

Developing Web Applications with OPM/Web

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Abstract

A Web application can be classified as a hybrid between a hypermedia and an information system. It has a relatively simple distributed architecture from the user viewpoint and a more complex dynamic architecture from the designer viewpoint. It needs to respond to heterogeneously skilled users, whose number is considered unlimited, handle security and privacy concerns, access heterogeneous, up-to-date information sources, and exhibit very dynamic behaviors. Existing hypermedia authoring techniques and system development methods can model some of these aspects, but none of them is sufficient to specify all the Web application concepts, including their distributed, complex structure and dynamic behavior. This paper introduces OPM/Web, an extension to the Object-Process Methodology (OPM) that satisfies all the structural and functional Web-based information system requirements. The main extensions of OPM/Web are adding properties of links to express requirements, such as those related to encryption; extending the zooming and unfolding facilities to increase modularity; cleanly separating declarations and instances of code to model code migration; and adding global data integrity and control constraints to express dependence or temporal relations among (physically) separate modules. A case study is presented in order to evaluate OPM/Web in comparison to the Object Management Group (OMG) standard for object-oriented development, the Unified Modeling Language (UML).