# HeisenData - Towards a Next-Generation Uncertain-Data Management System

## Fact Sheet

Project Information

**HEISENDATA**

Grant agreement ID: 249217

Project closed

**Start date**
1 March 2010

**End date**
28 February 2014

**Funded under**
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

**Total cost**
€ 100 000,00

**EU contribution**
€ 100 000,00

**Coordinated by**
TECHNICAL UNIVERSITY OF CRETE
Greece

## This project is featured in...

## Objective

Several real-world applications need to manage and reason about large amounts of data that are inherently uncertain. For instance, pervasive computing applications must constantly reason about volumes of noisy sensory readings, e.g. for motion prediction and human behavior modeling; information-extraction tools can assign different possible labels with varying degrees of confidence to segments of text, due to the uncertainties and noise present in free-text data. Such probabilistic data analyses require sophisticated machine-learning tools that can effectively model the complex correlation patterns present in real-life data. Unfortunately, to date, approaches to Probabilistic Database Systems (PDBSs) have relied on somewhat simplistic models of uncertainty that can be easily mapped onto existing relational architectures: Probabilities are typically associated with individual data tuples, with little or no support for capturing data correlations. This research proposal aims to design and build a novel, extensible PDBS that supports a broad class of statistical models and probabilistic-reasoning tools as first-class system objects, alongside a traditional relational-table store. Our proposed architecture will employ statistical models to effectively encode data-correlation patterns, and promote probabilistic inference as part of the standard database operator repertoire to support efficient and sound query processing. This tight coupling of relational databases and statistical models represents a major departure from conventional database systems, and many of the core system components need to be revisited and fundamentally re-thought. The proposed research will attack several of the key challenges arising in this novel PDBS paradigm (including, query processing, query optimization, data summarization, extensibility, and model learning and evolution), build usable prototypes, and investigate key application domains (e.g. information extraction).

## Fields of science (EuroSciVoc)

natural sciences > computer and information sciences > **data science**

natural sciences > mathematics > applied mathematics > **statistics and probability**

natural sciences > computer and information sciences > databases > **relational databases**

## Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

## Topic(s)

FP7-PEOPLE-2009-RG - Marie Curie Action: "Reintegration Grants"

## Call for proposal

FP7-PEOPLE-2009-RG
See other projects for this call

## Funding Scheme

MC-IRG - International Re-integration Grants (IRG)

## Coordinator

**TECHNICAL UNIVERSITY OF CRETE**

EU contribution

**€ 100 000,00**

Total cost

**No data**

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Activity type

**Higher or Secondary Education Establishments**

Links

Contact the organisation  Website
Participation in EU R&I programmes
HORIZON collaboration network

**Last update:** 16 July 2019

**Permalink:** https://cordis.europa.eu/project/id/249217