

## **Piano di formazione**

### **Design and experimentation of digital technologies for construction management**

The activities related to the grant concerns the design and experimentation of digital technologies for construction management.

However, the research project does not aim at the simple production of 3D parametric models with a semantic structure, that can also be developed from a cloud of points obtained with a high resolution digital survey, but has the final goal of defining methods, criteria and tools for the application of digital technologies for construction project management in the whole life cycle of the building, from the design and construction stage to the operation and maintenance stage and to the final demolition/renovation. Sustainability of building engineering and architecture will also be addressed with digital technologies.

The goal of the research work will be the study and analysis of tools and methods of BIM technologies, understanding critical points and strength points to propose theoretical and practical solutions suitable for project and construction management

The researcher will be involved in the following specific activities:

1. Building Information Modelling.
  - a. identification of protocols for the interoperability between the various actors of the processes, from the design phases to the implementation and maintenance phases;
  - b. definition of data sharing environment whose primary purpose is to allow the traceability, transparency and protection of information according to certain certification standards;
  - c. drafting of the information specifications for the performance of design services, for construction and facility management, that includes all the useful components for the identification, production, management and transmission requirements of the information content;
  - d. thoroughly analyze existing gaps in procedures, review processes and methods for collecting and managing data, and identify appropriate procedures to ensure successful implementation. The availability and updating of data are the most common problems for the management of the built environment.
2. Analysis of the educational, pedagogical and technological aspects of BIM e-learning
3. The researcher will be involved in the design and experimentation of a digital platform for Building Information Modelling. The Objective of the research work will be the experimentation of a collaborative learning environment for BIM in construction projects.

### **Outputs:**

1. Report on procedures, tools and strategies used for BIM e-learning providing a comprehensive overview of the ways how BIM can increase the performance of project construction management processes.
2. Step-by- BIM e-learning guidelines: how to implement participative learning of BIM by practitioners, students and professionals.
3. Experimentation and testing of a BIM enabled learning environment.
4. Analysis and survey of digital methods and platforms for teaching architecture and building sustainability.