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Editorial

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Welcome to the new year and the latest edition of *Civil Engineering*.

It is not yet clear what effect last year's political upheavals – with Britain deciding to leave the EU and the USA electing Donald Trump as president – will have on the international construction industry. But what is certain is that now, more than ever, we need to work together as a profession.

Civil engineers need to collaborate closely to bring innovative ways of working and new technology to the market. We need to ensure we are able to react rapidly to changing external conditions and challenging commercial environments, plus respond to the ever-present issue of sustainability.

These themes are championed by the Institution of Civil Engineers' (ICE) new president Tim Broyd, who opens our first issue of 2017 with his presidential address (Broyd, 2017). He reminds us that innovation and technological advances have been at the heart of what we do for many years. He then goes on to explain how digital engineering can transform people's lives, and how this agenda can help civil engineers deliver truly smart infrastructure on time, at reduced cost and with unprecedented quality and precision.

Moving on to our papers, Maltini and Asamov (2017) give us an overview of the decommissioning of Chernobyl nuclear power station, which was partly destroyed in an accident in 1986. This project sees more than 40 countries contributing with grants to the European Bank for Reconstruction and Development and an international team of engineers collaborating on the safe decommissioning of the plant and others of similar design. The paper describes the design and construction process for several large-scale storage and waste processing facilities, as well as a new 270 m wide arched confinement structure for the hastily erected 'sarcophagus' that contains unit 4's radioactive remains.

The second paper focuses on the benefits of using ICE's NEC3 Engineering and Construction Contract for a risky directional drilling project in Hong Kong (Li *et al.*, 2017). The authors show how NEC3 can help apportion risk equitably, while encouraging collaboration in risk mitigation to the benefit of both client and contractor. The paper also provides a useful technical insight into the use of horizontal directional drilling for creating a 1.4 km freshwater pipeline under a busy shipping lane in difficult ground conditions.

We move on to a review by Hancock *et al.* (2017) that investigates the current state of global navigation satellite systems, including those from the USA, Russia, China and the EU. The authors offer a practical evaluation of the different systems based on their test network at the University of

Nottingham's Ningbo campus in China, with a particular focus on performance in increasingly built-up urban environments. They go on to discuss the use of the various satellite systems for accurately mapping utilities, and go on to show that by using more than one satellite system civil engineers can benefit from significantly improved positional accuracy. They conclude with an overview of the Ductrunner pipe-mapping system, which can be used in combination with satellite systems for accurate mapping of underground utilities.

Our final authors, Hall *et al.* (2017), discuss the challenges facing national infrastructure systems today and in the future. They report on their development of the Nismod 'system of systems' simulation model, which attempts to model demand scenarios as well as the economic and sustainability impacts of future infrastructure. The model also maps the complex interdependencies between different systems in an attempt to support strategic decision making. Certainly it shows that the decisions we make in 2017 about nationally strategic infrastructure may still be having an impact long after the effects of Brexit and Trump.

I hope you enjoy reading this issue of *Civil Engineering* and, on behalf of the editorial panel, wish you a healthy and prosperous 2017.

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