

# Editorial Message: Special Track on Web Technologies and Applications

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## 1. INTRODUCTION TO THE TRACK AND STATISTICAL INFORMATION

The special track on Web Technologies and Applications is already at its fourth edition and has seen a constant evolution in the research issues. Currently, Web applications are required to rely on open, flexible, adaptable, and distributed infrastructure and to be ubiquitous, highly scalable, reliable, accessible from different devices, and personalized with respect to various user requirements. Web applications are becoming increasingly complex thereby creating a need for appropriate theoretical foundations, development methodologies, and supporting technology, drawing on different areas of computer science such as databases, artificial intelligence, programming languages, distributed computing, information retrieval, semantic modeling, human-computer interaction, etc.

The goal of the Web Technologies and Applications Track at SAC 2005 has been to promote research directions on novel applications for the World Wide Web, by providing a forum where academic and industrial researchers can share and disseminate ideas related to innovative Web technologies and methods. Proposed topics included: Web services, Semantic Web, collaborative Web systems, markup languages, Web mining, Web quality, Web searching, conceptual modeling of Web applications, Web engineering, security and integrity issues for the Web, caching and replication.

We received 54 submissions covering most of the proposed topics. The selection process was very rigorous: each paper was blind-reviewed by at least 3 independent reviewers with expertise in the topic, and evaluated for originality, significance, technical content, and clarity of presentation. The Program Committee was composed of 35 members (in addition to the track co-chairs) and 18 other external reviewers were involved in the reviewing process. Out of the 54 submissions, 20 papers were selected for presentation at the conference (36% acceptance rate). In addition, three papers were accepted for inclusion in the poster session. We sincerely thank the PC members and external reviewers for their valuable help in putting together a high quality and exciting program.

## 2. OVERVIEW OF THE ACCEPTED PAPERS

The track has been organized in five sessions: (i) Semantic Web and Reactive Web; (ii) Web Services and Collaborative Systems; (iii) Web Engineering; (iv) Web Performance and Monitoring; (v) Web Searching, Security and Markup Languages. Each session includes 4 papers.

The first session on Semantic Web and Reactive Web starts with the paper "An Approach to Acquire Semantic Relationships between Terms", by Xia Sun and Qinghua Zheng, who present a method for the automatic extraction of synonym, hyponym, and meronym relationships from texts based on linguistic patterns. Then, the paper "Survey of Semantic Annotation Platforms", by Larry Reeve and Hyoil Han, examines current Semantic Web annotation platforms that provide annotation and related services, and reviews their architecture, approaches and performance. Federico Pescarmona, Fulvio Corno, and Dario Bonino in "Automatic learning of text-to-concept mappings exploiting WordNet-like lexical networks" present some algorithms to automatically widen the lexical coverage of a semantic application, thus increasing the capability of correctly recognizing the ontology classes a document is related to. Finally, the last paper "Reactivity on the Web: Paradigms and Applications of the Language XChange", by Francois Bry and Paula-Lavinia Patranjan, deals with an emerging issue essential for upcoming Web systems such as online marketplaces, adaptive, Semantic Web systems as well as Web services and Grids: reactive Web. The article introduces the paradigms upon which a high-level language called XChange for programming reactive behaviour and distributed applications on the Web relies.

The second session deals with Web services and collaborative systems. In particular, the paper "Pollock: Automatic Generation of Virtual Web Services from Web Sites", by Yoojin Hong, Yi-Hsuan Lu, Jinesh Varia, and Dongwon Lee introduces a methodology that helps to automatically generate Web Services from the FORM-based query interfaces of a Web site. The paper "Tuple Spaces for Self-Coordination of Web Services", by Zakaria Maamar, Djamel Benslimane, Chirine Guedira, Qusay Mahmoud, and Hamdi Yahyaoui illustrates a tuple space approach to self coordination of Web services utilising case based reasoning. In "An OWL-S Based Approach to Express Grid Services Coordination", by Laura Bocchi, Paolo Ciancarini, Rocco Moretti, Valentina Presutti, and Davide Rossi, the authors extend OWL-S to the Grid domain and treat several issues related to reconciling Web and Grid Services approaches. Finally, the paper "Context-Aware Filtering for Collaborative Web Systems: Adapting the Awareness Information to the User's Context", by

Kirsch-Pinheiro Manuele, Gensel Jerome, Martin Herve, and Villanova-Oliver Marlene present an approach to information filtering that exploits at the same time the user profile and the context where the user is involved with his mobile device.

The third session is devoted to the solutions that different Web Engineering methods and methodologies provide to design problems such as model consistency, complexity, degree of usability of the modeled applications and reuse. In this context, the paper "First Experiences on Constraining Consistency and Adaptivity of W2000 Models through Graph Transformation", by Luciano Baresi, Sebastiano Colazzo and Luca Mainetti, argues for the need of including in Web proposals metamodeling techniques that let the designer enforce the consistency of the produced design artifacts. Next, the paper "Measuring Structure Complexity for Class Diagrams: An Information Theory Approach", by Yuming Zhou and Baowen Xu, emphasizes the link between class diagrams complexity and application quality, and defines an objective measure to deal with such complexity. Another measure used to determine the quality of a Web application is its degree of usability. In this sense, the paper "Where Web Engineering Tool Support Ends: Building Usable Websites", by Richard Atterer, dives into this concept and compares the expressive power regarding usability aspects of two Web Engineering solutions: UWE and OO-H. Also the last paper of the session, "A Product Line Architecture for Web Applications", by Luca Balzerani, Guglielmo De Angelis, Davide Di Ruscio and Alfonso Pierantonio, presents a set of techniques that help to improve both the design process and the final application quality and proposes a new architecture designed to develop, deploy and maintain web application families.

The fourth session, centered on Web Performance and Monitoring, begins with two papers that analyse the correctness and performance of Web applications. In the first paper, "TestUml: user-metrics driven Web Applications testing", Carlo Bellettini, Alessandro Marchetto and Andrea Trentini introduce a set of techniques to define test cases based on UML models. After that, Giuliano Casale in his article "Combining Queueing Networks and Web Usage Mining Techniques for Web Performance Analysis" proposes the combination of Web usage mining techniques with queueing networks that, applied on web access logs, allow for an effective Web capacity planning. The last two papers of the session are devoted to the selection and implementation of computing services. In the third paper, entitled "An Empirical Evaluation of Client-side Server Selection Policies for Accessing Replicated Web Services", Nabor Mendonça and José Airton Silva test five server selection policies for accessing replicated web services and study the variables that may influence the service response. Such services must be developed and deployed bearing in mind scalability, high availability, fault tolerance and robustness concerns, as Raffaella Grieco, Delfina Malandrino and Vittorio Scarano emphasize in "SEcS: Scalable Edge-computing Services"

The fifth session starts with two papers on Web searching. The first one, "Making XPath Reach for the Web-Wide Links", by Lule Ahmedi, investigates the definition of LDAP primitives for expressing links among distributed data sources in the network; this makes it possible following links among XML-based documents when searching. In the second paper, "Automatic Extraction of Informative Blocks from Webpages", Sandip Debnath, Prasenjit Mitra and C. Lee Giles then propose two algorithms for identifying primary contents within Web pages. The main result is the reduction, for search engines, of storage requirements and size of indexes, which allows faster search time, as well as greater user satisfaction. The third session paper, "SmartGate: A Smart Push-Pull Approach to Support Role-Based Security in Web Gateways", by Raman Adaikkalavan and Sharma Chakravarthy, deals with security issues, and discusses how role-based access control may enable proxy servers to act smarter, rather than just allowing or denying access based on access rules. Finally, the paper "Sanitizing using metadata in MetaXQuery", by Hao Jin and Curtis Dyreson, presents an extension of the XML data model and of the XQuery query language, to certify the reachability of data, and to sanitize data with the existence of proscriptive metadata.

In addition, the track includes tree poster papers. The first one, "Development of a Learning System to Introduce GIS to Civil Engineers", by Ronaldo Luna, Richard Hall, Michael Hilgers, Bill Lawrence, John Sullivan and Matt Buechler, proposes a Web-based e-learning system to facilitate the integration of Geographical Information Systems (GIS) into the Civil Engineering curriculum. The paper "wsBus: A Framework for Reliable Web Services Interactions", by Abdelkarim Erradi and Piyush Maheshwari, presents a lightweight framework that enables reliable Web services interactions through intelligent messaging.

Finally, the paper "Synthetic Environment Representational Semantics using the Web Ontology Language", by Mehul Bhatt, Wenny Rahayu and Gerald Sterling, investigates the use of Ontologies for solving some interoperability issues.

### **3. BIOGRAPHIES OF THE TRACK CHAIRS**

Cristina Castro Cachero received her Ph.D. in Computer Science from the University of Alicante (Spain) in January 2003, where she has been teaching Software Engineering since 2001. Her research work is centered on Web design methods and methodologies, with emphasis on design process and model quality. She is co-author of several papers that have been published in international conferences and workshops, and has participated as reviewer in well-known congresses such as the WWW, ICWE or the IRMA conferences.

Sara Comai received her Ph.D. in Computer Science from Politecnico di Milano (Italy) in January 2000 and is currently assistant professor at the same university. Her research interests are mainly in the areas of active databases, semistructured information representation and processing, conceptual models and tools for the specification of data-intensive Web applications integrated with Web services and workflow. She has published several papers in the above areas in international conferences and workshops. She is also co-author of the book "Designing Data-Intensive Web Applications", published by Morgan Kaufmann.

Maristella Matera has a Ph.D. in Computer and Automation Engineering. She is currently assistant professor at Politecnico di Milano, where she teaches Databases. Her research work focuses on design models, methods and tools for data-intensive Web applications, specification of context-aware, multi-channel Web applications, Web quality analysis, and formal specification of interactive systems. She is author of several papers on the above topics, and is co-author of the book "Designing data-intensive Web applications" (Morgan Kaufmann Publishers).