

Dynamic 3D representation of information using low cost Cloud ready Technologies

George MOURAFETIS, Charalabos IOANNIDIS, Anastasios DOULAMIS, Chryssy POTSIU, Greece

Key words: Dynamic representation, 3D visualization, Cloud platform, Low cost, DTM

SUMMARY

3D representation of objects and territories has been an everyday reality almost for everything. Software such as Google Earth and Google Maps has spatially enabled almost every aspect of our lives thus enhancing the way we deal with and use information. 3D visualization requires expensive software and hardware especially in cases where a large amount of data needs to be represented. Furthermore, most software available can handle only static pre-processed data, when used for 3D visualisation, and cannot produce a seamless and integrated outcome when the level of detail of the data changes rapidly. In this paper a low cost and efficient way of displaying dynamic 3D information and basemaps that may be used in various cases including displaying cadastral information is proposed. Furthermore a mechanism for dynamically updating Digital Terrain Models which are used in order to display the 3D information is also proposed. The efficiency of the technique is demonstrated with an actual example developed in C++, .NET and OpenGL. Various improvements have been tested with the use of Assembly language and SSE2 instructions. Data management and representation of 3D information is a demanding process that usually has a great cost and is difficult to implement and maintain. In the era of Information Technology, the CLOUD has come to offer powerful infrastructures with low cost leading many public and private companies to adapt this concept. The technics described in this paper can be easily transferred on the CLOUD platform to massively provide 3D visualization for the scope of cadastral and other purposes.