

APPLICATION OF THE MATRIX METHOD IN DETERMINING THE SHORTEST ROUTE IN BIM

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Received: 19.10.2020; Revised: 22.01.2021; Accepted 15.06.2021

Abstract

The research was carried out to determine the shortest route between two points in a maze-shaped room using the BIM model and a script created in Dynamo. The matrix method of route calculation was used to find the optimal relation between the accuracy of the calculated route and the time needed for calculations. In order to indicate the factors influencing the extension of the calculation time and mutual relation of factors, tests were carried out for different variants of the floorplan modification (room area, the surface of internal walls, distance between the entrance and exit in a straight line and within the boundary marked by walls of the maze). The results of all trials were presented graphically. Based on the obtained results, a definition of Benefit Factor was introduced, aimed at assessing and comparing objectively a performance in individual attempts to solve the task. On this basis, the method of assessment and selection of the preferred mesh density for further applications has been proposed.

Keywords: **BIM; Building information modeling; Facility management; FM; Matrix method; Routing in building.**