

Developing Web Applications with Object-Oriented Approaches and Object-Process Methodology – Ph.D. Research Proposal

Iris Reinhartz-Berger

Supervisor: Prof. Shmuel Katz and Prof. Dov Dori

Abstract

The exponential growth of the Web during the last two decades and its expected spread in the next years has set the stage for the enlarged use of Web applications. Web applications, which can be classified as a hybrid between a hypermedia and an information system, have a relatively simple distributed architecture from the user viewpoint and a more complex dynamic architecture from the designer viewpoint, heterogeneously skilled users whose number is considered unlimited, security and privacy concerns, heterogeneous, up-to-date information sources, and very dynamic behaviors. The existing hypermedia authoring techniques and system development methods can model some of these aspects, but none of them on its own is sufficient and even a combination of them is not enough to specify all the Web application concepts, including their distributed, complex structure and dynamic behavior.

The Object-Process Methodology (OPM) is an integrated approach to the study and the development of systems in general and information systems in particular. It unifies the system structure, behavior and functionality within one frame of reference, using a single graphical tool and a corresponding textual tool. In this work, I plan to extend OPM to be a specification methodology for distributed systems in general and Web applications in particular. The work consists of four main components. The first one is improving the distribution, dynamics and complexity management capabilities of the existing OPM. The second part is evaluating the extended OPM, called OPM/Web, in comparison to other modeling techniques for Web applications. In the third part I plan to develop a self-metamodel for OPM/Web. This metamodel will capture the fundamental OPM/Web notions, their relations and constraints, as well as an OPM development process. In the forth (and last) part of the work I intend to develop rules for converting a specification modeled in OPM/Web to a working Web application.