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TITLE OF DIPLOMA THESIS:

Development of a GIS tool for Supporting Maintenance Management of Port Infrastructures.

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ABSTRACT

New technology trends focus on the development of central information systems that will provide efficient management schemes through the whole lifecycle of engineering projects. Each individual stage of the project's lifecycle is accompanied by a large amount of information that is difficult to manage. In Greece, according to the relevant literature and practical experience, the maintenance stage is characterized currently by significant inefficiency. This fact is more pronounced in the case of Greek port infrastructures, which lack of systematic maintenance.This diploma thesis aims at the design, the development and the implementation of an online information management tool for supporting the management of the required maintenance actions of the 6th pier of the Thessaloniki Port and the relevant information sharing between all the involved members, through a combination of database and internet technologies. The developed tool gives the potential of real-time control, monitoring, identification and assessment of the functionality of the examined port infrastructure. Moreover, it enables the provision of descriptive interventions in order to deal with the recorded problems. Therefore, the proposed tool can support the management of all required maintenance actions leading to a prompt and more effective maintenance decision making process as well as to a suitable scheduling of required interventions. The tool has the form of a web application (web GIS tool). For its implementation, a relevant database has been developed. The database (geo-database) consists of a set of geospatial information of the 6th pier's infrastructures. The web application gives the users the potential of real-time mutual interactions by using devices with access to the internet.For implementing all the above, the database's design was carried out using the ArcMap software, which is one of the ArcGIS package interfaces. ArcMap enables the efficient compilation of thematic maps. For dynamic data-driven tables, the Microsoft's SQL Server Management Studio (SSMS) software was used. All the above were published on a GIS Server and through the WebGIS Portal the web GIS tool was finally created.