

University of Birmingham Secures Data and Information on a GBP 1 Billion Development Package

Bentley's BCDE Helps School Officials Unify Data
and Make Faster Decisions

LARGEST CAMPUS REDEVELOPMENT IN OVER A CENTURY

The University of Birmingham in England is currently undergoing the largest campus-wide redevelopment since the first phase of building was completed in 1909. The GBP 1 billion, 10-year program, begun in 2016, will create much needed new facilities for students, staff, and the community at large. Among the many new and refurbished buildings included in the project are a new library, new psychology and biomedical research facilities, an energy accelerator research building, a new data center, a teaching and learning hub, a new engineering school, a business school extension, and a restored gym and theatre. The 10-year plan also includes construction of a new campus in Dubai. The goal of the redevelopment is to protect and upgrade the buildings to benefit the students and the academic community while celebrating the institution's long history.

The massive and multifaceted scope of the initiative led the University of Birmingham to look for a method that would help them carefully manage all project data and securely support delivery and transition from planning to operations. University officials also wanted tighter control of all the documents, drawings, 3D models, and related data for all assets, even the ones not affected by the redevelopment. With the method they were using, project and asset information lived in multiple, disparate legacy systems, as well as the university's external supply chain, which created a situation that made university officials uncomfortable with the amount of risk. In addition to inefficient and time-consuming data retrieval, officials were concerned about data loss in the event of a supplier dispute or insolvency during design and construction. Therefore, they needed to find

a way to gain full control over their data and unite it in one platform.

SEEKING A COMMON DATA ENVIRONMENT

University officials determined that going digital with a common data environment (CDE) would greatly improve project management. A CDE would enable them to break free all data from individual silos and store it in one location, lowering the time required to search for and access individual items, which would speed design and development. Additionally, it would help them combine all types of information, from drawings and historical data to compliance and health and safety information, to improve decision-making. The university also wanted to continue using information stored in the CDE to optimize operations once individual projects were completed.

However, simply implementing a CDE and unifying data would not meet all of University of Birmingham's requirements. To be successful, their environment would also have to significantly reduce the time needed for asset information handover from contractors, which then required an average of six months but sometimes dragged on for a full year. The university wanted to ensure that the CDE could support infrastructure building standards, including ISO 19650, as well as the university's specific workflows. The collected data would also need to be presented in a way that would help reduce energy needs and their overall carbon footprint. Lastly, the CDE had to handle increasingly complex technology solutions as the university worked toward their goal of creating a campus-wide digital twin. University officials sought a CDE that could help achieve all their disparate goals.

PROJECT SUMMARY

ORGANIZATION

University of Birmingham

SOLUTION

Digital Cities

LOCATION

Birmingham, England, United Kingdom

PROJECT OBJECTIVES

- ◆ To establish a common data environment that would enable them to own their data.
- ◆ To improve the development of a GBP 1 billion redevelopment package and support new development in Dubai.

PROJECT PLAYBOOK

BCDE

FAST FACTS

- ◆ The University of Birmingham's 10-year redevelopment program, begun in 2016, will create new facilities for students, staff, and the community.
- ◆ Information for the wide-ranging project was scattered within various data silos, slowing access.
- ◆ University officials customized BCDE to accommodate the regulations, security requirements, and workflows.

ROI

- ◆ Within BCDE, the university can store information on the history and current condition of over 200 buildings of different ages, complexities, and uses.
- ◆ The time to data handover for completed construction to operations reduced from the average of six months to one month.
- ◆ Improved decision-making will help the university reduce costs while working toward the goal of generating 75% of power on-site and reducing their carbon footprint by 3,000 tons per year.

“The university continues to migrate more information into the CDE each day, meaning we will always surface information about our assets quickly without the risk of single points of failure and information losses.”

-Rich Draper, Head of BIM and Digital Assets, University of Birmingham Estates

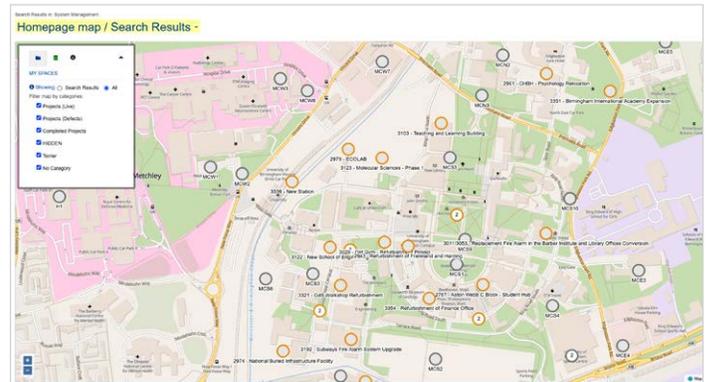
ACCOMMODATING ALL UNIVERSITY REQUIREMENTS

After examining multiple options, the University of Birmingham discovered that Bentley's BCDE would unify their data while also meeting their specific requirements. Working closely with Bentley experts, university officials set up and customized BCDE to accommodate the university's regulations, security requirements, and workflows. The teams also took care to ensure that the CDE meets ISO standards for both construction and data security.

Now, the University's Estates Office team—consisting of over 200 permanent staff members and 10 student apprentices ranging from mechanical engineering to information management—uses BCDE to manage all campus building data. They can store information on the history and current condition of the 672-acre campus, including over 200 buildings of different ages, complexities, and uses. The CDE also allows them to keep control of the data while seamlessly collaborating with the various suppliers and contractors working on new construction and improvements.

IMPROVING DEVELOPMENT WITH SEAMLESS DATA ACCESS

With all information about the existing campus buildings—as well as planned construction and improvement—in one place, stakeholders can now track and report milestones, changes and decisions, and access data much faster. In particular, the time needed to handover data for completed construction to operations has been greatly reduced, falling from an average of six months to one month. With less time needed to search for and compile data, team members can spend more time on design and construction tasks. Additionally, university officials developed a trackable process within the CDE to clearly define and communicate what deliverables are needed, eliminating ambiguity and error. Through the use of the CDE, the university has achieved savings of GBP 28,000.



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By establishing clear workflows, university officials have greatly improved visibility into the design and construction progress. Since the university now fully owns all data, they can easily retrieve and use the data to resolve contractor disputes. At the same time, the entire supply chain of approximately 300 companies still has access to all data, at any time and on preferred devices, ensuring that drawings and designs are reviewed and approved in a timely fashion. Decision-making has also improved by providing the team with invaluable insights into operational processes. The CDE will help the university work towards its goal of generating 75% of needed power on-site via combined heat and power plants, and to reduce their carbon footprint by 3,000 tons per year. [Establishing a golden thread for all university assets](#) provides the university with a record of information when resolving faults or refurbishing buildings, as well as provide the key elements toward building a campus-wide digital twin.