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Unified Data Organization and Management in an Integrated Design Environment

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Introduction

The architectural design process is very complex and it is not easily confined to a single design environment. As the design process gets more complex due to the technological advances in building materials and construction methods, an integrated design system becomes a central design issue. To have an integrated design system, all applications should be integrated in a unified environment within which there should be a data structure to facilitate an effective data communication among the various design stages and data control facility to seamlessly connect all these applications.

A primary purpose of this work is to suggest an object oriented architectural design environment for the essential part of the seamless environment for designing a building. Within the object-oriented design environment, a unified data model and detailed data control module have been implemented to seamlessly connect all these applications. The unified data model organizes the structure of the design data to keep the design consistent throughout the design and construction process. It also helps to do effective data communication among the various design stages to ensure quality and time saving in the final construction of the building. The data management module supports the consistent and easy mechanisms in controlling the data representation through the inter-connected modules. It is also responsible for creating, maintaining, and viewing a consistent database of the design description.

In the suggested design environment, each architectural element partially describes the model and individual elements are aggregated hierarchically. Some parts of the projection are defined and other can be inherited from above. Also, creation of an improved or new design element can easily be accommodated in the environment. The integrated database in the suggested environment is the basis by which design data can be shared among the design tools of the design environment. The database organizes the design description within each representation, correlates equivalent descriptions across the representations, and attempts to maintain these correspondences as the design incrementally evolves.

Conclusions

The architect could have minimum discontinuity in his creativity and the design process could be similar to the natural design process with the help of the integrated design environment that consists of an intelligent design data management system, interface system and graphical display system. A well-defined internal structure and set of reference libraries can also benefit the seamless working environment.

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