

# The Tree Faces of GECAD's Research Group Web Portal

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## ABSTRACT

Nowadays, most Web sites and Web applications are developed using relational databases to store dynamic content. This paper presents a Web portal that builds three different hypertext presentation layers upon a relational database for delivering information to distinct types of User-Agents.

## Categories and Subject Descriptors

H.5.4 [Information Systems]: Hypertext/Hypermedia – architectures, navigation and user issues.

## General Terms

Design, Human Factors.

## Keywords

Hypertext, Semantic Web, Mobile Web.

## 1. INTRODUCTION

The GECAD (Knowledge Engineering and Decision Support Research Center) Web portal has three different hypertext presentation layers. The Semantic Web Layer [1], the Mobile Web Layer [2] and the Regular Web Layer [3]. Each layer is most suitable for delivering information to different types of User-Agents. For instance, when the User-Agent is a semantic web crawler, such as SWSE or Swoogle, the appropriate layer is the semantic Web.

The Mobile Web layer is suitable for delivering information to mobile User-Agents, such as personal digital assistants or smart phones. The Regular Web Layer is appropriate for the most common User-Agents - usually Web browsers, such as Internet Explorer and Mozilla Firefox.

To deliver the information, the GECAD Web server contains an interface generator engine that communicates directly with GECAD's database server, to access the data stored and dynamically generate the hypermedia interfaces. Figure 1 illustrates the behavior of the system.

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*Hypertext 2008, June 16–20, 2008, Pittsburgh, PA, United States of America.*

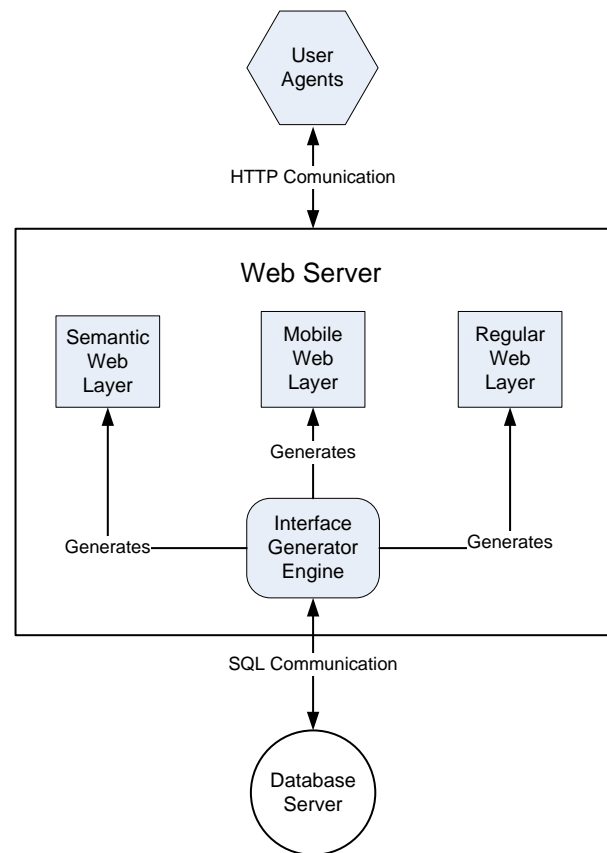


Figure 1. System behavior.

## 2. THE SEMANTIC WEB LAYER

The Semantic Web Layer was built according to the semantic Web for research communities ontology (SWRC ontology), an ontology in which research communities and related concepts are modeled, representing knowledge about researchers, research communities, their publications and activities, as well as about their mutual interrelations [4]. Figure 2 shows the main concepts of the SWRC Ontology.

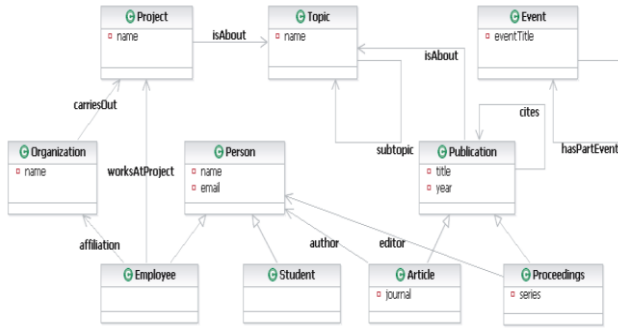


Figure 2. Main concepts of the SWRC ontology.

The SWRC ontology represents very well the concepts related to research groups and excellently matched with GECAD's relational database. No modifications were needed in the relational model to implement the RDF file generator. The version of the ontology used to build the Semantic Web Layer comprises a total of 53 concepts in a taxonomy and 42 object properties [4].

### 3. THE MOBILE WEB LAYER

The Mobile Web Layer of the Web portal was developed based on the W3C mobile Web best practices 1.0. This document specifies best practices for delivering Web content to mobile devices, setting series of recommendations designed to improve the user experience [5]. Building a mobile version based on these recommendations makes the Web site completely browser independent, and always fitting the screen size of the device used to access the pages. The version was initially tested in mobile devices emulators and then tested in real mobile devices. Figure 3 shows snapshots of the mobile Web version in a mobile device.



Figure 3. Snapshots of the mobile Web version.

### 4. THE REGULAR WEB LAYER

The regular version of the Web site is the main entry point of the application. It has hyperlinks to the other versions and exclusive tools, such as a Web content management system (CMS), allowing some specific users to create, manage and edit HTML content; a front-end that allows administrators to manage the information stored in GECAD's database; and a tool that allows researchers to publish and manage the information about their

scientific publications. Figure 4 shows the authoring tools of the Web portal.

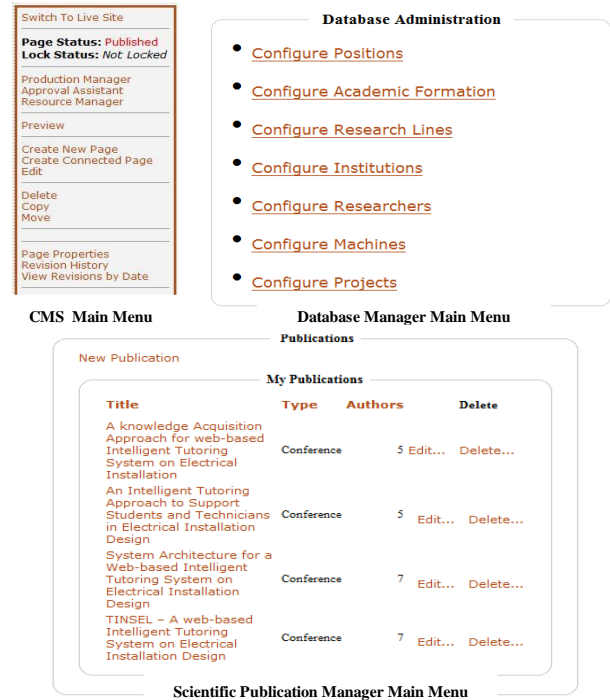


Figure 4. Authoring tools of the Web portal

### 5. CONCLUSIONS AND FUTURE WORK

This paper presents a Web portal with some authoring functionalities, and three different output layers, to provide information to different types of User-Agents. The innovation presented here is generating multiple hypertext presentation layers from the same database. This makes the Web portal much more versatile and adapted to the actual needs of the World Wide Web users. As future work, the portal could be improved by using the SWRC ontology to implement semantic navigation and ontology-based search, as the semantic portal SEMPport [6].

### 6. REFERENCES

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