3D Registration of Apartment Rights Using BIM/IFC: Comparing the Cases of the Netherlands, Saudi Arabia, and Turkey

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SUMMARY

It is evident that the built environment has a vast and ever-growing number of complex and multi-layered buildings. The number of these buildings is increasing because of the increasing pressure on the limited space in cities and. It is important to note that different sectors are involve the realization of a new building. These sectors are mainly the Architecture, Engineering, and Construction (AEC) and land administration that covers the cadastral registration, spatial or zoning plans, and property valuation. Noteworthy to mention at this point is, that today the subdivision plans regarding apartment rights in buildings are to be provided on the floorplans as submitted with building/construction permit request. These plans show the apartment boundaries as two-dimensional (2D) representations. These 2D representations however are insufficient in describing the ownership rights in clearly and completely in multi-storey buildings. Further, the building units that are obtained from 2D representations are also incapable to estimate the valuation of these apartments in both taxation and selling/buying processes. Considering that digitalization and consequently digital data are becoming more and more the norm in the AEC industry, including in the building permit requests, there is thus an opportunity to exploit Building Information Modeling (BIM) models, specifically Industry Foundation Classes (IFC) models, in registration of apartment rights with three-dimensional (3D) representations. To investigate the opportunity, this study will further analyze the cases of the Netherlands, Saudi Arabia, and Turkey by revealing the similarities and dissimilarities with respect to registration of apartment rights in terms of both legislative basis and current practice, and extrapolating the current 2D practices into fully 3D representations. In earlier work LADM based information models for the 3D legal spaces/elements in buildings have been developed and related to BIM/IFC. By comparing the three different information models, we expect to be able to detect commonalities (and differences). The first aim of the study is to put forward the possibility of providing an internationally standardized modelling specification for 3D registration of legal rights within buildings, based on the earlier detected

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information model overlaps. The second aim is to increase the awareness in other sectors than land administration with regards to legal objects or legal spaces in the buildings. As a supplement aim, this study will endeavor to provide guidelines for these other sectors, most specifically the Architects, regarding what kind of information BIM/IFC models should have, in order to put into practice and also facilitate 3D registration of apartment rights.

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