AI and Digital Transformation in Construction Management Training Course

14 - 18 Dec 2026

Lisbon

4500 € (Per Person)

Ref: #CON4347_86613

Course Introduction / Overview:

The construction industry is undergoing a monumental shift, moving away from traditional practices towards a digitally integrated and intelligent future. This transformation is driven by the convergence of Artificial Intelligence (AI), Building Information Modeling (BIM), the Internet of Things (IoT), and data analytics. This intensive training course is meticulously designed to equip professionals with the knowledge and skills to lead and navigate this new era of construction. As highlighted by academic leaders like Dr. Ioannis Brilakis, a pioneer in construction IT, the adoption of digital tools is no longer optional but essential for survival and growth. This course delves deep into the practical applications of AI throughout the project lifecycle, from generative design and predictive scheduling to automated safety monitoring and digital twin-based facility management. Drawing on concepts discussed in seminal works such as "Building a Digital Future: A Revolution in Construction", participants will explore how to leverage technology to enhance efficiency, reduce costs, improve safety, and deliver higher quality projects. BIG BEN Training Center provides a comprehensive learning experience that bridges the gap between theoretical concepts and real-world implementation, empowering attendees to become catalysts for innovation within their organizations and drive the future of smart construction.

Target Audience / This training course is suitable for:

- Construction Project Managers.
- Civil Engineers and Structural Engineers.
- Architects and Design Professionals.
- Site Managers and Supervisors.
- Quantity Surveyors and Cost Estimators.
- BIM Managers and Coordinators.
- Technology and Innovation Officers.
- Real Estate Developers and Asset Managers.
- Construction Company Executives and Directors.
- Procurement and Supply Chain Managers.

Target Sectors and Industries:

- Commercial and Residential Construction.
- Infrastructure and Heavy Civil Engineering.
- Real Estate Development and Management.
- Architectural and Engineering Services.
- Oil and Gas and Energy Sector Projects.
- Governmental bodies and Public Works Agencies.
- Manufacturing and Industrial Construction.
- Consulting and Project Management Firms.

Target Organizations Departments:

- Project Management Office (PMO).
- Operations and Site Management.
- Engineering and Design Departments.
- Planning and Scheduling.
- Information Technology (IT) and Digital Innovation.
- Health, Safety, and Environment (HSE).
- Procurement and Contract Management.
- Finance and Cost Control.
- Quality Assurance and Quality Control (QA/QC).

Course Offerings:

By the end of this course, the participants will have able to:

- Evaluate the core principles of digital transformation and its impact on the construction value chain.
- Analyze the role of AI and machine learning in optimizing project schedules, budgets, and resource allocation.
- Implement strategies for integrating Building Information Modeling (BIM) with AI for enhanced project outcomes.
- Utilize data analytics and predictive modeling for proactive risk management and decision-making.
- Assess the application of IoT, drones, and robotics for real-time site monitoring and automation.
- Develop a foundational strategy for implementing digital twin technology for asset and facility management.
- Formulate a change management plan to foster a culture of digital adoption within a construction organization.
- Identify future trends and emerging technologies shaping the next generation of construction management.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, practical, and engaging, ensuring that participants can immediately apply their learning in a professional context. We move beyond traditional lectures to create a dynamic learning environment that fosters deep understanding and skill development. The course heavily relies on real-world case studies of successful digital transformation projects in the construction industry, allowing participants to analyze challenges, strategies, and outcomes. Interactive sessions, group discussions, and brainstorming workshops encourage collaborative problem-solving and the exchange of diverse perspectives. Participants will engage in hands-on exercises and simulations that replicate complex project scenarios, enabling them to practice applying AI concepts and digital tools in a controlled setting. Our expert instructors facilitate a continuous feedback loop, providing personalized guidance and ensuring that theoretical knowledge is effectively translated into practical, actionable skills. This blended approach of theory, application, and collaboration ensures a comprehensive and impactful learning experience that empowers participants to lead technological change in their workplaces.

Course Agenda (Course Units):

Unit One: Foundations of Digital Transformation in Construction

- Introduction to Industry 4.0 and its relevance to the construction sector.
- Understanding the pillars of digital transformation: people, process, and technology.
- The evolution from traditional construction to smart construction.
- Core concepts of Artificial Intelligence (AI), Machine Learning, and Deep Learning.
- Challenges and opportunities in adopting digital technologies in construction.
- Analyzing the digital maturity model for construction companies.
- Case studies of early adopters and their competitive advantages.

Unit Two: Key Digital Technologies and Platforms

- Building Information Modeling (BIM) as the digital foundation.
- The Internet of Things (IoT) for real-time data collection on-site.
- Role of drones and UAVs in surveying, monitoring, and inspection.
- Introduction to Digital Twins: creating virtual replicas of physical assets.
- Cloud computing and common data environments (CDE) for collaboration.
- Augmented Reality (AR) and Virtual Reality (VR) for visualization and training.
- Blockchain for supply chain transparency and smart contracts.

Unit Three: AI Applications Across the Project Lifecycle

- AI in pre-construction: generative design and site selection.
- Automated cost estimation, bidding, and tender analysis using AI.
- AI-powered project scheduling and resource optimization.
- Enhancing construction site safety with AI-driven monitoring and predictive alerts.
- Automated quality control and defect detection using computer vision.
- Robotics and automation for on-site construction tasks.
- AI in post-construction: predictive maintenance and facility management.

Unit Four: Data Analytics and Intelligent Decision-Making

- The importance of data strategy in construction projects.
- Techniques for collecting, cleaning, and managing construction data.
- Applying predictive analytics for forecasting project delays and cost overruns.
- Data visualization and business intelligence dashboards for project insights.
- AI-driven risk assessment and mitigation strategies.
- Optimizing supply chain and logistics through data analysis.
- Leveraging historical project data for continuous improvement and learning.

Unit Five: Strategy, Implementation, and the Future of Construction

- Developing a strategic roadmap for digital transformation.
- Change management principles for overcoming resistance to new technology.
- Ethical considerations and data privacy in AI implementation.
- Measuring the Return on Investment (ROI) of digital initiatives.
- The future of AI: autonomous construction and self-healing materials.
- Fostering a culture of continuous innovation and digital literacy.
- Final project: creating a digital implementation plan for a sample construction project.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As AI automates more decision-making processes in construction, what ethical frameworks must be established to ensure accountability and human oversight in critical project phases?

What unique qualities does this course offer compared to other courses?

This training course distinguishes itself by offering a holistic and strategic perspective on digital transformation, moving beyond a narrow focus on individual software or tools. While other courses may concentrate on the technical aspects of specific technologies, our curriculum emphasizes the critical integration of people, processes, and technology. We focus on the 'why' and 'how' of implementation, addressing the significant challenges of change management, strategic planning, and fostering an innovative culture, which are often the primary barriers to successful adoption. The content is structured around the entire project lifecycle, providing participants with a seamless understanding of how AI and digital tools create value from initial design to long-term facility management. By incorporating principles of data-driven decision-making and predictive analytics, the course equips leaders not just to use technology, but to leverage it for proactive risk management and strategic advantage. The emphasis on real-world case studies and a forward-looking module on future trends ensures that the learning is both immediately applicable and relevant for long-term career growth in an evolving industry.