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Real estate project delivery system

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ABSTRACT

Organizations that have real estate holdings often spend substantial amounts on development of real estate for office spaces, production facilities, data centers, etc. Such organizations typically rely on third-party software solutions and consultants to manually track real-estate project costs and schedules. The present techniques provide a cloud based project delivery system that integrates the organization's real-estate management applications with cloud based applications and building information models. With such integration, the techniques enable monitoring of project costs and schedules using a flexible user interface. The techniques can extract insights by integrating project cost, schedule, and attribute data with building information models and provide analytics based on such data. The techniques also learn from real-estate project history to further enhance the project delivery system.

KEYWORDS

- construction software
- project delivery system
- cloud data management
- monitoring and analytics
- building information model

BACKGROUND

Organizations that have real estate holdings often spend substantial amounts on development of real estate for office spaces, production facilities, data centers, etc. Such organizations typically rely on third-party software solutions and consultants to manually track

real-estate project costs and schedules. Although software to manage real estate projects exists, such software is designed for real estate firms and is not suitable for internal project management use in non-real estate firms. Also, data security and compatibility issues can hinder use of such software.

DESCRIPTION

The present techniques provide a cloud based solution to organizations to help monitor and analyze internal real-estate project costs and schedules.
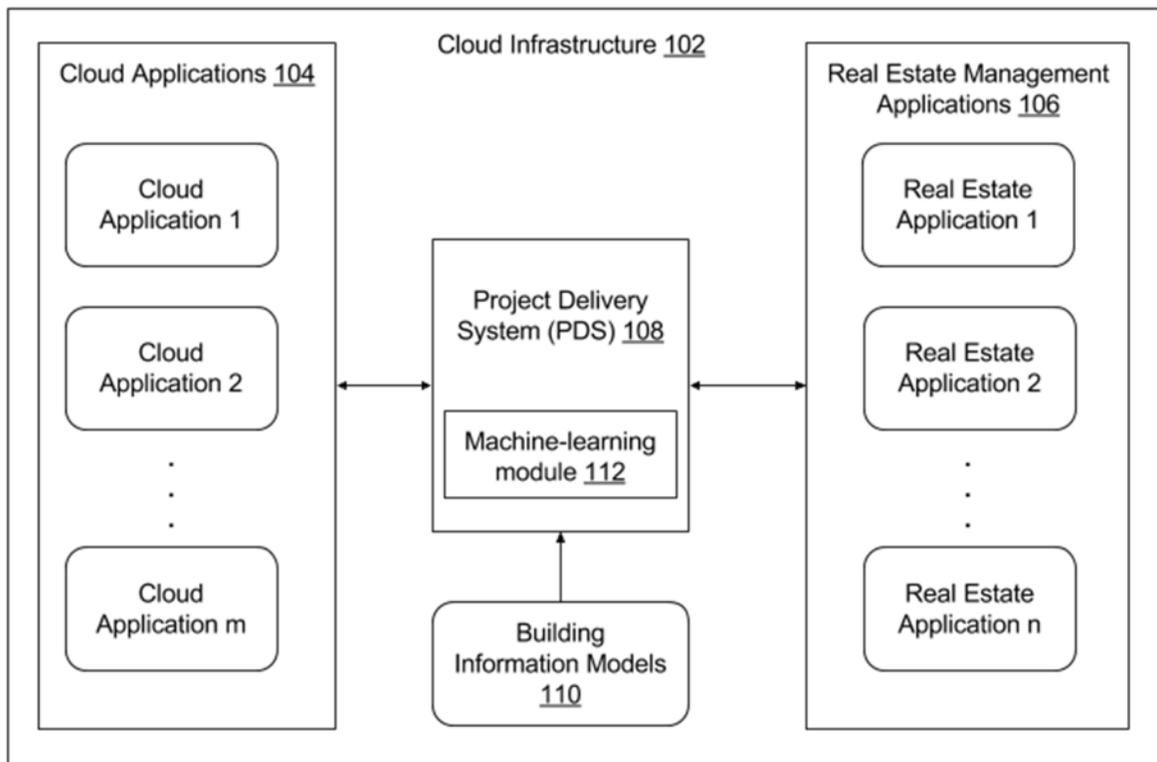

Fig. 1

This disclosure utilizes web and cloud data management and collaboration solutions to build a real-estate project delivery system ("PDS"). PDS (108) integrates existing organizational real estate management applications (106) and ensures interoperability of organizational real estate data with other cloud hosted applications (104). Examples of such cloud hosted

applications include cloud storage, spreadsheets, documents, project management and analytics tools, etc. These applications are supported by cloud infrastructure (102).

The PDS utilizes cloud-based analytics to provide visualization of real-estate management and project data, e.g., cost estimates/schedules, through a flexible interface. Such an interface allows display and manipulation of project cost and schedule information. For example, an interactive 3D view of the project (e.g., an office building, a factory, etc.) can be manipulated using keyboard and mouse gestures, similar to a desktop 3D authoring environment. Selected objects in the project 3D model are highlighted and mouse rollover on selected objects cause display of related data.

The PDS can also extract insights from the integration of building information models (110), project cost estimates, and project schedules. A building information model ("BIM") is a digital representation of structural, physical, and functional aspects of a real-estate project. BIM can be a knowledge repository of data corresponding to a real-estate project to enable decision making during the lifecycle of the project, based on data retrieved from real-estate applications.

More specifically, for a given project and building information model, the PDS traverses the project model to estimate the cost of each unit in the model and rolls up this cost to generate a cost estimate for the entire project. The PDS generates cost estimates directly from the project model and a built-in cost database. The accuracy of the estimate is based on the accuracy of the project model and the selection of appropriate costs from a built-in cost database based on project constraints. The PDS also supports integration of project schedule data with cost details in the project model. Further, the PDS can employ techniques such as machine learning to leverage the real-estate project history and building information modeling to more effectively analyze data and develop insights.

The PDS includes a machine-learning module (112). The machine-learning module is used to analyze available current data for the various functionalities of the PDS as described above. Further, the machine learning module enables continual improvement in the PDS.

The PDS offers several features such as (a) support to workflows utilizing the above specified applications and services; (b) automated extraction and exchange of information among these applications; (c) data lifecycle support including version management; and (d) project and program level visualization and monitoring and analytics, including, monitoring progress of work performed against plan as well as project and overall cost and schedule management.

CONCLUSION

This disclosure describes techniques to build a real-estate project delivery system that integrates an organization's real-estate management applications and cloud applications with building information models. The project delivery system provides a flexible user interface to display and customize project cost data and schedule information. The system enables both project and program level visualization. The project delivery system provides analytics and extracts insights from real-estate data, e.g., project schedules and costs, and building information models of real-estate projects. The system facilitates monitoring of work progress and management of project cost and schedule. Further, the system can employ learning techniques to analyze real-estate project history and develop insights to be applied in future projects.