GUEST EDITORIAL PREFACE

Special Issue on Managing, Evolving and Distributing Data Warehouses and OLAP Data Cubes in Novel Environments

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The issue of *managing, evolving and distributing Data Warehouses and OLAP data cubes in novel environments* is gaining momentum in Data Warehouse and OLAP research community. This issue not only poses both *conceptual and methodological research challenges*, but also *practical and pragmatic aspects* that mainly concern with representation and processing optimizations devoted to improve the overall task (i.e., manage, evolve, distribute).

The issues above are also spread-up by both recent data-model paradigms, such as *social networks*, and recent technological advances of complex infrastructures, such as *Cloud Computing platforms*.

From the convergence of conceptual, methodological, practical and solution-driven research challenges, it follows a great interest of the Data Warehouse and OLAP research community for the issue of managing, evolving and distributing Data Warehouses and OLAP data cubes in novel environments, which originated this special issue.

With the aim of adequately pursuing both theoretical and practical challenges deriving from this convergence, this special issue contains three papers that have been selected after two rigorous review rounds. Some of these contributions have originally been invited as selected papers from the *ACM 14th International Workshop on Data Warehousing and OLAP* (DOLAP 2011), leaded by the Editors, held in conjunction with the in conjunction with *20th ACM International Conference on Information and Knowledge Management* (CIKM 2011), Glasgow, Scotland, UK, October 24-28, 2011. DOLAP is widely recognized as the premier forum where both researchers and practitioners in the areas of Data Warehousing and OLAP share their findings in theoretical foundations, current methodologies, and practical experiences.

In the following, an overview of the three paper contained in this special issue is provided.

The first paper, titled: *Efficient Top-k Keyword Search over Multidimensional Databases*, by Ziqiang Yu, Xiaohui Yu and Yang Liu, introduces a new approach, called *Cascading Top-k Keyword Search* (CTKS), to *perform keyword search over multidimensional databases* in settings where the size of main memory is very limited, such as in mobile devices. In contrast to conventional approaches that compute *Steiner trees* as the query answers, the proposed approach conducts the search through *iteratively expanding super-nodes as to cover all keywords*. Experimental results demonstrate that CTKS compares favorably to existing algorithms in terms of efficiency and memory consumption. Also, CTKS can be well deployed to mobile devices as part of *mobile OLAP applications*.

The second paper, titled: *Modeling and Querying Continuous Fields with OLAP Cubes*, by Leticia Irene Gómez, Silvia Alicia Gómez and Alejandro Vaisman, focuses the attention on *Spatial On-Line Analytical Processing* (SO-LAP), which is aimed at exploring *spatial data* in the same way as OLAP operates over tables. SOLAP however, only accounts for *discrete spatial data*. Current decision support systems are increasingly being needed for handling more complex types of data, like *continuous fields*, which describe physical phenomena that change continuously in time and/or space (e.g., temperature). On the basis of this main consideration, authors propose a model and an algebra supporting it, that *allow operating via classical OLAP operators over SOLAP data cubes*, independently of the underlying data types and physical data representation, hence providing support for both discrete and continuous spatial data support, as well as for *spatiotemporal data analysis*.

Finally, the third paper, titled: *A BPMN-Based Design and Maintenance Framework for ETL Processes*, by Zineb El Akkaoui, Esteban Zimányi, Jose-Norberto Mazón and Juan Trujillo, investigates *Business Intelligence* (BI) applications by putting the emphasis over *the issue of designing, implementing and maintaining ETL* (Extraction, Transformation, Load) *processes*. As widely-known, the latter is an inherently complex problem that is typically costly and time consuming. Indeed, in this context, the ETL designer faces two major issues during the development of ETL processes: (*i*) *how to implement the designed processes in an executable language*, and (*ii*) *how to maintain the implementation when the organization data infrastructure evolves*. In order to support these difficult tasks, authors propose a *model-driven framework that provides automatic code generation capability and ameliorate maintenance support of a vendor-independent ETL language* they proposed in a previous research. Also, authors provide a set of model-to-text transformations able to produce code for different ETL commercial tools as well as model-to-model transformations that automatically update the ETL models according to data source evolution.

The Editors would like to express their sincere gratitude to the Editor-In-Chief of *International Journal of Data Warehousing and Mining*, Prof. David Taniar, for accepting their proposal of a special issue focused on managing, evolving and distributing Data Warehouses and OLAP data cubes in novel environments, and for assisting them whenever required. Also, the Editors wish to express their thanks to all the authors who submitted papers to this special issue and, last but not least, to the reviewers who volunteered their time to provide constructive feedbacks.

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