



ubiquitous
knowledge discovery

IST, FET Open

KD ubiq IST-FP6-021321

Knowledge Discovery in Ubiquitous Environments

Coordination Action

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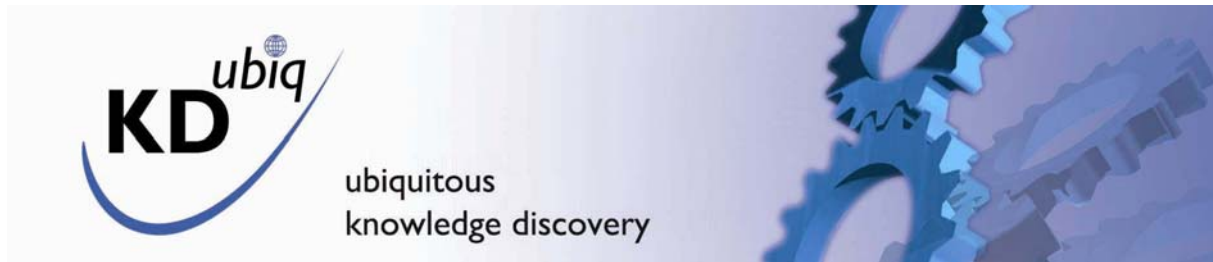
**Publishable Final Activity Report including
Publishable Results of the Final Plan for
Using and Disseminating the Knowledge
Incl. Final Plan for Using and
Disseminating the Knowledge**

01.12.2005 – 31.05.2008

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Abstract:

This document is the Final Publishable Activity Report on the KDubiq CA including the summary report of all activities coordinated during the entire project period starting from for the 01.12.2005 until 31.05.2008.

A more detailed description is given in D1.2. Final Synthesis Report.

Revision history

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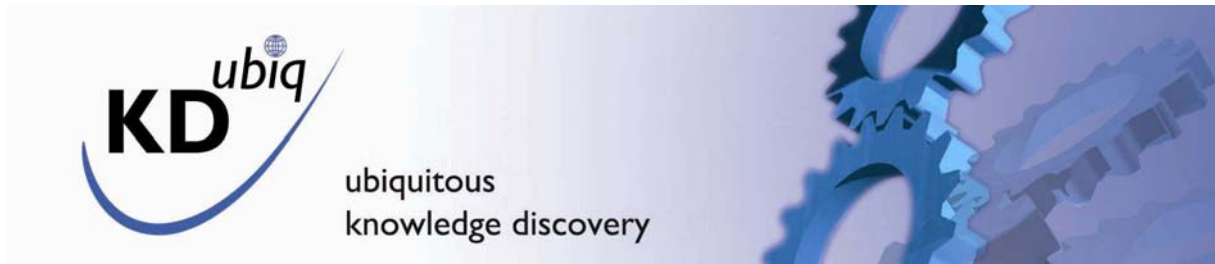


Table of Contents

| | |
|--|---|
| Table of Contents | 3 |
| Overview | 4 |
| Objective 1: To structure and support emerging multi-disciplinary communities..... | 4 |
| Objective 2 and 3: To identify new research challenges and to derive strategic guidelines for long-term research by blueprint editing..... | 5 |
| Objective 4: to identify new emergent technologies to be transferred to industry | 6 |



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Overview

The KDubiq coordination action brings together newly emerging research in **ubiquitous knowledge discovery**. Research areas are:

- **data mining in mobile systems**, wireless communication networks
- **distributed architectures**: distributed data mining, grid, P2P, agents
- **learning components**: online learning, data streams, anytime learning
- **data types**: spatio-temporal sensor data, web 2.0, multimedia
- **security & privacy**: privacy preserving data mining, intrusion detection
- **HCI & cognitive modelling**: user interfaces of ubiquitous discovery systems

This multi-disciplinary approach constitutes a paradigm shift for the field of knowledge discovery since the idea of a standalone (desktop or workstation) analysis tool is abandoned in favour of **process integrated, distributed and autonomous analysis systems**. Work done in this area merely scratches the surface, is dispersed among several communities, and in a very early stage. Integration of the various sub-areas involves considerable risk. The KDubiq CA aims to close the gap and strengthen long-term research and applications in a new and future-oriented discipline **ubiquitous knowledge discovery**. It faces many new challenges, e.g. because of technical limitations in memory, CPU power, bandwidth etc, and can only succeed if **privacy and security** are addressed in a principled and multi-disciplinary manner.

As a coordination action, the project combines scientific goals with community building and external dissemination. It does not produce original scientific research results, but has the objective of providing an integrating perspective on ongoing and future research.

Objective 1: To structure and support emerging multi-disciplinary communities

A major objective of a coordination action is community building. To this end, we organized a significant number of events that gave rise to direct contacts among researchers interested in this new field. They joined in **working group meetings, workshops, tutorials and summer schools**.



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In the working group people from different areas relevant to ubiquitous knowledge discovery came together – often for the first time – to jointly discuss their work and research agenda. The core group came together regularly over a period of 30 months, so that sustainable cooperations could start.

Scientific workshops are a good mechanism for addressing a wider audience, to start dissemination of results, to attract new people, and to learn about emerging ideas. We had 10 **topic-oriented scientific workshops** attached to the most important data mining and machine learning conferences. In the second half of the project, we organized 7 workshops or exhibitions associated to conferences in neighbouring areas such as Ubicomp, Mobile Data Management, Ambient Intelligence, Tangible and Embedded Interaction.

Project Clustering. Scientific workshops and working group meetings are complemented by the **Project Clustering**: here, relevant projects from different communities come together. This aspect helps in disseminating ideas of KDubiq to other projects and researchers not part of this initiative. The **1st project presentation day at ECML/PKDD 2006 in Berlin** was a useful first event in this direction, the **2nd presentation day took place in September 2007 at ECML/PKDD 2007 in Warsaw**.

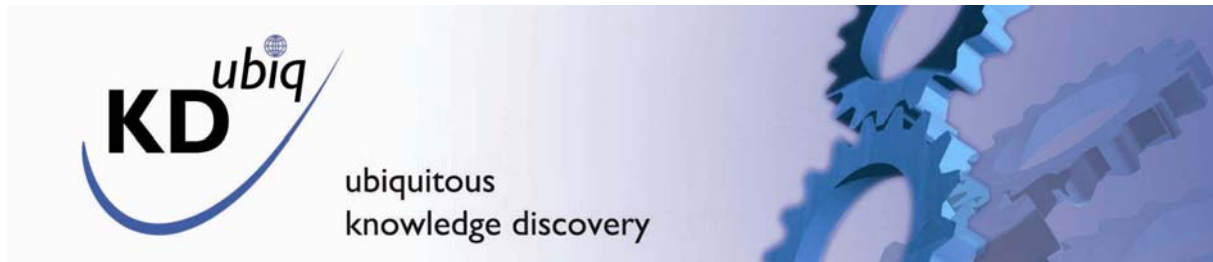
Training. summer schools are an excellent mechanism to attract new students to the field. The organization of the **1st KDubiq Summer School (WP5)** with 45 students and researchers from 14 countries was a major event in this direction. In 2008 we have organized successfully the **2nd KDubiq Summer School** March 2008 in Porto, Portugal. In total 63 participants from 14 countries have joined the 2nd Summer school. This major training activity in KDubiq project helped considerably to strengthen the common ground for the integration of the involved fields and to support the formation of KDubiq community feeling also among students.

Objective 2 and 3: To identify new research challenges and to derive strategic guidelines for long-term research by blueprint editing

A main activity of the project has been the blueprint editing activity. Blueprint editing was conceived as a means to an end: community building. The blueprint defines the research challenges in ubiquitous knowledge discovery along six main dimensions: Applications; Ubiquitous Technologies; Resource aware, distributed algorithms; Ubiquitous Data; Privacy and Security; HCI and User Modeling.



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The blueprint is a very timely contribution. For maximum impact, the final decision about dissemination of the blueprint is **to publish it as a book in fall 2008**. We believe that the combination of high-level overview and technical material will give a much more complete and accessible view than each perspective alone could provide. The blueprint fills a definite gap, since there is no comprehensive, high-level statement available about the challenges in this emerging area of research.

A significant further activity was the contribution to the **NSF workshop on Next Generation Data Mining (NGDM'07)**. The US National Science Foundation (NSF) workshop on Next Generation Data Mining'07, was held in Baltimore in October 2007. This event that takes place approximately every 5 years. Many of the most renowned researchers from Data Mining are invited to present their vision of the field. The KDubiq coordinator has been invited – as one of only two non-Americans - to present the KDubiq research challenges and the European KDubiq community. In the Springer Proceedings of this event that is about to be printed, a full Chapter on “KDubiq - Ubiquitous Knowledge Discovery” has been written by Michael May and the KDubiq Working Groups Chairs and Co-Chairs.

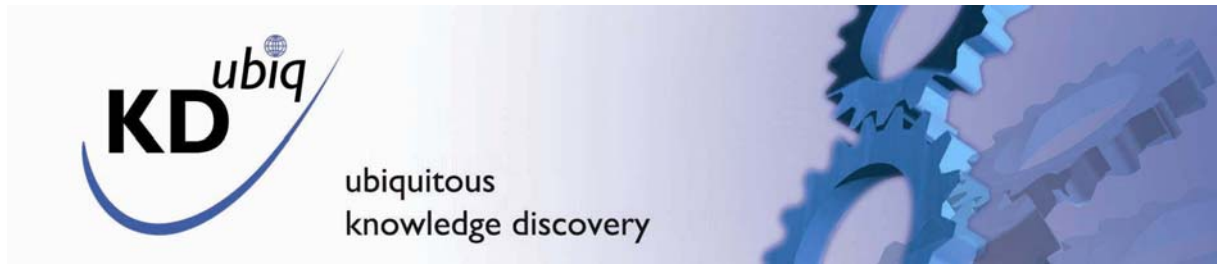
Objective 4: to identify new emergent technologies to be transferred to industry

The main focus of KDubiq was on setting up a scientific community and identifying a research agenda. Industrial exploitation has to be seen on a more long-term scale. The **Transfer Workshops** were designed to initiate contacts with end users and industry. In year one we had a first industry meeting organized at DaimlerChrysler Research in Ulm in June 2006. In the final year we had a second industry and application workshop in Porto in March 2008. Areas such as environmental monitoring, eCommerce, plant monitoring, vehicle fleet management, internet (web 2.0), and advertising showed a strong need for KDubiq technology.

Summary. Overall, the project was very successful in involving and motivating researchers to join the KDubiq initiative. Many researchers became active that were not among the initial contributors to the proposal. The consortium could spread out to other disciplines. There is a broad consensus among the participants that the time is ready for an initiative such as KDubiq and that the field will profit significantly from it. The working groups, the workshops, the summer schools, the tutorials and the interdisciplinary dissemination created a rich infrastructure for this new community to meet and to exchange results.



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Many of these activities are going to continue after the end of KDubiq or are even intensified, e.g. a "First Workshop on Ubiquitous Knowledge Discovery (UKD 08)" will take place at PKDD/ECML in September 2008. We plan to have this workshop in regular intervals; preferably in Europe collocated with ECML/PKDD.

Web site

The KDubiq Web site is available at www.KDubiq.org.



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