

BI and Data Warehouse Solutions for Energy Production Industry: Application of the CRISP-DM methodology

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Abstract. This paper reports two projects for supporting decisions of the Company of Electricity in Azores Islands, Electricidade dos Açores. There were several decisions to support, such as whether communications between islands should be moved from the present telephone lines to VoIP, and if better models to support forecast power consumption should be adopted. The solution established integrates OLAP cubes in a data mining project, based on CRISP-DM process model. Both for strategic and more operational decisions the objective was always to get accurate data, build a data warehouse and to get tools to analyze it in order to properly inform the decision makers. These DSS's translates big CSV flat files or acquire data in real time from operational Data Bases to update a data warehouse, including importing, evaluating data quality and populating relational tables. Multidimensional data cubes with numerous dimensions and measures were used for operational decisions and as exploration tools in the strategic ones. Data mining models for forecasting, clustering, decision trees and association rules identified several inefficient procedures and even fraud situations. Not only was possible to support the necessary decisions, but several models were also displayed so that control decision makers and strategists could support new problems.

Keywords. Decision Support Systems, Data Mining, OLAP, operations efficiency.

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DSS 2010 Programme

July 9, 2010 (Friday)

Time			
9:00-10:00	keynote Omar El Sawy, Decision Support and Environmental Scanning: Past Hallucinations, Present Realities, and Future Prospects - room 6.1.36		
10:00-10:30	Coffee Break (c6 atrium)		
10:30-12:20	room 6.1.36 Understanding Decision Making - II chair Zita Paprika	room 6.2.49 Applications of Multi-Criteria Decision Analysis - II chair Rudolf Vetschera	room 6.2.50 Business Intelligence and Data Warehousing - II chair Graeme Shanks
	On Institutional Rationality and Decision Making in Adopting Green ICT Strategies. <i>Tom Butler, Anthony Flynn and James McGarry</i>	PRIOR-WEB: A Discrete Multicriteria Prioritization Tool for the Global Economy Context. <i>Juan Aguarón, María Teresa Escobar, José María Moreno-Jiménez and Alberto Turón</i>	Making Sense of the Master Data Management (MDM) Concept: Old Wine in New Bottles or New Wine in Old Bottles? <i>David Sammon, Frederic Adam, Tadhg Nagle and Sven Carlsson</i>
	Implementing the "Design for Emergence" Principle in GDSS. <i>Constantin-Bala Zamfirescu, Luminita Duta and Ciprian Cîndea</i>	Using Action Research on the Process of Decision Support with VIP Analysis Software. <i>Alessandra Ventura, Luis C. Dias and João N. Clímaco</i>	BI and Data Warehouse Solutions for Energy Production Industry: Application of the CRISP-DM Methodology. <i>Armando Mendes</i>
	The Involvement of Group Decision and Communication Support in Building a SME Cluster in China. <i>Junxiang Zhang and Patrick Humphreys</i>	A GIS Embedded Decision Support System for Bicriteria Location Problems. <i>Sérgio Fernandes, M. Eugénia Captivo and João N. Clímaco</i>	Market Strategy and Innovation in the Business Intelligence Industry: A Preliminary Study. <i>Steve Remington, Peter O'Donnell and David Arnott</i>
Decision-Making under Uncertainty and Complexity. <i>Eurico Lopes</i>	Ranking Alternatives on the Basis of a Dominance Intensity Measure. <i>Alfonso Mateos, Antonio Jiménez, Ernesto Aguayo and Arminda Moreno</i>	How Web 2.0 Improves Business Intelligence: Showcase of Emerging Technologies. <i>Berta Buttarazzi, Mirko Mechilli and Luciano Polinari</i>	
12:20-13:30	Lunch		
13:30-14:30	panel: Healthcare IT and Decision Support - room 6.1.36 chair Gloria Phillips-Wren		
14:30-15:30	room 6.1.36 Design of Decision Support Systems - I chair Peter Keenan	room 6.2.49 Business Intelligence and Data Warehousing - III chair Peter O'Donnell	room 6.2.50 Knowledge Management - II chair Piero Migliarese
	Global and Local Organizational Factors Influencing Information Requirements in DSS Development. <i>Vincenzo Corvello and Davide Salvatore Gitto</i>	SYSCO: Data Warehousing and Business Intelligence for Decision Support in Supply Chain Management. <i>Dan E O'Leary</i>	A System for Extracting Tacit Knowledge: Shared and Collaborative Knowledge Generation. <i>Sara Topi, Mauro Mazzieri and Aldo Franco Dragoni</i>
	Decision Support by CAFM Systems: A Challenge in Facility and Real Estate Management. <i>Thomas Madritsch and Michael May</i>	A Taxonomy of Motives for Understanding Business Intelligence Systems Implementation. <i>Ilona Jagielska, Graeme Shanks and Rahim Mahbubur</i>	Socio-Technical Enablers of Knowledge Management. <i>Meliha Handzic</i>
DSS Framework for Analysis of the Impact of Objects to People at Visitors' Area. <i>Ferenc Kiss and Marianna Török</i> (short paper)	Decision support for ERP-Based Production Management: a Business Intelligence Perspective, <i>Shaofeng Liu, Jonathan Moizer, Pushpa Subramaniam, Mike Leat and Isabelle Linden</i>	An Approach for Collaborative Decision Making in Knowledge Management. <i>Imène Brigui-Chtioui and Ines Saad</i>	
15:30-16:00	Coffee Break (c6 atrium)		
16:00-17:20	room 6.1.36 Context in Decision Making chair Marcos Borges	room 6.2.49 Intelligent Decision Making - II chair Pascale Zaraté	room 6.2.50 Decision Support for Policy Making - I chair Maria Franca Norese
	Context-Oriented Scientific Workflow System and its Application in Virtual Screening. <i>Xiaoliang Fan, Patrick Brézillon, Ruisheng Zhang and Lian Li</i>	Case and Model Based Hybrid Reasoning for Group Decision Making. <i>Abdelkader Adla, Pascale Zarate, Jean-Luc Soubie and Noria Taghezout</i>	Public Procurement as Regulated Decision Making Problem: Challenges for DSS. <i>Csaba Csáki and Frederic Adam</i>
	Cognitive Decision-Making Process as Context Information. <i>Andreia Pereira and Flávia M. Santoro</i>	Towards a Cellular Indexing in a Case Based Reasoning Approach: Application to an Urban Transportation System Regulation. <i>Fouzila Amrani and Karim Bouamrane</i>	An IS Success Evaluation of a DSS in a Police Organization. <i>Sven A. Carlsson, Linda-Marie Skog and Olgerta Tona</i>
Framing Decision-Making at Two Levels. <i>Patrick Brézillon and Jean-Charles Pomerol</i>	I-DSS for Detecting Stars Degeneracy. <i>Tiago Simas, Rita Ribeiro, Fernando Pinheiro and João Fernandes</i>	Optimisation of Transport Time of Patient into the Health Units in the Town of Yaoundé: An Implantation Decision Process of Dark Zone Health Units. <i>Chrispin Pettang, Marcelline Blanche Manjia and Georges Edouard Kouamou</i>	
17:20-18:30	free time		
18:30-22:30	Conference Dinner		

papers in brown (supplemental proceedings) and short papers: presentation time of 20 minutes