality modelling is the term of the moment, which encompasses capturing and processing of mass data in the form of point clouds depicting the existing environment, whether they are produced from laser scanning or through photogrammetry. As an example, Bentley presented the work being carried out by Costain at London Bridge Station, and the subject of an article in the Jan/Feb issue of GW. Bentley calls this ContextCapture and hitherto the data has been processed 'On-premise' (i.e. on a computer on site), but in April they will be launching a service which will allow the user to take photos on a smartphone and transmit them for processing in the cloud. They claim that a small model comprised of seventeen images can be processed and returned within fifteen minutes. The model would however be uncontrolled so perhaps it is better to return to the office, download, add the control and then send to the cloud. Processing in the cloud has the advantage that the project has access to more and faster processing power to tackle large as well as small photogrammetric exercises.

Photo Shoot Planning

The planning for photogrammetry can be carried out in Concept Station. It calculates optimised photo positions to achieve a specified accuracy – whatever the platform – and then, if a drone is involved, can produce a flight plan, which can be transferred to the flight control software. Topcon will be supplying ContextCapture with their UAS and Bentley is currently collaborating with drone manufacturer, DJI.

‘Inspectioneering’

Bentley sees photography and photogrammetry as a means of bringing inspection activities indoors. Photogrammetry has a significant advantage over laser scanning in that the cost of data capture is generally less and produces a model which is the same as would be seen by someone visiting the site. A series of photogrammetric surveys can be viewed in sequence in the office to show how defects develop. They can potentially import the design drawings too so that, for example, an area of concrete spalling could be viewed as it develops together with underlying reinforcing bars and other structural detail. It is not hard to imagine that frequent photography and modelling could lead on to software that can predict failure.

Surveying the Smart City State

Bentley’s interests are now moving into smart cities. They see the technology being enabled by scalable, open and secure cloud computing, big data, social media and the rise of instant information and the internet of things. At the same time the virtual and physical can be combined in augmented reality. The Singapore Land Authority has mapped the island state using Bentley Map and Pointools. The model is used for flood management, planning telecommunications cover, air flow dynamics, studying the urban heat island and underground infrastructure. They foresee significant monetary benefits from real-time analytics using all this data.

This article was published in Geomatics World May/June 2017

<https://www.gim-international.com/content/article/bentley-puts-modelling-in-the-cloud>
