Editorial:
Rob Buckley, Editor - GeoInternational
robertbuckley@geoconnexion.com

Peter FitzGibbon, Editor - GeoUK
peterfitzgibbon@geoconnexion.com
+44 (0) 1992 788249

Alan Plumley News Editor
+44 (0) 1438 715124
news@geoconnexion.com

Columnists:
GeoInternational
Louise Friis-Hansen, FIG
Daniel Katzer, Hinte Messe
Roger Longhorn, GSDI
Alistair Maclenan, Quarry One Eleven
Geoff Sawyer, EARSC

GeoUK
Chris Harris, Modern Surveying
Graham Wallace, AGI News
Guest Blog: Damian Testa
Terri Freemantle, Observations

Publisher:
Mai Ward
+44 (0) 1223 279151
maiward@geoconnexion.com

Advertising:
Micki Knight, Sales & Marketing Director
+44 (0) 7801 907666
mickiknight@geoconnexion.com

Mailing Address & Subscription Enquires:
GeoConnexion Limited,
PO Box 594, Cambridge,
CB1 0FY, United Kingdom
+44 (0) 1223 279151
info@geoconnexion.com
subscription@geoconnexion.com
www.geoconnexion.com

Design:
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www.atgraphicsuk.com

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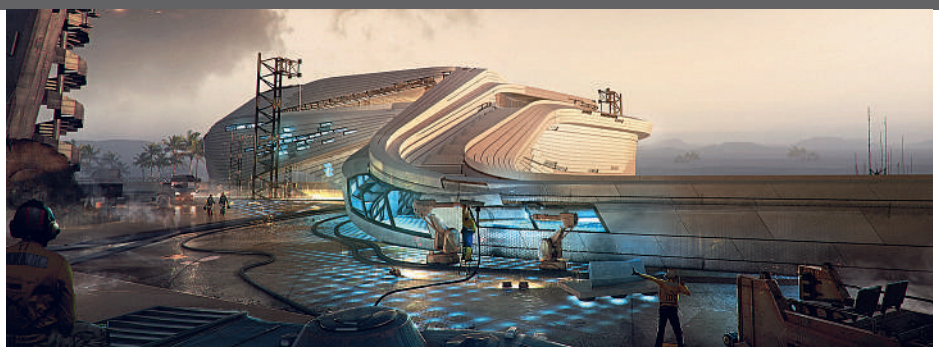
ROB BUCKLEY
EDITOR
robertbuckley@geoconnexion.com

AS REAL AS REAL

3D VISUALISATION TECHNOLOGIES ARE ENABLING THE CONSTRUCTION INDUSTRY TO CREATE PROJECTS THAT LOOK EXACTLY THE WAY THEIR DESIGNERS WANT



There's almost always a difference between theory and practice. It doesn't matter how well you plan, how many variables you consider and how studiously you consider the potential obstacles, no plan survives contact with reality.

That's certainly been the case with construction, surveying's very first application. Surveyors can survey, architects can plan, builders can obtain the correct materials and so on, but invariably events overtake all that preparation.

Yet we're now at the point in our history where new technologies are making it possible for the differences between a construction project's design and the eventual realisation of that design can be as close to zero as possible, whether that construction is of a single building or a whole Smart City. In this issue, we look at BIM and 3D visualisation in particular.

BIM – a far easier acronym than the clunky expression 'building information modelling' – is what Andrew Norrie describes on page 37 of this issue as less a 'gentle change in attitude so much as a bloody revolution'. For more than 20 years, the construction industry was used to 2D CAD environments but BIM and its 3D modelling capabilities are forcing the industry to adapt. The benefits are huge, particularly when used in combination with the processing capabilities of the cloud, Norrie says. With hundreds of people participating on a project, BIM and the cloud together provide both the communication and modelling capabilities for everyone involved to be able to visualise plans together, more or less as the project will appear when constructed. However, new methods of working are still needed to truly be able to benefit from this new approach. Indeed, the industry's failure to embrace new methods in favour of tried and tested solutions has led to waste of as much as 50% on some projects.

Being able to visualise projects in three dimensions in advance also allows new kinds of buildings to be created, Andrew Watts argues on page 41. These buildings can use less energy, are more durable, look better, are more interesting to inhabit and are less expensive to build, as well as more imaginatively designed, Watts says. He points to work of Zaha Hadid Architects, whose 'audacious geometry comprising curves and sweeping planes cannot be built using traditional methods'. Completely new shapes can be developed and their behaviours precisely known before they have been physically made. It's even possible to have the 3D geometries of buildings created by CAD systems themselves, rather than be a person, resulting in 'shapes that have never been seen before'.

This ability to collaborate and innovatively design scales up from single projects to entire cities. On page 32, Aidan Mercer looks at how the city of Helsinki in Finland is already using 3D visualisation, BIM, 'reality modelling' and other technologies to turn itself into a Smart City. Helsinki has been using 3D strategies in urban planning since the 1980s, but its approach has continued to involve with the technology to the point it now has an intelligent CityGML model and a reality mesh. It now has 12 pilot projects that use 3D design information, ranging from modelling maintenance processes to a citizen interaction platform that enables Helsinki residents to have a direct say in how much car parking they'd like, for example. City planners can then take their views into consideration when creating the next additions to Helsinki's urban landscape.

I hope you enjoy the issue.