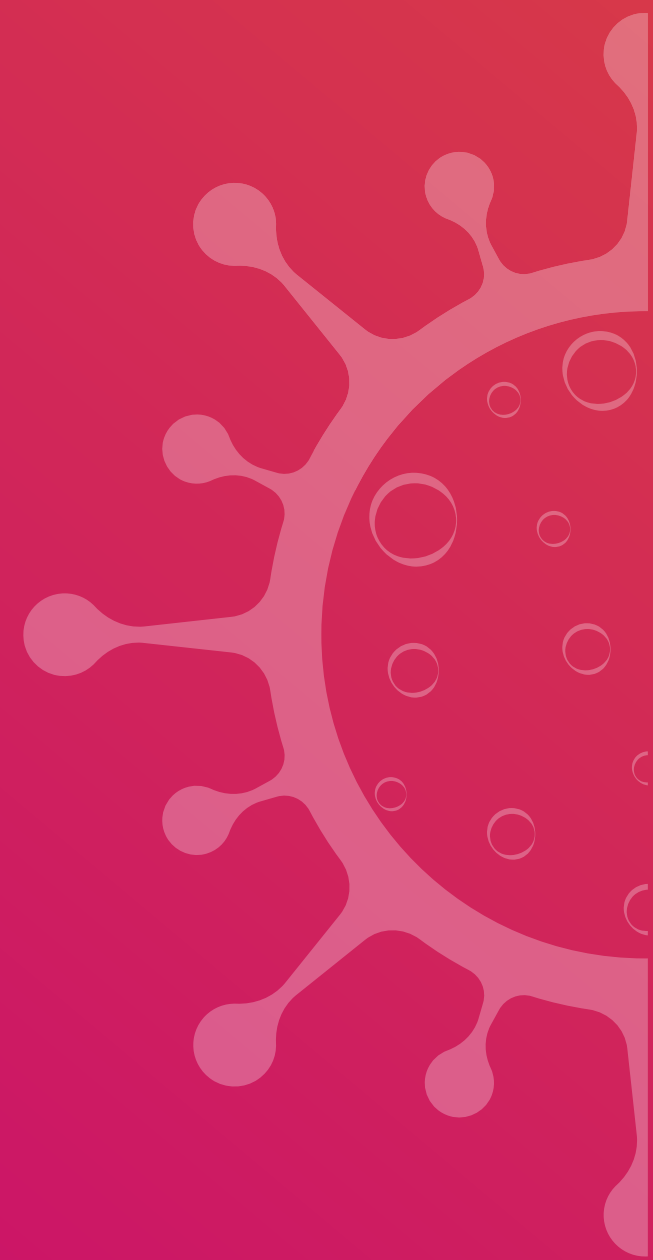




Post-Covid19 Recovery:

Five Ways Contractors Can Plan for Success





Post-Covid19 Recovery:

Five Ways Contractors Can Plan for Success

At the start of 2020, it was all systems go for construction companies. With the global population predicted to hit 9 billion by 2050 – and two out of every three people living in cities by 2050¹ – the demand for construction had never been greater.

As a society, we're adapting to social distancing and the current lockdown has presented challenges for the construction sector. However, not all work has come to a standstill. As you continue planning for post-virus recovery and success, we believe these top five areas will play an important part in shaping the sector:



1 STAGING CONSTRUCTION OFF-SITE

The biggest opportunity for construction is urban development. However, regenerating buildings or constructing new builds in busy cities poses huge challenges for construction companies.

Aside from operating on constrained sites in busy locations (e.g. the Leadenhall Building in London where the site footprint was the building footprint), sites are often live environments, with businesses in occupation.

To enable contractors to meet the aggressive timescales of complex construction projects, they need a highly structured process to build and test solutions. Often the best way to do this is off-site. 'Just-in-time' construction currently accounts for less than 10% of total construction output but is on an upward trajectory², and it's no surprise why. It can:

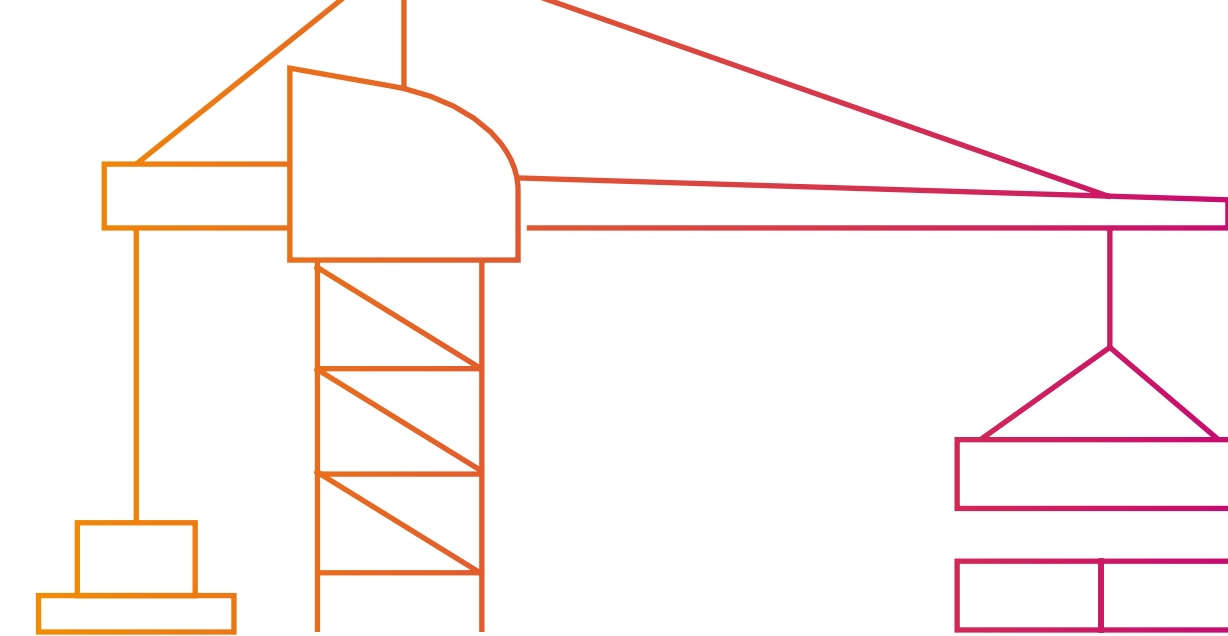
- increase productivity
- reduce timescales
- provide greater predictability
- enhance quality control
- reduce whole life costs.





STAGING CONSTRUCTION OFF-SITE

As companies look to stage construction off-site, there are several factors to consider:



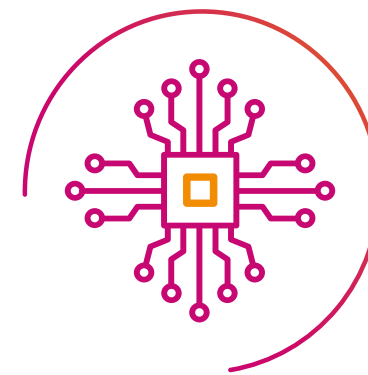
Test away from pressurised live environment:

ensure you work with suppliers who have the capability to offer staging environments, either at their site or a third-party site, and proven processes where they can pre-configure solutions and carry out repeated testing.



Organise 'just-in-time' materials delivery systems:

building sites are very busy environments with multiple contractors each carrying out their own deliverables, all needing to skilfully work around each other. Give careful thought to re-engineering your supply chain as getting the timing and communications with suppliers right is key.



Invest in digital twin technology:

Being able to create an exact mirror of the asset, means you can spot and correct irregularities before building work starts. IDC predicts that companies who invest in digital twin technology improve cycle times of critical processes by 30%³.



Move to partnership-based relationships:

establishing clear communication paths is critical for the value chain to work, but not only are robust systems needed, a mindset and approach to collaborate are also essential. Seek out trusted companies you can partner with.



Align planning methodology:

ensure all stakeholders use a standard methodology to track and deliver the critical elements. Right from design to installation, being able to carefully plan, monitor and log all activities is crucial.



STAGING CONSTRUCTION
OFF-SITE

2 EMBRACING TECHNOLOGY THAT TRANSFORMS

From software-defined networks forming the backbone of sites to connected construction technologies such as BIM, wireless sensing, and AR/VR, there's an incredible array of emerging technologies for the sector.

But adoption is slow, and many companies are missing out on innovative approaches to driving down cost and improving project execution.



In the coming year, we expect to see design, engineering, and construction firms further augment their portfolios with digital and connected technology assets in an effort to capture a larger share of this market.⁴

Deloitte



In a recent article by International Construction, Menno de Jonge, Director of Digital Construction at Royal BAM Group talked about the need to fully embrace digital technologies. BAM has a phrase that has become synonymous with the company which is...

'We make it before we make it'

...meaning digital-first, then physical. The digital tools BAM embraces enables them to easily visualise the construction schedule, flag any potential problems and get back on track – while saving on rework.



EMBRACING TECHNOLOGY
THAT TRANSFORMS

2 EMBRACING TECHNOLOGY THAT TRANSFORMS

Chris Johnson, Chief Technology Officer at Balfour Beatty, believes companies at the forefront of the digital revolution, which integrate new technologies most effectively, updating their business capabilities and their offer, are set to reap the biggest rewards.

In the same article he set out how Balfour Beatty aims to have a 'digital twin' for all their physical projects with each piece of work reflected in the data-drive model. He believes this collaborative platform will allow for increased understanding and interaction.

Digital technology is already transforming how we design, construct and maintain our infrastructure. Aside from streamlining resources, the benefits include improving the bottom line, optimising asset efficiency and ultimately creating smart, connected job sites of the future.⁴ We anticipate many more contractors actively seeking out and embracing digital game-changers.

Looking ahead to 2020, these inherently disruptive technologies have the potential to provide the efficiency, productivity, and safety breakthroughs the industry has sought for decades.⁴

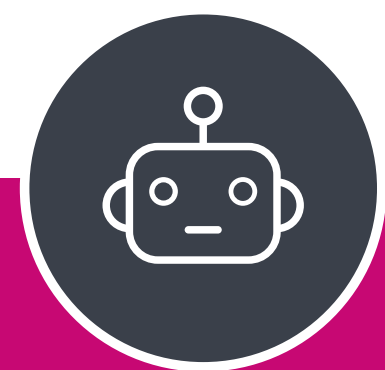
Deloitte



EMBRACING TECHNOLOGY
THAT TRANSFORMS

2 EMBRACING TECHNOLOGY THAT TRANSFORMS

Digital opportunities in engineering and construction



Robotics

From autonomous rovers and drones that can increase the efficiency of site inspections, to mechanical arms that automate highly repetitive tasks like bricklaying and tying rebar, the robotic revolution looks set to gather significant pace.



Automation

The rise of artificial intelligence (AI) is beginning to impact construction—from the major leaps taken in concepts like the predictive design at the project planning stage, to the rise of intelligent buildings that learn how best to operate themselves and serve their users over time.



3D printing

Accurate digital design information allows 3D printing to be used for everything from rapid prototyping, component manufacture and scale modeling, to the full-scale printing of project components.



Autonomous vehicles

Automation of construction sites – the combined use of autonomous technology and electric power— enables work to take place around the clock without the need for breaks or the disruptive noise levels that traditionally prevent such working.



Unmanned aerial vehicles (UAVs)

From undertaking inspections ensuring that workers are kept out of harm's way, to surveying vast areas of land in just a few minutes, the continued rise of UAVs will considerably improve safety and productivity in construction.



Virtual and augmented reality (VR/AR)

From enabling project teams and stakeholders to step inside their proposed schemes before construction work commences, to enabling walkthroughs of complex site logistics plans to support health and safety awareness training.

Deloitte: Digital opportunities in engineering and construction



EMBRACING TECHNOLOGY
THAT TRANSFORMS



FOCUSING ON SUSTAINABILITY

With growing concerns over climate change and the finite nature of these resources, there is increasing pressure on construction firms to reduce their environmental impact. The built environment currently accounts for:

45%

of total UK carbon emissions (27% from domestic buildings and 18% from non-domestic).

72%

of domestic emissions arise from space heating and the provision of hot water.

32%

of landfill waste comes from the construction and demolition of buildings.

13%

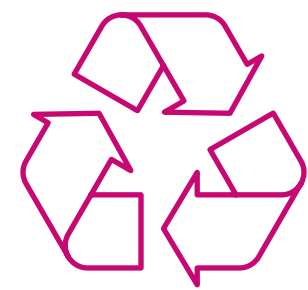
of products delivered to construction sites are sent directly to landfill without being used.⁵



FOCUSING ON
SUSTAINABILITY

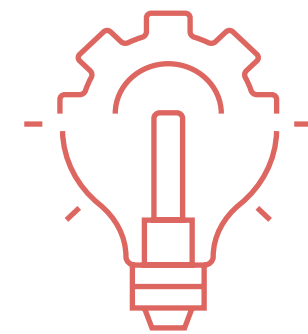
3 FOCUSING ON SUSTAINABILITY

We predict the focus in 2020 to be on:



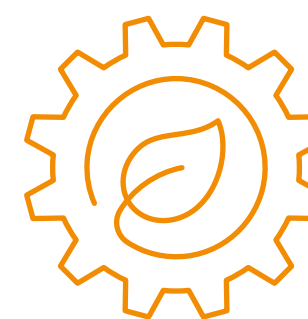
Sustainable materials:

Commercial concrete production releases tons of greenhouse gases into the atmosphere every year, contributing to environmental pollution and climate change. Fortunately, there are more sustainable construction materials that present a greener alternative such as straw bales, bamboo, recycled plastic, wood, ferrock and timbercrete.



Modular construction:

There is also a trend towards offsite prefabrication and modular construction methods. With parts of the building built offsite, this mitigates costs involved with weather delays and long working hours. Leftover materials can be recycled which cuts waste and increases sustainability.



Green technologies:

The return on investment in “green” technologies and processes will come in the form not only of decreased emissions but also improved productivity, shortened time to project completion and reduced equipment and project costs. Being able to boast of green credentials will be a boost both to the natural environment, to the communities surrounding the build, and to an organisation’s reputation.



At the recent Construction Climate Change Summit, solar power, biodegradable materials, green insulation, cool roofs and self-powered buildings were listed in the top ten sustainable construction technologies used today in green construction.⁶



However, adopting sustainable construction methods is not an overnight process and there are challenges.

Almost 40% of UK firms reported that affordability was the greatest challenge presented by adopting sustainable construction practices. Almost 50% of firms stated that they expected green buildings to incur higher first costs.⁷ But with high client demand for greener buildings, many construction firms will need to cite the greater perceived value in tenders to help offset any additional costs.



FOCUSING ON
SUSTAINABILITY



BUILDING THE CASE FOR OPEN STANDARDS

Construction companies need to juggle multiple projects at the same time, and they must collect, produce, organise, analyse and exchange an increasing amount of metadata.

While the industry transitions from paper plans to digital data, it's proving hard to combine the two especially with very large data sets. Open data standards, reusable agreements that make it easier for people and organisations to publish, access, share and use better quality data, enable this successful data exchange.



What makes construction complex is not the complexity of the building, it's the number of people that are required to work together to make it happen.⁸

Nathan Wood
Executive Director, Construction
Progress Coalition



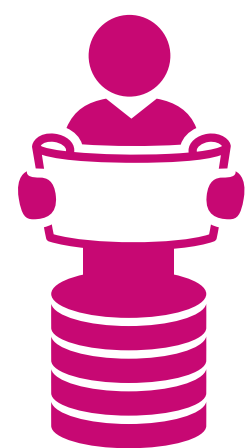
BUILDING THE CASE
FOR OPEN STANDARDS



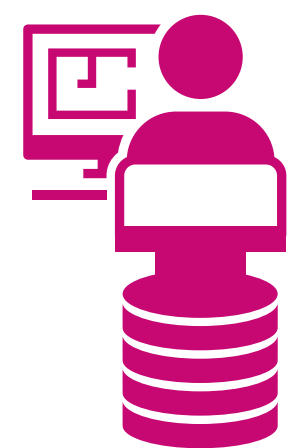
BUILDING THE CASE FOR OPEN STANDARDS

When we consider the number of stakeholders in construction (the below diagram represents the core players that exist across the project delivery supply-chain) it is no surprise that a common framework and language are required. Improving the flow of data is critical for all parties who need to collaboratively work together to develop standards that will enable better, more efficient ways of working.

Data Producers In The Workflow



Architect



Engineer



General Contractor



Trade Specialist

Influencers Over That Piece of Data



Owner



Inspector



Facilities Manager

Construction Progress Coalition: Open Integration Summit



BUILDING THE CASE
FOR OPEN STANDARDS



BUILDING THE CASE FOR OPEN STANDARDS

Open standards can help at all stages of the project lifecycle for built assets from design to estimating and bidding, constructing and finally to completion and ongoing management.

At each stage, multiple parties have different requirements but need to work together. Industry body, BuildingSMART International (BSI) cites these benefits for open data standards:

- more transparent, collaborative and open workflows
- greater information certainty due to a shared vocabulary of industry terms
- more open procurement processes
- processes that are inclusive for companies large and small
- greater re-use of data.

Digital transformation requires a disruption of certain legacy process standards to produce new standards that align all project stakeholders around a common goal.

Construction Progress Coalition

Setting standards across a complex and distributed industry may appear daunting.

Bodies such as BSI and GSI have come together to promote greater interoperability. And the Construction Progress Coalition is trailblazing by seeking to transform project collaboration through a Common Data Exchange (CDX). With an estimated £13.5B wasted due to poor data interoperability between project delivery stakeholders⁸, the onus is on all stakeholders to take an active role in shaping the construction standards of the future.



BUILDING THE CASE
FOR OPEN STANDARDS



MOBILISING GEN Z •

With skilled labour shortages a constant dilemma, the construction industry is turning to a new young breed of workers to help solve this predicament - Generation Z - which is most commonly associated with those born between 1995 and 2010.

To successfully attract Gen Z talent construction firms should highlight how Gen Z job seekers can advance in their organisations. Construction companies should also focus their messaging to these job seekers on professional development, emphasising ongoing training opportunities, mentorship programmes and apprenticeships designed to help them move up the career ladder.

Members of Gen Z grew up with the expectation that technology will play a role in their careers. While the construction industry has traditionally lagged in technology adoption, this is rapidly changing.

Construction industry technology from BIM software to drones to wearables to virtual reality and 3D modelling technologies can attract Gen Z job seekers and increase their interest in construction jobs.



5 MOBILISING GEN Z

Gen Z'ers are known as digital natives - they grew up with technology like smartphones, tablets and social media.

Companies need to be where this cohort spends time, and that means online. Members of this generation will search for jobs online, making it important to specifically tailor recruiting messages across social media platforms.

It's also important that construction employers should make their commitment to corporate social responsibility known during the recruiting phase and beyond. In the main, Gen Z'ers want to find jobs that align with their personal values, giving serious consideration to opportunities with construction companies that are socially conscious and diverse.



Some Gen Zers are taking time to teach themselves tools and systems specific to construction, and they'll be seeking employers who are both using this tech and exploring further ways to innovate with it.

Stacy Scopano
Vice President of Innovation at Skanska

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