Detailed guide: Creating a Digital Built Britain: what you need to know

Overview

Digital Built Britain is a partnership between the Department of Business, Energy & Industrial Strategy (BEIS) and Innovate UK to create a digital economy for infrastructure, buildings and services.

The programme is designed to transform how the UK construction industry and operations management professionals approach social and economic infrastructure through digital technology. This includes the way we plan, build, maintain and use that infrastructure, as well as the renewal, replacement and creation of new built assets.

All of this should help people to make better use of built assets, and provide better social outcomes to the challenges of urbanisation and an increasing population. It should also improve the UK's productivity and support growth.

Digital Built Britain will:

- advance the skills of a wide range of people so that they can confidently use technology to digitise their construction projects and manage the built assets
- help UK businesses and organisations of any size to seize opportunities offered by technology and increase their revenue in domestic and international markets
- develop and promote the standards, practices and policies that underpin strong, innovative construction and operations management sectors
- establish new models of delivery and collaboration that allow the UK to retain its position as a global leader

See the press release announcing the launch of Digital Built Britain.

What Digital Built Britain aims to do

Digital Built Britain seeks to digitise the entire life-cycle of the UK's built assets.

Built assets provide important services to citizens. Using digital technologies in the design and construction process can improve their effectiveness and efficiency so they can provide better user experiences. This should also improve the productivity of the UK and other countries by creating new opportunities for growth through the export of expertise and services.

There are 2 main goals:

- to better understand the needs of users and enable 'right first-time' delivery
- to provide buildings and infrastructures as quickly and efficiently as possible

In addition, a digital approach will award greater levels of transparency. It will also give insights into how citizens use public services to allow for improvements based on their experiences in the future.

The Digital Built Britain programme was created to meet these needs. It aims to:

- maximise the lifespan of infrastructure and building facilities and

networks to make them safely available to provide services for longer
- gain insights into how assets can be improved by measuring the in-service performance user behaviours
- provide new business models with better information on projects from initial design through to completion and then management
- develop strategies that allow the construction supply chain to be better integrated, especially with the manufacturing sector
- support engineering and construction services to be delivered more efficiently (whole life costs, time and carbon)
- identify any required new skills and systems for future construction projects early, to support the development before they are needed
- further develop and drive uptake of industry standards
- ensure that the UK remains at the forefront of digital working to maximise the export of UK digital services

What is building information modelling and how does it affect you?

Building information modelling (BIM) is one of a range of tools that will be used to digitise the built environment and operations management industries. It is a primary focus of the Digital Built Britain programme because it provides the most detailed analytical view of a built asset during the design and construction of a project.

BIM is used in conjunction with [British Standards](#) processes to provide a collaborative way of working. People working on a construction project are able to create and share information at defined stages of that project.

Using these methods with BIM supports the efficient design, delivery and maintenance of infrastructure and buildings. The data you generate is then available to help others in the supply chain to make more informed decisions to improve productivity and reduce waste.

The background

UK government's [2011 Construction Strategy](#) defined 4 levels of BIM. This was done to help clients and suppliers understand how BIM and digital technologies should be used on projects.

These levels were designed to support industry to create specific capacity at each level and to ensure appropriate standards for effective and fair procurement.

Government currently sponsors projects at Level 2. All centrally-funded government departments use this method, as set out in its [Construction Strategy 2016-2020](#).

Level 3 has commenced its development and is expected to come to the market in mid-2020s.

The 4 BIM levels

Each of the 4 levels represents an increasing maturity in use of digitisation and collaboration in a construction or infrastructure project:

Level 0

Projects will use only 2D computer-aided design (CAD) drafting. There is very little collaboration. Any data that is exchanged is typically done so via paper or print.

Level 1

Projects will use a mixture of 2D and 3D CAD drafting. They will use a common data environment for the electronic sharing of data. This will often be managed by the main contractor and may be shared among team members. Projects may also use some standard data structures and formats.

Level 2

Projects will use intelligent, data-rich objects in a managed 3D BIM environment. All parties working on a project are able to combine their BIM and design data to collaborate and share information through the use of a common data environment (CDE). The CDE enables users to carry out checks against data validation strategies to make sure they are on target.

[See the requirements for Level 2 BIM](#).

[Get advice on achieving Level 2 BIM](#).

Level 3

Projects at this level are fully collaborative. They use a single, shared project view for data integration, which all parties can access and modify as allowed through process and security controls.

What comes next

Digital Built Britain builds on the achievements of the Level 2 BIM programme. It will support the next step to Level 3 BIM and in turn enable wider digitisation in construction and operations management.

New and emerging technologies, such as the internet of things and advanced data analytics, with the growing digital economy will create further opportunities.

Digital Built Britain will support these opportunities by:

- helping everyone who has a stake in public sector building and infrastructure to work together to provide long lasting solutions to the biggest industry problems
- making the roles of consultants, contractors and manufacturing suppliers fit for the future
- improving technical solutions and reducing costs
- using service performance data to develop new business models for infrastructure and building design, delivery, operation and adaptation
- ensuring that the increase in availability and use of operational and performance data is underpinned by appropriate Level 3 security measures that protect national security
- supporting all organisations that need to achieve Level 3 to do so, by providing a practical stepping stone through the development of Level 2 C (Convergence). This includes SMEs and local authorities

Get involved

As the Digital Built Britain programme evolves we hope to develop and launch a number of working groups. These groups will inform the focus of our work and determine the future of the digital economy in construction and operations management.

If you would like to get involved please contact BIM.Support@innovateuk.gov.uk to register your interest.

[Notice: IP6 0AG, Binder Limited: environmental permit issued](#)

The Environment Agency publish permits that they issue under the Industrial Emissions Directive (IED).

This decision includes the permit and decision document for:

- Operator name: Binder Limited
- Installation name: Progress Works Treatment Facility
- Permit number: EPR/RP3536SW/V004

[Notice: M41 7JB, United Utilities Water Limited: environmental permit issued](#)

The Environment Agency publish permits that they issue under the Industrial Emissions Directive (IED).

This decision includes the permit and decision document for:

- Operator name: United Utilities Water Limited
- Installation name: Davyhulme Wastewater Treatment Works — Sludge Treatment Facility
- Permit number: EPR/HP3931LJ/V010

[Notice: GL2 5LF, Severn Trent Water Limited: environmental permit issued](#)

The Environment Agency publish permits that they issue under the Industrial Emissions Directive (IED).

This decision includes the permit and decision document for:

- Operator name: Severn Trent Water Limited
- Installation name: Netheridge Sewage Treatment Plant
- Permit number: EPR/HP3095CT/V003

[News story: £3 million Dragon's Den style competition shortlists ideas to clean up old nuclear plants](#)

The shortlisted entries, many of which come from companies that have never worked in the nuclear industry before, now have around 3 months to develop their ideas for a chance to move on to the next stage. They'll start fleshing out their concepts on how to safely dismantle a large number of highly radioactive rooms or 'cells' at Europe's most complex nuclear site, Sellafield in Cumbria.

Melanie Brownridge, the Nuclear Decommissioning Authority's (NDA) Head of Technology, said:

> This competition is an amazing opportunity for creative, forward-thinking and innovative companies to collaborate and come up with cutting-edge solutions for cleaning up some of the UK's most complex nuclear sites.

[The competition](#), which is being run by the NDA, and the UK government's innovation agency, Innovate UK, is awarding an initial £750,000 to a shortlist of 15 newly formed consortia to help them develop their ideas. Full details remain under commercial wraps but more will be revealed when the winners are picked at the end of the year and begin to build prototypes, supported by the remaining funds.

Shortlisted entries

Lead contractor	Project title
A.N. Technology Ltd	A Flexible Measurement and Waste Led, Robotics-Based Decommissioning Project
Amec Foster Wheeler	Integrated Innovation for Nuclear Decommissioning
Barrnon Ltd	Barrnon Integrated Decommissioning System
Cavendish Nuclear Ltd	Sellafield In-Cell Decommissioning System (SIDS)
Costain Oil, Gas and Process Ltd	Stabilisation, Excavation and Segregation
Createc	Elephants to Ants: Innovation in Integration
Davy Markham Limited	Integrated & Transferable Decommissioning Toolkit
Eadon Consulting Limited	Versatile Decommissioning System (VDS)
James Fisher Nuclear Limited	Hot Hatch Cell Recovery
MDA Space & Robotics Ltd	DecomSmart
Nuvia Limited	Nu-Decom
Oliver Crispin Robotics Ltd	LaserSnake++
Rovtech Solutions Ltd	Integrated Keyhole Remote Decommissioning System
University of the West of England	Integrated robotic system for characterisation and decommissioning
Westinghouse Electric Company UK Limited	Integrated Innovation for Nuclear Decommissioning

Over the next few years several major plants at Sellafield will come to the end of their operational life, such as the [Thermal Oxide Reprocessing Plant (THORP) and Magnox Reprocessing Plants](), which are used to reprocess spent nuclear fuel from power stations across the UK and the rest of the world.

This will mark the start of an important decommissioning challenge to deal with a number of highly radioactive 'cells' containing a complex network of contaminated pipes, vessels and several miles of steelwork.
The competition set out to find and fund technology that will clean up the 'cells' as safely, quickly and cost-effectively as possible whilst minimising risks to the workforce.

The winning technologies will need to find ways of safely accessing the cells, surveying the contents, cleaning them out and putting the radioactive waste into packages for safe storage. The proposals feature the use of leading-edge technologies such as artificial intelligence, virtual reality, robots, drones, lasers and specialised remote sensors and detectors.

Although initially focused on Sellafield, the winning ideas could be used to clean up the other nuclear sites owned by the NDA, which date back to the earliest days of the UK nuclear industry.

Melanie added:

The NDA is continually seeking the best ways to encourage new ideas from the supply chain and ensure everyone has an opportunity to get involved. The response we have had to this competition has been fantastic. We've been really impressed by the standard of proposals and the healthy numbers of applicants.

I'm also extremely encouraged by the high level of interest from organisations outside the nuclear sector, offering highly innovative solutions from industries such as the oil and gas sector, defence industries and even space exploration.

Derek Allen, Innovation Lead at Innovate UK, said:

We are delighted to be working again with the NDA as they continue to support innovation to deliver their programme.

We are looking forward to seeing the integration and demonstration of some of these technologies that will ultimately lead to safer, faster, cheaper nuclear decommissioning. This has the potential to open up significant business opportunities for UK organisations both nationally and globally.