

Fast Mapping and Geospatial Data Acquisition by Innovative Indoor Mapping System

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SUMMARY

Facility management is becoming a fundamental activity over the useful life of a building. In this process are involved various professionals with different background so unequivocal data of the state of the art must be provided. If Building Information Models are now mandatory in most of the design procedures, it is not always easy, sustainable and fast enough the as built a "as designed" verification or the modeling of existing buildings. Thanks to the continuous and recent technological progress, innovative instruments are now available in the market, making sustainable the fast mapping of indoor environments.

The paper deals with a fast indoor mapping of several buildings with the aim to carry out a fast and accurate measurement check of the areas involved in cleaning activities. The typology of building involved are quite different, starting from public offices, to airports, railway stations and more. We have been investigate how the latest indoor mobile mapping system (iMMSs) based on SLAM (Simultaneous Localisation And Mapping) algorithms provide in a fast way useful data to stakeholders involved in the building management process.

The case study for this test is a portion (an entire floor recently restored) of a four storey building in the municipality of Milan. The floor investigated is mainly composed on offices characterized by different areas and heights. The average area is 750 square meters divided in eleven offices, two bathrooms and corridors.

The real case study has been chosen because particularly attractive considering that, during the restoration process, new sensors as smoke detectors, emergency light and motions sensor have been placed. The instrument used is the innovative extremely light (6 kgs) Heron wearable indoor mobile mapping system, capable to acquire 3D data and high resolution

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images.

The trajectory of the instrument has been defined automatically and a 5 cm accuracy of the point cloud obtained has been reached. The RGB images have been used to extract geospatial information using the Orbit 3DM Feature Extraction Standard. The use of advanced iMMS devices allows to obtain fast 3D point cloud data of indoor environments and to easily extract geospatial data to be applied in facility management projects.

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