

## Special issue on Digital Information Management

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New challenges have arisen from the combination of capture, search and communication capabilities with technologies of the digital data management, which have traditionally addressed digital archiving and document management. This has resulted in a growth in amount and diversity of potentially useful digital information sources of various types and in several application domains, such as digital libraries, distributed data management, document ranking and selection and leads us towards a digital society. Nevertheless, as a result of heterogeneity and distributed nature of data, digital information repositories present significant hurdles in acquiring useful knowledge from these repositories. Naturally, issues on how to capture, store, preserve, interpret, monitor, control, deliver and manage the massive available data sources and systems become crucial and require various improvements and major modifications of the current tools to be used in the provided to the digital society. Currently, there is notable number of research work on intelligent approaches to design and deploy advance techniques for information retrieval, image recognitions, data mining and document classifications. The ability for current scholarship to follow, anticipate and dialogue with these important questions in the ICT community will prove an important foundation for the next generation of technological advances.

This special issue seeks to contribute new insights on these issues and challenges in order to better address the evolution of data acquisition technologies and computing advances. The papers included here stem from the second annual IEEE International Conference on Digital Information Management (ICDIM) held in Lyon-France in 2007. This edition of ICDIM successfully achieved its goal of bringing scholars from academia, research laboratories and industry to the proverbial table to discuss their work and share their experience both theoretically and practically. The forum served as a collaborative platform to address the emerging issues of the digital society and solutions in information science and technology. We believe that their insight contributes to a greater understanding of these important questions that are in the forefront of scholarship and intellectual inquiry in the ICT community.

Not only did the following papers receive accolade from conference participants, they were chosen at the end of a special procedure to be shared in this published format after a very tight review process in which seven extended papers out of forty-four papers presented were selected for inclusion in this special issue after two rounds of reviews. The acceptance rate was thus 15.9% and the selected works reflect the high standards for excellence used by the many esteemed members of the editorial board who contributed to this special issue. Their contributions are greatly appreciated. The special issues contain 14 papers and the papers are published in two physical issues, August and October 2008. The first issue contains the following papers.

The first paper is entitled “**Learning Transfer Rules for Machine Translation from Parallel Corpora**” (pas de copyright), in which *Werner Winiwarter* presents JETCAT, a Japanese-English transfer-based machine translation system. The main research contribution is that the transfer rules are not handcrafted but are learnt automatically from a parallel corpus. The system has been implemented in Amzi! Prolog, which offers scalability for large rule bases, full Unicode support for Japanese characters, and several APIs for the seamless integration of the translation functionality into common office environments. As a first user interface, a translation environment has been developed under Microsoft Word. The dynamic nature of the system allows for an easy customization of the rule base according to the user’s personal preferences by simply post-editing the translation results, which leads to an automatic update. The user interface for Microsoft Word also provides the possibility for the user to display token lists, parse trees, and transfer rules, which makes JETCAT also a very useful tool for language students.

The second paper is “**Map-based Interfaces for Information Management in Large Text Collections**” (pas de copyright), authored by *Rudolf Mayer*, *Angela Roiger* and *Andreas Rauber*. Here, the authors give an overview of existing techniques and applications of Self-Organising Maps (SOM) in Digital Libraries, and present recent work in assisting the user in exploring the map by automatically describing maps using advanced labeling and summarization of map regions, focusing on text collections. Therewith, the SOM becomes an attractive tool for Information Management in large corpora.

The third paper is entitled “**A Forum-based Organizational Memory as Organizational Learning Support**” (manque de source+copyright) by *Adeline Leblanc* and *Marie-Hélène Abel*. Here, the authors focus on the problem of Information and Communication Technologies that have transformed the way people work and have a growing impact on long life learning. Organizational Learning is an increasingly important area of research that concerns the way organizations learn and thus augment their competitive advantage, innovativeness, and effectiveness. Within the project MEMORAe2.0, the authors address the capitalization of knowledge in the context of an organization and by organizational learning. They present the organizational learning approach; stress the role of an organizational memory in this approach; define the concept of learning organizational memory; and specify the use of a forum concept in such a context. Finally, they present the approach MEMORAe, the environment E-MEMORAe2.0 developed, and its evaluation.

The fourth paper, "**Query Planning in the PORDaS P2P Database System**" (pas de copyright), is authored by *Kjetil Nørnvåg, Eirik Eide and Odin Hole Standal*. Here, the authors see the peer-to-peer (P2P) paradigm as a possible solution to some of the problems in distributed data management. P2P has already proved to be suitable in contexts like file sharing, distributed computations, and distributed search. The authors aim at using P2P to solve some problems in the domain of *distributed databases*. In this paper, they 1) present PORDaS, a distributed DBMS based on P2P techniques, 2) describe query processing and query planning in PORDaS, and 3) present results from an experimental evaluation of different query planning variants.

The fifth paper is dedicated to "**Standardized Multimedia Retrieval based on Web Service technologies and the MPEG Query Format**" (*copyright*). *Mario Doller, Kerstin Bauer, Harald Kosch and Matthias Gruhne* deal here with the growing number of digital audiovisual media files available over the internet or even on users' hard discs. In order to support efficient storage and retrieval of those data, several comprehensive and rich multimedia retrieval systems (MMRS) have been introduced. Unfortunately, a standardized query format does not yet exist and almost every retrieval framework provides its own proprietary solution. Therefore, the ISO/IEC SC29 WG11 committee decided to contribute to this application by establishing the MPEG Query Format (MPQF). The MPQF is currently in Final Committee Draft (FCD) status and provides besides the standardization of messages from and to multimedia services also functionalities for service discovery, aggregated services and definition of service capability descriptions. In this context, the paper briefly introduces the MPQF and concentrates thereby on the management part. Based on this, a Web Service based framework is presented that realizes the management functionalities of MPQF. One of its central novel features is the distribution of a MPQF request to multiple multimedia services and the aggregation of individual result sets.

In "**A Framework for Web Content Management System Operations and Maintenance**" (*copyright*), *Jurriaan Souer, Paul Honders, Johan Versendaal and Sjaak Brinkkemper* focus on the problem of using Web Content Management Systems (WCMS) to improve development speed, online flexibility and cost effectiveness for web applications. The problem is that organizations lack the organizational processes and structure to effectively maintain WCMS. The authors propose here a WCMS Process Framework for the operation and maintenance phase of Web Engineering. They elaborate on the construction of the framework that encompasses the description of a generic IT Management framework and the inclusion of Web Content Management processes into a strategic, tactical, and operational level. The framework is validated through an expert validation consisting of three industry experts and a case study at a large Dutch telecommunications services provider. The case study substantiates the vision that the WCMS Process Framework contains a set of process descriptions that effectively supports the operations and maintenance of web applications.

Through "**Map Integrity Constraint Verification by using Visual Language Parsing**" (*copyright*), *Vincenzo Del Fatto, Vincenzo Deufemia and Luca Paolino* cope with the tools for the creation of geographic maps and propose an approach based on visual language parsing for guaranteeing the integrity of data produced during the map editing process. According to the proposed approach, constraints are expressed by using high-level data model, such as OMT-G, and converted in a proper visual language grammar automatically. From such a grammar, a parser able to identify incorrect aggregation of spatial data input is generated. The grammar formalism also allows to associate suitable semantic actions with productions in order to perform automatic corrections of inconsistent input data, error recognition and visualization, prompting actions for error recovery. Also, a system prototype supporting the proposed process is presented.

In "**Route Navigation Method for Disabled Access GIS in Consideration of Abilities and Psychologies**" (*copyright*), *Shinobu Izumi, Go Kobayashi and Takaichi Yoshida* aim to propose a route navigation method for disabled access GIS. They focus on the disabled psychologies as well as their physical conditions. This paper represents quantization of physical and psychological burden of the disabled persons inflicted by various barrier factors. Also it represents estimation of total burden of a route to determine the optimum route. The route is represented by graph theory and route navigation method which is based on Dijkstra algorithm is applied. The authors extend the algorithm to make it possible to provide information on obstacles even when there are no accessible routes available to destination. The result of this study is being implemented and published as 3D Web Disabled Access GIS.

We hope this special issue motivates researchers to take the next step beyond building models to implementing, evaluating, comparing, and extend proposed approaches. Many people worked long and hard to help this issue become a reality. We would first like to gratefully acknowledge and sincerely thank all the reviewers for their timely and insightful valuable comments and criticism of the manuscripts that greatly improved the quality of the final versions. Of course, thanks are due to the authors, who provided excellent articles and timely extended revisions. Finally, we are grateful to the editors of the Journal of Digital Information Management for their trust in us, their efforts, patience, and painstaking editorial work during the production of this special issue.

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## Guest Editor Biographies

**Dr. Youakim BADR** received a Doctorate in Information Systems from the French National Institute for Applied Sciences in Lyon (INSA of Lyon). In 2004, he joined the faculty of the INSA of Lyon as Assistant Professor of Computer Science. Dr. BADR has worked extensively in the field of coupling XML documents and Object-Relational Databases. Through his research he has acquired skills in fields such as Interoperability, Modeling, System Architectures and Networking, and their application to various domains such as Business Processes, Supply Chains, Productions Systems and Virtual Enterprises. His current academic research interests include systems in both the service sector and ICT. In particular, he studies the ecosystem of services and the multidisciplinary modeling approach to design services through the integration of ICT, strategy and processes. He leads the Service-Oriented Enterprise research team which combines industrial and computer engineering approaches. In this context, he co-supervises several graduate students and actively participates in national and international projects (COPILOTES, INTERPROD, SEMEUSE, SIMSYPROD, etc.). Dr. BADR is vigorously involved in a series of international conferences. He served as General Co-Chair of ICDIM'07, CSTST'08 and the Web Technology Track of SAC 2008, and International Program Member of IAS'08, NOTERE'08, SITIS'07, JFO'07, WCNC'07 and ECWS'06. He also serves as a reviewer for various conferences and journals, namely ACM Computing Reviews, Scientific Journals International, the Journal of Service-Oriented Computing and Applications. He is a professional member of ACM, IEEE Services Computing Community, a member of OW2 and the Service Sciences working group of the Networked European Software and Services Initiative (NESSI).

**Dr. Richard Chbeir** received his PhD in Computer Science from the University of INSA- FRANCE in 2000. The author became a member of IEEE since 1999. He is currently an Associate Professor in the Computer Science Department of the Bourgogne University, Dijon-France. His research interests are in the areas of distributed multimedia database management, XML similarity and rewriting, spatio-temporal applications, indexing methods, multimedia access control models, security and watermarking. Dr. CHBEIR has published (more than 40 peer-reviewed publications) in international journals and books (IEEE Transactions on SMC, Information Systems, Journal on Data Semantics, Journal of Systems Architecture, etc.), conferences (ER, WISE, SOFSEM, EDBT, ACM SAC, Visual, IEEE CIT, FLAIRS, PDCS, etc.), and has served on the program committees of several international conferences (ICDIM, IEEE SITIS, ACM SAC, IEEE ISSPIT, EuroPar, SBBD, etc.). He has been organizing many international conferences and workshops (ICDIM, CSTST, SITIS, etc.). He is currently the Chair of the French Chapter ACM SIGAPP.