

Indoor MMS and Digital Twin to Get the Spatial Data of a Large Real Estate Asset

Vassena Giorgio Paolo Maria (Italy)

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SUMMARY

The article presents how the problem of census of all the services of a large real estate portfolio has been addressed and resolved. The works started by the need of the metropolitan city of Milan to fill up a large data base used to manage more than 500 social housing buildings. To acquire all the geospatial information of the buildings, it was decided to proceed with a 3D mapping using innovative LiDAR based indoor mobile mapping systems, enriched by high resolution 360° panoramic RGB pictures. The quality of the images acquired on the field allow to recognize all the services and objects present in the buildings as: lamps, elevator, plugs, typology of doors, paths, The three-dimensional data and the spherical RGB panoramic images have been shared on the net, through an ad hoc cloud platforms that allows to share and make a virtual tours inside the 3D models. The data can be structured in a hierarchical structure and the elements can be recognized and annotation insert in the model. The organization of the data structure and the innovative technological developments are described which, through recognition and tagging in the field of recognizable objects, allow to speed up the census of the objects and the structuring of the surveys in tree structures. The Database extracted in this way becomes part of the knowledge base of the asset manager and allows to optimize the management operations of the building heritage. The survey activities also included the survey of prospectuses. In particular, it describes how the high resolution photographic data and the 3D point cloud data was shared in the cloud, allowing the creation of a digital twin of the entire building stock. Finally, the testing operations of the work and the main characteristics of the general tender specifications are described.

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