

Application of 3D City Model in Spatial Planning of the City of Zagreb

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SUMMARY

City of Zagreb has been developing 3D city model for spatial planning since 2008. The initial 3D model was created by photogrammetric mapping with Level of Detail 2, for city urban territory of about 240 km². Latter updates were made using airborne LiDAR data from 2012 and UAV photogrammetry in 2019 and 2020.

Initiative for the 3D model development came from geospatial data provider and the city spatial planning sector was detected as the main user and developer of value added applications. Besides spatial planning, more applications in the city administration were detected: emergency management, environment protection, energy sector, water management etc.

For majority of users, City of Zagreb has been developing 3D web application since 2015 (<https://zagreb.gdi.net/zg3d/>). Application is based on ESRI 3D platform and integrates 3D semantic building model with LiDAR based DTM, UAV reality mesh and point clouds, 3D data on city greenery, BIM, land use data, landslides data, protected heritage buildings and population data.

Application of 3D city model in spatial planning may be classified as: 3D overlay in master land use planning, 3D building zoning in detailed land use planning, 3D modelling of new buildings during architectural competitions and 3D modelling of building interpolations in protected city core.

With emerging green and digital transition in the city management, future of 3D city models is bright, despite problems in data update financing and lack of qualified staff. With number of a real time data sources coming in practice, Zagreb 3D city model project is going towards development of digital city twin.