3D City Models (3DCM) are key features into decision making of several urban related problems. Therefore 3DCM are needed by several applications, but the required level-of-detail (LoD) of the model depends on the application. Our goal is to propose a multi-scale 3DCM production and use method. Our approach consists of merging, procedural modeling, graph rewriting techniques, and a generalization technique to handle all different kinds of LoD of a 3DCM. In this way, it allows to handle various heterogeneous LoDs of a complete urban city model. We test our proposal with the 3DCM of the City of Nantes for a rendering application. Our results can also be applied to other LoD criteria to match other 3DCM-based needs.