

# Building Back Better – a digital response

Smart Risk Registers can support high quality project delivery in line with the government's *Build Back Better* plan, argue project team consultant **Kelachi Amadi-Echendu**, management consultant **Graham Robinson**, supply chain barrister **Professor Rudi Klein**, construction risk management consultant **Stephen Woodward** and South African-based organisational behaviour specialist **Anton Krause**.

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## KEY POINTS

- Accelerating global digitalisation following the coronavirus COVID-19 pandemic creates an opportunity for a digital response to *Build Back Better*.
- The Smart Risk Register supports delivery of better-quality infrastructure at lower cost, through early and transparent engagement with decision-making outcomes.
- The Smart Risk Register supports the desired cultural shift in the industry towards realising the full benefit of digital approaches, such as BIM.
- The Smart Risk Register provides an opportunity for the UK to establish itself as the leader in the field of collaborative risk management.
- This will improve the confidence of investors and insurers, through greater certainty regarding risk allocations.

### The digital need

The *Construction Sector Deal*, published in 2018, described the priority areas for industry and government to work together to radically improve the productivity of the sector. Termed the 'bytes and mortar revolution'; two key priorities of the deal are increased off-site manufacture and building a digital future. In parallel, Dame Judith Hackitt's 2018 report, *Building a Safer Future*, published following the Grenfell Tower tragedy, made several recommendations to government,

including establishing a digital 'golden thread' to "ensure that accurate building information is securely created, updated and accessible, at points throughout the building life cycle." (*Hackitt* 2018, 102).

The digital need as described by and recommended to government, has been accelerated by the impact of the global pandemic.

"The coronavirus is not just a temporary crisis, it's a permanent disruptor", anticipates Haim Israel, Head of Thematic Investing, Bank of America Global Research. The Bank of America report, *The World After Covid*, identifies that the pandemic is accelerating the structural shifts of global knowledge, leaving a significant legacy in the generation and use of data to inform business and wider society.

The *LSE Business Review* identifies that the world disrupted by the coronavirus pandemic necessitates new supply chain models that prioritise resilience and responsiveness over lowest cost, traditional procurement models. The current priority is improving supply chain resilience and reducing the long-term adverse impact that coronavirus will have on supply chains especially with such work elements as cladding, steel and building services and given that 90% of the construction process is outsourced. There will be unprecedented demands on the construction industry in terms of building safety, unavailability of professional indemnity insurance cover, clamour for reducing carbon footprint, an ambitious infrastructure programme with limited budgets and adoption of more efficient ways of working such as off-site component manufacturing.

### The Smart Risk Register

The concept of the Smart Risk Register was first aired in the article, 'Digitising risk management', in *Building* magazine on 8 March 2019 by Professor Rudi Klein, then CEO of the Specialist Engineering Contractor's Group and Mike Halsall, then an advisor to the government on Distributed Ledger Technology. The key outcome of the Smart Risk Register is that "Ownership of the relevant risk, its likely impact, probability of occurrence and measures to manage it will need to be logged into the system. All this activity must take place before any construction begins." (*Building*, 8 March 2019). The Smart Risk Register tests risk assumptions and the adequacy of risk reviews and provides an auditable and transparent ledger of decisions reached. The combined security and transparency of Distributed Ledger Technology with machine learning computation provides high quality data through unbiased information gathering and reporting.

In proactively engaging the whole team with a single source of truth on risk, the Smart Risk Register provides the opportunity to identify project risks with greater transparency than is possible non-digitally. This improves the probability of more efficient and safer project outcomes that meet the expressed needs of the client and users. The ability to provide early warning to stakeholders of risks taken by or allocated to a party unable to manage it will allow for optimum risk management. This has the potential to alleviate some of the recent challenge regarding professional indemnity insurance and the considerable increase in cost to organisations from hesitant insurers.

The collaborative nature of the project delivery process is embedded early; stakeholders to all stages of the project lifecycle are invited to contribute to the risk register, working through ownership and likely impact of risks to give greater certainty in completion dates and the cost plan.

A Smart Risk Register has the potential to significantly reduce the cost of UK construction which is the amongst the highest in Europe. The Smart Risk Register aims to rectify budgetary failure by:

- 1) Making risk the driver for the cost plan and eradicating endemic waste.
- 2) Evidencing compliance or non-compliance with the key investment decision.

- 3) Signifying when the project is ready for construction (or not ready for construction because of failure of one or more of the identified risks). and automatically notifying the client, project participants and external stakeholders such as building control authorities, the Health and Safety Executive, project and risk insurers and funders.

Embedding a digital risk register improves governance and accountability - two particularly important factors in public infrastructure procurement described by the Build Back Better plan and identifies potential efficiency savings. As such it promotes much needed reforms in the UK's management of public finances and procurement of infrastructure, and vitally supports the increase in flow of direct overseas investment into the infrastructure sector.

### A culture of coordinated risk management

Collaboration of all stakeholders is embedded in the approach, creating the environment for project participants to align objectives and build trust to achieve better outcomes for all stakeholders.

The Smart Risk Register is applied to both behavioural and operational risks, collecting data on perceived and experienced project risk as the project proceeds. The data feeds an early warning system, embedding a real-time Distributed Ledger Technology risk register into the delivery model.

The Smart Risk Register enables an open approach to risk engineering: risk identification, mitigation plans, and appropriate risk allocation. Distributed Ledger Technology provides a transparent audit of all the team's decisions. This approach to managing data enables industry benchmarking, providing a standardised risk management approach that can be applied across the sector.

Through machine-learning heightened industry knowledge of construction and infrastructure risk, the Smart Risk Register provides a human behavioural risk interface with artificial intelligence. Collecting information in one place increases the transparency of risk identification, helps to expose buried risks, counters optimism bias and improves the accuracy of risk ownership to provide better information for third-party project auditing. Use of a Smart Risk Register moves to overcome

the systematic poor pricing of risk that leads to so many procurement and payment issues and counters the prevailing strategy of supply chain risk transference that has seen professional indemnity insurance premiums reach unmanageable levels. Both payment management and digital early warning systems functionally support supply chain cashflow in mitigating the risk of supply chain insolvency, poor payment practices, compliance-related and legislative risk, and supply chain proof-of-payment reporting. The Smart Risk Register creates time for effective risk evaluation and decision-making through a digital early warning system, identifying risks through real time risk profiling, creating opportunity for timely responsive action that can influence future procurement strategies.

The Smart Risk Register also seeks to accelerate engagement with existing collaborative data-sharing approaches in the industry, such as BIM. With a strong culture of experience and evidence of prior success, the construction sector has been slow to adopt and fully gain the benefit of digital and technological developments, often accused of stagnant productivity as a result. Culture is significant to the successful transformation of the industry going forward. Although construction is by nature a collaborative process, with the rapidly increasing complexity of projects, effective collaboration requiring trust, transparency and sharing of information, and speed of response and decision-making must be actively enabled by the systems and processes through which the project is managed.

Creating a collaborative platform using Distributed Ledger Technology to establish a project risk profile prior to commencement of the project moves a BIM approach from the recognised areas of technical design to the whole delivery process. A goal of the Smart Risk Register is to enable sharing and synchronising data from

multiple historic projects to inform decision-making on current and future projects.

The Smart Risk Register aims to maximise the benefit of machine learning and early warning systems to improve risk identification, allocation, and reduction in the collaborative delivery of complex construction and infrastructure projects. Applying the Smart Risk Register to projects targets the productivity challenge faced by the sector, often experienced in the low uptake of digital tools and technologies to improve existing processes and ways of working. Although an ongoing issue for many decades, the productivity challenge has been exacerbated by high-profile cases of risk management failure, such as the collapse of Carillion, and the exceptional global impact of the Covid-19 pandemic. The effectiveness achieved by the Smart Risk Register could bring about significant economic, technical and behavioural gains in a sector that is desperate for transformation. Development of the Smart Risk Register is ongoing, with several next steps planned as outlined below.

### Next steps

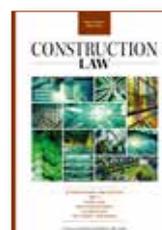
- ◆ Undertake industry market testing using “market champions”, targeting investors with supply chain influence.
- ◆ Engage with institutional investors to mandate the Smart Risk Register as the means of protecting their return on their infrastructure investment through “de-risking construction”.
- ◆ Following trialling in the UK domestic market, explore the potential to use blockchain technology and develop the Smart Risk Register as a system to combat corruption on international construction projects. The advantage of blockchain is that it offers greater transparency than traditional e-procurement systems in tackling corruption in public procurement. **CL**



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