General Project Information	
Project Title	**KD4CD: Knowledge Discovery for Complex Data in Formal and Relational Concept Analysis**
Project Code	DIAKRATIKES/KY-GA/0310

Summary	Data Mining has become a major research field over the past 10 years. This success is mainly due to the need of analyzing qualitative data. Qualitative studies arise from many different areas, in sociology, psychology, marketing, etc. In fact, it concerns any study having symbolic data (for example, in case of sociological study, it can be the person's gender, hair color, ethnical origin, etc.) as opposite to quantitative data (typically, some measures). Lattice-based data mining (also called Formal Concept Analysis) became an essential component of Data Mining for many different reasons. Its purpose is to extract information from symbolic data, i.e. when we consider objects (of different natures) described by properties (of different natures), we have a binary data table of object having (or not) properties. This situation is universal, and fundamental to symbolic data analysis. A recent development in this field was the introduction of Relational Concept Analysis which can infer relations between formal concepts whose semantic is similar to roles between concepts in ontologies. In essence the aim of developing this cooperation between the two is to assist in the quest for improving knowledge discovery in databases by developing a better understanding of the underlined ordered structure. The current project has the following objectives: a) Putting together two teams with strong different specialties. The French team is led by Pr. A. Napoli, head of the research group Orpailleur (LORIA, France), which goal is to extract knowledge units from databases, and in sequence, to design knowledge-based systems for reasoning and solving problems in a given domain. The Cypriot based research is led by young researcher Dr. F. Domenach (University of Nicosia, Cyprus), who specializes in the theoretical structure underlining Data Mining. b) Improving knowledge discovery in databases (for symbolic and numerical methods) by having a better understanding of the underlined ordered structure (the lattice), which will lead to better and more efficient algorithms, either in formal concept analysis, or in knowledge discovery guided by domain knowledge (KDDK). c) Raising academic awareness of the impact of efficient Data Mining methods to any quantitative study. At the end, delivering a substantial survey on all the literature for completing the background knowledge on this subject matter. A literature review like this has not been conducted to date in Cyprus, and we believe that it will be a basic reference for anyone wanting to study in depth symbolic Data Mining and to carry on research work in this area. In addition, such a survey could be used for presenting a tutorial at one of the most important conferences of the domain such as KDD, ECML/PKDD or ICDM.

Funding	
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Framework	2009-2010
Programme	Bilateral Cooperation
Action	Bilateral Cooperation

Internal Coordination						
Project Submitted Under	University of Nicosia Research Foundation (UNRF)					
Role in Project	Host Organisation					
Project Coordinator (PC)	Dr. Florent Domenach					
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Schedule			
Year Awarded	**Duration (in months)**	**Start Date**	**Expected End Date**
2011	24	20/06/2011	19/06/2013

Budget			
	%	**Euro**	
Funding Agency Contribution	100	4,999	
Total Project Budget		**4,999**	

Dissemination	
Funding Website	www.research.org.cy
Project Website	

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