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

*IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.*

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

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 generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also 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.

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Eunika Mercier-Laurent · Danielle Boulanger (Eds.)

# Artificial Intelligence for Knowledge Management

Third IFIP WG 12.6 International Workshop, AI4KM 2015  
Held at IJCAI 2015

Buenos Aires, Argentina, July 25–31, 2015

Revised Selected Papers



Springer

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ISSN 1868-4238

ISSN 1868-422X (electronic)

IFIP Advances in Information and Communication Technology

ISBN 978-3-319-55969-8

ISBN 978-3-319-55970-4 (eBook)

DOI 10.1007/978-3-319-55970-4

Library of Congress Control Number: 2017935960

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Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Preface

Knowledge management (KM) is a large multidisciplinary field with its roots in management and artificial intelligence (AI). AI paved the way for thinking, knowledge modelling, knowledge processing, and problem-solving techniques.

Knowledge is an intangible capital that influences the performance of organizations and their capacity to innovate. Since the beginning of the KM movement in the early 1990s, companies and non-profit organizations have been experimenting with various approaches.

After the first AI4KM (Artificial Intelligence for Knowledge Management) organized by IFIP (International Federation for Information Processing) group TC12.6 (Knowledge Management) in partnership with ECAI (European Conference on Artificial Intelligence) in 2012, and after the second workshop held during the Federated Conferences on Computer Science and Information Systems (Fedcsis) in 2014 in conjunction with the Knowledge Acquisition and Management Conference (KAM), the third edition of the workshop was held in partnership with IJCAI (International Joint Conference on Artificial Intelligence) in 2015.

The objective of this multidisciplinary collocation is to gather both researchers and practitioners to discuss methodological, technical, and organizational aspects of AI used for knowledge management and to share the feedback on KM applications using AI.

We would like to thank the members of the Program Committee, who reviewed the papers and helped put together an interesting program in Buenos Aires. We would also like to thank all the authors. Finally, our thanks go out to the local Organizing Committee and all the supporting institutions and organizations.

This volume contains selected papers presented during the workshop. After the presentation, the authors were asked to extend their proposals by highlighting their original thoughts. The selection focused on new contributions in any research area on the use of all AI fields for Knowledge Management. An extended Program Committee then evaluated the final versions of the proposals, leading to these proceedings.

The first paper “Knowledge-grid Modelling for Academic Purposes” proposes a multi-dimensional knowledge model, designed to distribute and manage knowledge resources. This model contributes to founding an advanced knowledge platform capturing the following dimensions: time, area, and social dimensions. The concept of knowledge grid is presented as a potential method of knowledge acquisition and management. The application domain is the infrastructure of a university with three studied sub-domains: management, education and, research.

In “A Knowledge Engineering Perspective of Knowledge Management: How to Manage Project Meeting Knowledge,” the authors claim that knowledge engineering methodologies can be used to improve knowledge management. Knowledge engineering needs to shift from developing expert systems in order to represent knowledge in a way easier for knowledge sharing and it also needs to be embedded in the cycle of

knowledge management. A Cooperative Knowledge Discovery framework is designed and two case studies illustrate its feasibility for knowledge management.

“Web of Data Evolution by Exploiting Agent-Based Argumentation” explains that sharing knowledge and data coming from heterogeneous sources is one of the challenges of linked data. To keep this knowledge graph up to date requires both ontology vocabularies and data since they should be consistent. To deal with the Web of data evolution, the authors propose an agent-based argumentation framework to assist the user in linked data changes. Agents use argumentation theory to reach a consensus about the best change alternative without inconsistency in an a priori way.

The main goal of the article “Content Management Systems based on GNU GPL License as a Support of Knowledge Management in Organizations and Business” is to argue that the area of content management is not exploited enough and would greatly assist the process of knowledge management in organizations. Possible scenarios and development steps of content management systems implementation in the area of knowledge management are described.

In “Context-Aware Knowledge Zoning: Traceability and Business E-mails,” the authors use the framework of corporate and project memories to capture an enhanced context and examine how they can track collaborative knowledge in e-mails. The approach relies on pragmatic linguistic, discourse analysis, organizational chunks—roles and competencies—to extract parameters relevant to locate traces of knowledge.

“From Knowledge to Sign Management: A Co-design Methodology for Biodiversity and Music Enhancement” exposes that knowledge representation with ontologies and case-based reasoning is often not enough for gaining qualitative results in decision support systems. The authors propose a user-centered approach, both artificial and natural, in which knowledge management is embedded in sign management. A co-design methodology and a cooking method on a creativity platform are designed. Biodiversity and music domains support the proposition.

This article “Learning from Daily Knowledge: How to Keep Track and to Represent Design Projects Knowledge” studies how to capture and represent knowledge produced in daily work. Experiences must be repeated to represent epistemic and semantic knowledge that can be reused to deal with new problems. Techniques are described to catch daily knowledge in order to build semantic classifications and to enhance learning in organizations.

“Building Time-Affordable Cultural Ontologies Using an Emic Approach” describes an approach to using NLP methods to extract information related to culture from texts. The objective of this research work is to build time-affordable, conceptually sound, and machine-readable cultural representations. The formal dimension and the culture conceptualization are addressed by using “methodologies” coming from ontology engineering and cognitive anthropology.

The last article “Artificial Intelligence for Successful Kflow” concludes the proceedings. Through selected experiences and contributions the author tries to correctly and, in an exhaustive manner, define “knowledge flow” as: “creation, collection, processing and sharing of information and knowledge in an organized and optimized way, capturing the different activities of the extended organization as well as needs and

motivations—individual and collective—of all participants.” AI methods and techniques help in organizing and exploring this flow through various knowledge models, reasoning methods, and machine learning as well.

We hope you’ll enjoy reading these papers.

January 2016

Eunika Mercier-Laurent  
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