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# **KNOWLEDGE MANAGEMENT IN ACTION**

## **IFIP – The International Federation for Information Processing**

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

*IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.*

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

# KNOWLEDGE MANAGEMENT IN ACTION

*IFIP 20<sup>th</sup> World Computer Congress, Conference  
on Knowledge Management in Action, September  
7-10, 2008, Milano, Italy*

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# IFIP 2008 World Computer Congress (WCC'08)

## Message from the Chairs

Every two years, the International Federation for Information Processing hosts a major event which showcases the scientific endeavours of its over one hundred Technical Committees and Working Groups. 2008 sees the 20th World Computer Congress (WCC 2008) take place for the first time in Italy, in Milan from 7-10 September 2008, at the MIC - Milano Convention Centre. The Congress is hosted by the Italian Computer Society, AICA, under the chairmanship of Giulio Occhini.

The Congress runs as a federation of co-located conferences offered by the different IFIP bodies, under the chairmanship of the scientific chair, Judith Bishop. For this Congress, we have a larger than usual number of thirteen conferences, ranging from Theoretical Computer Science, to Open Source Systems, to Entertainment Computing. Some of these are established conferences that run each year and some represent new, breaking areas of computing. Each conference had a call for papers, an International Programme Committee of experts and a thorough peer reviewed process. The Congress received 661 papers for the thirteen conferences, and selected 375 from those representing an acceptance rate of 56% (averaged over all conferences).

An innovative feature of WCC 2008 is the setting aside of two hours each day for cross-sessions relating to the integration of business and research, featuring the use of IT in Italian industry, sport, fashion and so on. This part is organized by Ivo De Lotto. The Congress will be opened by representatives from government bodies and Societies associated with IT in Italy.

This volume is one of fourteen volumes associated with the scientific conferences and the industry sessions. Each covers a specific topic and separately or together they form a valuable record of the state of computing research in the world in 2008. Each volume was prepared for publication in the Springer IFIP Series by the conference's volume editors. The overall Chair for all the volumes published for the Congress is John Impagliazzo.

For full details on the Congress, refer to the webpage <http://www.wcc2008.org>.

*Judith Bishop, South Africa, Co-Chair, International Program Committee*

*Ivo De Lotto, Italy, Co-Chair, International Program Committee*

*Giulio Occhini, Italy, Chair, Organizing Committee*

*John Impagliazzo, United States, Publications Chair*

## WCC 2008 Scientific Conferences

<b>TC12</b>	<b>AI</b>	Artificial Intelligence 2008
<b>TC10</b>	<b>BICC</b>	Biologically Inspired Cooperative Computing
<b>WG 5.4</b>	<b>CAI</b>	Computer-Aided Innovation (Topical Session)
<b>WG 10.2</b>	<b>DIPES</b>	Distributed and Parallel Embedded Systems
<b>TC14</b>	<b>ECS</b>	Entertainment Computing Symposium
<b>TC3</b>	<b>ED_L2L</b>	Learning to Live in the Knowledge Society
<b>WG 9.7</b>	<b>HCE3</b>	History of Computing and Education 3
<b>TC3</b>		
<b>TC13</b>	<b>HCI</b>	Human Computer Interaction
<b>TC8</b>	<b>ISREP</b>	Information Systems Research, Education and Practice
<b>WG 12.6</b>	<b>KMIA</b>	Knowledge Management in Action
<b>TC2</b>	<b>OSS</b>	Open Source Systems
<b>WG 2.13</b>		
<b>TC11</b>	<b>IFIP SEC</b>	Information Security Conference
<b>TC1</b>	<b>TCS</b>	Theoretical Computer Science

## IFIP

- is the leading multinational, apolitical organization in Information and Communications Technologies and Sciences
- is recognized by United Nations and other world bodies
- represents IT Societies from 56 countries or regions, covering all 5 continents with a total membership of over half a million
- links more than 3500 scientists from Academia and Industry, organized in more than 101 Working Groups reporting to 13 Technical Committees
- sponsors 100 conferences yearly providing unparalleled coverage from theoretical informatics to the relationship between informatics and society including hardware and software technologies, and networked information systems

*Details of the IFIP Technical Committees and Working Groups can be found on the website at <http://www.ifip.org>.*

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# Preface

Knowledge management (KM) is more and more recognized as a key factor of success for organisations: not only structured companies, but also virtual enterprises, networks of organisations or even virtual communities. These organisations of different kinds, are becoming increasingly aware of the need to collect, organise, mobilise, increase, in sum manage, the knowledge characterising their ability to stay alive, adapt and evolve in a turbulent context. Through various organisational and technological approaches, KM aims at improving knowledge access, sharing and reuse as well as new knowledge creation. KMIA 2008 highlights problems, requirements and solutions that are derived from actual, concrete experiences.

The fourteen papers accepted at KMIA 2008 give various answers to the following questions:

*What organisational strategies can enable to enact and promote KM within organisations? How to link these organisational strategies with the ICT technology?*

Organisational strategies can be related to the evolution of the organisation itself or to its environment: intra-organisational and inter-organisational strategies can thus be distinguished. Some papers emphasize the importance of collaboration and knowledge transfer for team work and collaborative projects that may be intra-organisational or inter-organisational (e.g. inter-organisational outsourcing relationships).

Strategies for designing and manufacturing innovative products are recognised as crucial for enterprises that operate in competitive sectors.

Networks of organisations can help to improve the competitiveness of these organisations: KM can thus enhance competency management in such networks and help an organisation to find relevant costumers, suppliers, or cooperation partners.

Power relationships in an organisation can also influence the KM practices.

*What are the various kinds of knowledge, application domains, organisational structures, and their implication on KM?*

Various typologies of knowledge were proposed in literature: tacit knowledge, explicit knowledge, know-how, knowledge mobilised by various types of competencies... These various kinds of knowledge are exploited in some papers.

Some KM solutions rely on profiles of organisation competencies and activities. The importance of competencies for innovative product design strategy in competitive sectors is also stressed.

The KMIA papers present applications in medical domain (clinical pathways, dementia management and support system), in automotive industry (design and manufacturing of complex mechanical products), in software design, in environmental planning and in financial domain. Examples of scenarios studied are: project memory, decision support, participatory planning or inter-organisational competency management.

*What methods and approaches can be adopted for the design of KM solutions?*

Several papers rely on empirical studies for designing a KM solution: e.g. empirical study on a software enterprise, or empirical study on networking needs in small and medium enterprises (SMEs) in Information Technology (IT) domain, or analysis of an experience in participatory planning in environmental domain. One paper adopts the business ethnography methodology.

*What techniques and technologies can be adopted for sustainable KM solutions?*

The technical solutions offered by the papers rely on document management techniques, document retrieval, contact management, decision-support systems, memory support systems, ontology-based systems, or knowledge discovery techniques.

For enhancing cooperation among organisations, some papers offer tools aimed at improving mutual awareness among a network of organisations or suggest the use of reusable patterns for supporting collaborative knowledge transfer and for inter-organisational outsourcing relationships.

*What are the critical success factors for KM socio-technical solutions?*

Relying on a participatory approach with the stakeholders, and with the involvement of end-users and of management, among others, and taking into account the organisational strategy and the collaboration processes in the organisation seem necessary for a successful KM solution.

In some organisations (such as hospitals), a KM solution must take into account the fact that expertise and experience are distributed over different organisational levels and different professions.

The need to take into account the context and the processes is also emphasized: context in clinical pathways, context-sensitive assistant.

Software enterprises adopting End-User Development need to take into account processes of knowledge diffusion not only in the client organisation, but also in their customer-producer relationships.

*How to evaluate KM applications in real situations? What are the lessons-learned in each phase of the KM application life-cycle, from conception up to continuous adaptation?*

Several case studies are described in the papers: case study about clinical pathways in medical domain, empirical study on the networking needs among

SME in the IT domain, trials in a financial to evaluate the patterns proposed for supporting collaborative knowledge transfer.

Several authors rely on a participatory approach, they derive the chosen KM solution from the organisational strategy and from the analysis of relevant case studies and they evaluate the KM solution in various contexts.

The proceedings present successively the following papers:

- In "KT" CarePacks - A Collaboration Patterns for Knowledge Transfer. Learning form IS/IT - Outsourcing Case at a Swiss Financial Institution", Malgorzata Bugajska presents the "pattern" approach enabling to describe solutions for recurring problems. Patterns for sustainable knowledge transfer for outsourcing relationships are offered through CarePacks – reusable patterns for supporting act of collaborative knowledge transfer. The paper also presents lessons learned from introducing such patterns in a financial institution.
- In “Core Knowledge Management in a Designer Community of the Automotive Field”, Stefania Bandini, Sara Manzoni and Fabio Sartori discuss a conceptual and computational approach to the design of KM systems to support people involved in the design and manufacturing of complex mechanical products. They develop an IDS system for the acquisition, representation and use of knowledge of expert designers working in an enterprise in automotive industry.
- In "Knowledge Artifacts as Bridges between Theory and Practice: The Clinical Pathway case", Federico Cabitza, Carla Simone and Marcello Sarini analyse the definition, use and maintainance of Clinical Pathways in hospitals and their different roles for bridging medical knowledge with the related practices by which physicians deal with a specific care problem. This case stresses the need of an integrated approach towards the computer-based support of information and knowledge management in rapidly evolving cooperative work settings.
- In “Managing Knowledge in Urban Planning: Can Memory Support Systems Help?”, Adele Celino, Grazia Concilio and Anna De Liddo analyse an experience of participatory planning in environmental domain. They stress the interest of memory support systems in such planning processes as means to capture the argumentation chains produced along the planned actions and supporting them. They present the first results of a research project aiming at developing such a memory support system.
- In "Building a Framework for Actions and Roles in Organizational Knowledge Transfer", Alexander Hoffmann presents a framework that structures roles and actions relevant in organisational knowledge transfer scenarios and that is useful for identifying and classifying factors which leverage or prevent knowledge transfer.
- In “CoLinK: Cooperative Knowledge Management for Engineering Teams”, Michael Klingemann and Juergen Friedrich present CoLinK a prototype for a

process-oriented KM system useful in a participatory design project. CoLink allows engineers to jointly model projects with generic process descriptions augmented with knowledge annotations during each project. These engineers thus constitute a virtual engineering community within the enterprise and beyond. The CoLink system offers both document management and contact management.

- In "Conceptual Model of Target Activity as Tool for Developing Management and Support System for Dementia Care", Helena Lindgren presents a case study analysing the process of investigating suspected dementia in patient cases were analysed. The resulting model captures structures and required knowledge at different levels of care, while providing a perception of use context. The decision-support system DMSS (Dementia Management and Support System) is adapted to different use environments.
- In "On Problems, Requirements and Solution Approaches when Supporting Knowledge Intensive Processes in Industry", Christian Luetke Entrup and Thomas Barth aim at providing support of knowledge intensive processes by analysing similarities among product data, and by offering retrieval of the relevant knowledge-related documents in the context of a given process in the domain of automotive supplier industry.
- In "Third Generation Knowledge Management in Action: Relational Practices in Swiss Companies", Jens O. Meissner and Patricia Wolf show the relevance of third generation KM concepts to explain relational practices in contexts of face-to-face interaction and virtual communication. Scharmer's Concept of Self-transcending Knowledge and Snowden's Knowledge-Ecology-Approach 'Cynefin' enable to develop a third generation KM framework that highlights the critical role of relational practices for KM.
- In "Knowledge Management-in-action in EUD-oriented Software Enterprises", Bernhard Nett, Johanna Meurer and Gunnar Stevens use Business Ethnography methodology for analysing practices of small software enterprises and their potential to acquire, secure and use knowledge about end-users of their products, so as to enhance End-User Development.
- In "Business Finder – A Tool for Regional Networking among Organizations", Tim Reichling, Volker Wulf and Benjamin Moos present Business Finder, a tool for improving mutual awareness among small and medium enterprises (SME) in a regional network. The design of this tool is based on an empirical study into networking needs among SME in the IT domain. Relying on text matching algorithms and integrated into the usual document management, this tool allows creation and search of profiles of organisation competencies and activities, so as to identify potential partners.
- In "Knowledge Management Capability Framework", Birinder Sandhwalia and Darren Dalcher present a Knowledge Management Capability framework based upon an empirical case study on a software project organisation. They study the development of the organisation's KM initiative from its initial state, to an organisational state where the KM practices are institutionalised

and embedded within the daily activities and work methods of the organisation. KM capabilities tackled are KM infrastructure and KM processes. The proposed framework helps organisations to analyse potential imbalance between their KM initiative and their actual needs.

- In "DYONIPOS: Proactive Support of Knowledge Processes", Silke Weiß, Josef Makolm, and Doris Reisinger, present the research project DYONIPOS offering a context-sensitive and agile assistant based on semantic and knowledge discovery technologies, so as to support the knowledge workers with the currently needed knowledge automatically, in a non intrusive way.
- In "A Community of Knowledge Management Practitioners: Mirroring Power across Social Worlds", Hiroko Wilensky, Norman Su, David Redmiles and Gloria Mark distinguish two spaces: a community of KM practitioners and their respective work organisations. The authors notice that power relationships in work organisations are transferred into the community: they influence the community processes and enhance the knowledge sharing practices among the members. Strauss's social world perspective helps to understand how the actions and interactions outside of the community impact the community.

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