HOMER: a Model-Based CASE Tool for Data-Intensive Web Sites

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We present HOMER, a CASE tool for building and maintaining complex, data-intensive Web sites. In HOMER the processes of creation and maintenance of a Web site are completely based on the adoption of suitable models, to describe the various aspects of the site (content, navigation structure, presentation). The development of a site does not require any code writing activity: based on the results of the design process, the system automatically creates programs to implement the site, statically and/or dynamically, as needed; also, the system does not depend on any specific tool or language: it has a modular architecture, which integrates external servers for specific tasks; finally, the system supports site administrators for several maintenance activities, which can involve changes over the site at different levels.

The site content is described both at the conceptual level, using the ER data model, and at the logical level using relational tables. In fact, to rely on robust and effective technology, the data to be published in the site are stored in a relational database. The site structure is described by a formal model, called ADM [1], which allows to give an intensional description of the hypertext structure.

Based on ADM, the graphical layout of data is described by a specific styling mechanism, which specifies how pieces of information are formatted in a page.

The core of the system is the HOMER *Design Server* which manages the formal representations stored in the design repository, and generates algebraic expressions that map the database structures onto the site ones. These algebraic expressions, combined with the presentation directives, are used to automatically produce Java servlets (or Microsoft Active Server Pages) that implement the site.

Site designers and administrators access every functions of the system through a graphical user interface. A number of graphical primitives allow designers to draw the ER scheme, as well as the ADM scheme, in the site building process, and help administrators govern restructuring actions during the site life-cycle.

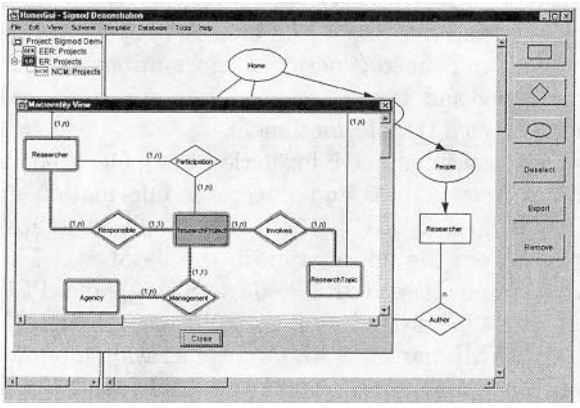

Figure 1: The HOMER GUI

The system is modular and scalable. HOMER can produce both static and dynamic sites, and is able to generate outputs for both HTML and XML/XSL formats. Also, it is worth noting that the system does not provide its own tool for designing the graphical layout of the site; on the contrary, it leaves designers free to handle graphics by their preferred tool (any WYSIWYG HTML editor).

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References

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