



GIS and BIM technologies for conservation and restoration of the Historic Heritage

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Short description of the lecture (up to 10 sentences):

The SIArch-Univaq is an Information System dedicated to the Architecture. It comes from a research made in the University of L'Aquila, DICEAA Department, by the group working on the Architectural Survey and Graphic Representation. It was financed by the Italian Ministry of University under the PRIN (Projects with Relevant Interest for the Nation) measure.

The project aims it is to integrate in a single database the very huge amount of data related to the architecture as historical heritage. The available data are very complex, it is related to architectural shape, history, structure, decay, former building preservation and transformation works, use, accessibility and so on. In addition to that all the digital formats are very different, as well as its sources, it can be alphanumeric, vectorial and raster and organized and edited in a very various ways. The goal was to integrate this great amount of data in an single integrated Information System related to the architectural spatial configuration. In addition to that it has to be easy to use, easily upgradable and able to generate up-to-date synthesis report. To reach this aim it's necessary define a geo-referenced information system integrated to digital three-dimensional architectural models. To obtain this result the information system structure is planned referring to a three-dimensional model, as 3D is the main feature of architecture. The modelling tools of GIS software only permit the construction of simple elements. So three-dimensional architectonic models are realised using most common 3D modeling software (Autodesk AutoCAD and 3D Studio Max, Robert McNeill & Associates Rhinoceros, INUS Technology Rapidform XOR), preserving the spatial references essential to the definition of a geo-referenced database to which information have to be connected. Then these model are imported into the architectural information system. The number and the morphology of elements that have to be interrogated influence the level of detail and modalities of construction.

At present the SIArch-Univaq project is completed and tested on some different buildings classified as Historical Heritage, the software allows, at each building scale, to make a tri-dimensional model navigation asking for and consulting the large amount



of information stored in the database and, by mean of appropriate print layouts, having a very good support for the restoration or rehabilitation projects.

2nd part.

Urban textures studies of the settlements in the Abruzzi Region inner area.

During the middle age the settlements in the central area of the Abruzzi region grown up according with the political and economical situation giving shape to the peculiar landscape of the Gran Sasso mountains chain valleys.

The lessons will clarify the role of the settlements, its shape and the relationship between the urban fabric and the building typology.

Syllabus of the lecture subjects (enlisted):

1. GIS for the Architectural Heritage - introduction and general features - The SIArch Univaq system
2. Construction of 3D architectural models to be interrogated in a GIS procedure
3. SIArch Univaq fieldwork tests
4. The defensive system of the former "Via degli Abruzzi"
5. Roman and middle age settlements in the Abruzzi central area
6. Urban textures studies, form and typology

Terminy wykładów			
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