



POLITECNICO
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Honors thesis

COURSE OF:
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Abstract

The BIM methodological approach applied to road infrastructure: case study Serra Rotonda Tunnel.

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by

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The work on my thesis has the objective to test a new project methodology about the road infrastructure based on Building Information Modelling (BIM). By using the documentation provided by A.N.A.S, the company that manages the Italian road and motorway network, it was possible to apply the process by referring it to a particular case study: the Gallery Serra Rotonda of the new A3 motorway in Basilicata.

My considerable interest on the subject comes from the fact that BIM methodology can be an important opportunity for process optimization, as well as to facilitate the project, introducing higher quality and at the same time a cost saving. Thanks to a management of the entire life cycle, all the projects that use a BIM based approach allow to evaluate different scenarios, identify and anticipate risks and opportunities acting in real time.

The first part of the thesis points out the main feature of the BIM: it allows a parametric approach useful to collect within the model all data related to it. Model and integrated data are also shared among all professionals in the various disciplines involved in the process. After understanding what actually is the BIM, we tried to collect as much material as possible on the state of the art of BIM for infrastructure.

After careful analysis of the Computer Aided Drafting (CAD) documentation provided by ANAS, focus of the work has been the BIM approach applied to the case study of the Serra Gallery Rotunda and three themes have been developed:

I. the Interoperability

environmental planning and analysis of the Building Information Model: in fact, as architecture, engineering and construction are collaborative activities and a software application, that can handle all the works associated with them, doesn't exist, it is necessary to find tools that allow the exchange of data between actors and applications. After testing the communication between the different software used for the modeling and lighting technique analysis of the case study (Autodesk Infracworks 360, Autodesk Civil 3D , Subassembly Composer , Autodesk Revit , 3DStudioMax , Dialux), a research was carried out on the new exchange formats and new perspectives of interoperability for the INFRA Bim .

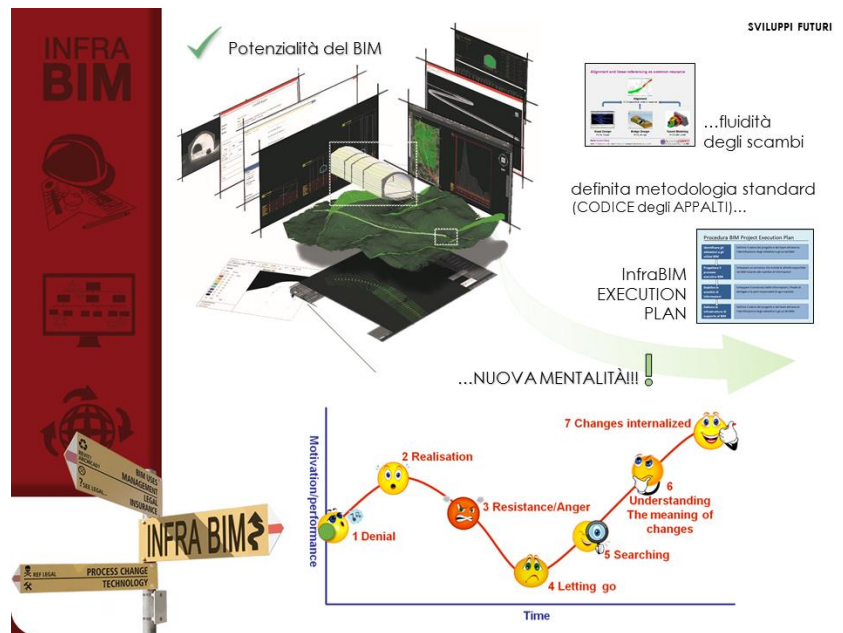


II. the Research of the LEVEL of Development and DETAIL (LOD) of the model graphic content and its recognition relating to infrastructure matters, (given the presence on the international scene of the protocols drawn up only for the building industry). This research has tried to enrich the methodology tested on the Case Study in order to regulate the cooperation among the different stakeholders involved in the process in accordance with the levels of the maturity model to realize.



III. the Research of the Standards for the creation of a common language that defines precisely the exchange of data on the basis of the cooperation of the BIM group work , which led to the proposal to codify the file names in order to simplify the management of data and to have workflows transparent and comprehensible.

I hope this work will be a step towards the implementation of BIM for infrastructure. After the initial activation that took time, planning and training, it tried to give an overview of how it's possible to start to use a BIM process , reason why the modeling of the case study does not go into detail regarding structure, plants and system.



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