

Web Engineering: Introduction to Minitrack

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The Web has evolved into a global environment addressing all kinds of application delivery, ranging from small-scale and short-lived services to large-scale, enterprise workflow systems distributed over many servers. The design, implementation, maintenance respectively evolution, and federation of such Web applications requires the application of software engineering practice, specifically as the life-cycle of Web applications is dramatically influenced by arising technologies, user-behavior, and state-of-the-art trends in electronic commerce.

Nevertheless most of today's Web application development is still ad-hoc, which may result from the Web's legacy as a coarse-grained, document-centric information system rather than an application platform. Furthermore, the navigational metaphor intrinsic to the Web opens up new ways of managing huge information spaces, and the way users interact with applications to perform a task. Because the Web implementation model does not relate well to state-of-the-art software development models, it is rather difficult to define frameworks that enable the construction of Web Information System applications, reuse design knowledge captured in design patterns, or bridge the gap between a design model and the Web implementation model.

This problematic was recently referred to as Web Crisis - indicating that the lack of a structured approach will restrict the process of developing or federating more complex systems in the Web relating to cost reduction and quality improvement. In the recent years, this "web-experience" in the Hypermedia and Web community evolved into a new discipline called Web Engineering. Thus, Web Engineering focuses on the evolution of a profound engineering process and dedicated technologies, methods, and models for the development and maintenance of Web-applications.

The Minitrack consists of five papers that cover a broad range of aspects concerning Web Engineering:

In "Towards a Relationship Navigation Analysis" Yoonhee Yoo and Michael Bieber discuss the importance for determining the relationships within conceptual domains or implementations. Thus, they introduce the Relationship Navigation Analysis for system analysis, which is based on a generic relationship taxonomy and provides a systematic way of identifying useful relationships in application domains. German and Cowan investigate many design patterns of the Web community in "Towards a unified catalog of hypermedia design patterns". They analyze the vocabularies and taxonomies of design patterns for the Web that are in use today and propose to rewrite the patterns using a uniform vocabulary.

Markus Schranz, Johannes Weidl, and Stefan Zechmeister argue in "Engineering Complex World Wide Web Services with JESSICA and UML" that complex Web services are comparable to large software systems. Therefore, the management and engineering process requires dedicated methodologies and processes. The authors introduce the use of the object-oriented language JESSICA and its support by the Uniform Modeling Language UML. They demonstrate the use of the engineering system with a real world application. In their paper "A Schema-Based Approach to Web Engineering" Christoph Kuhnke, Andreas Turk, and Josef Schneeberger present a tool that supports their process model for publishing. They suggest the separation of content, layout, navigation, and structure for Document Engineering. This discipline focuses on document design, authoring, and production, and is seen as a methodology of Web Engineering. In "Using Finite State Machines as Design and Engineering Model for Database Backed Web Applications" Karl M. Göschka and Jürgen Falb examine the use of hyperlink for user interaction with relational databases. They present an approach using finite state machines as basis for modelling dynamically generated hyperlinks, which in turn are used to interact with databases.