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# Software Technologies in Knowledge Society

# J.UCS Special Issue

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**Abstract:** The current society has knowledge as one of its most important values and indeed this is often called Knowledge Society. But Knowledge Society is still a desired aim more than a reality. Technology must serve to the achievement of Knowledge Society through knowledge-based information systems, but this is not an easy and out-dated task, nevertheless critically important topics, from different multicultural and interdisciplinary perspectives, address the complex relationships among technology, knowledge and society. World Summit on the Knowledge Society (WSKS) is an international event that promotes the dialogue for the main aspects of the Knowledge Society towards a better world for all. WSKS brings together key stakeholders of the Knowledge Society development worldwide, from Academia, Industry, Government, Policy Makers, and active citizens to look at the impact and prospects of the Information Technology, and the knowledge-based era it is creating, on key facets of living, working, learning, innovating and collaborating in today's hyper-complex world.

**Keywords:** Knowledge Society; Software Engineering; Semantic Web; Knowledge Engineering; Services; Information Systems;
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## 1 Introduction

The application of advanced Software Technologies in the context of the Knowledge Society is a bold contribution of the Software Engineering scientific community to a joint vision for applied humanistic computing.

In the last years the Economic Crisis around the world has emphasized the importance of reflective responsive ways based on the exploitation of human capital, knowledge and learning to their full potential. From this point of view the contribution of the World Summit in the Knowledge Society, with participants from more than 50 countries provides a scientific think tank that analyses the importance of Information and Communication Technologies to the design, implementation and adoption of solutions towards the realization of the Knowledge Economy.

In the wide spectrum of considerations, this special issue emphasizes Knowledge and Learning Management Technologies in Social Networks Research, and Technology Enhanced Learning and E-learning Innovations.

Innovation is a critical milestone for the Knowledge Society. Software Technologies can play a critical role towards the evolution and the innovation of the state of the art approaches to well-known deficits of performance in the Knowledge Society Contexts. Bold objectives in the Knowledge Society Agenda require a functional approach since real world systems must be adopted by citizens in a wide variety of different practical services. Software Technologies are challenging not only the services but more over the managerial perspectives and their management. In the Knowledge Society context these are some of the key issues that this special issue is trying to give an answer or at least to provide a first outlet for further discussion [Lytras, 10]:

- How can modern software technologies support ubiquitous effective knowledge and learning management solutions?
- Which are the main limitations of pilot systems and prototypes in the quest of solutions for large scale problems?
- How can software engineers adopt and combine various software technologies targeting in personalized, context aware applications?
- Which are the implications of Social Software to value adding key propositions?
- Which are the key aspects of the Knowledge Society that are linked to advanced Software Technologies approaches?
- How can ideas and abstractions about effective solutions be transformed to functional solutions?
- Which are the key requirements and which are the constitutional Software Technologies that provide the basic building blocks for Software Engineering targeting to Knowledge Society?

## 2 Special issue contents

In the collection of the articles that are included in the special issue the above research agenda is analysed further.

Thus, García-Peñalvo et al. paper entitled “Opening Learning Management Systems to Personal Learning Environments” presents the evolution and opening of the actual Learning Management Systems towards Personal Learning Environments (or Networks) through a service oriented proposal. The background of this paper establishes that the stability and maturity of the LMS may become yet another resistance factor working against the introduction of innovations. A service orientation, fully compliant with Web 2.0 philosophy, proposes an open mind solution where interoperability among information systems through semantic defined services constitutes the basis for an open knowledge transfer and interchange highway in a new real information system evolution.

Other key element in Knowledge Society learning-based systems are gLearning applications. This success factor, from a software engineering approach, is tackled by Minović et al. They proposed a Model Driven Approach to educational game

development that focuses on models rather than on implementation. This approach provides many opportunities to primarily reuse existing resources especially when it comes to knowledge.

Wells et al. go deeper in System Analysis with an integration proposal of cognitive work demands in the systems engineering process through development of a Cognitive Work Analysis (CWA) framework Systems Modeling Language (SysML).

Software Engineering for knowledge-based systems must take into account more dimensions than technological ones in requirements elicitation processes. Colomo et al. expose in their paper that designing and developing computer systems process is driven by emotions. Requirements engineering stage has several tasks in which the emotional factor represents a key role, for example acceptance and negotiation activities. This paper presents a study based on the application of affect grid in requirements engineering main stakeholders: developers and users. Results show that high arousal and low pleasure levels in the process are predictors of conflictive requirements.

Knowledge-based systems deal with a very difficult task in all the activities regarding knowledge management, due to knowledge representation is not a trivial task. García et al. propose a visual-analytics tool oriented to support knowledge engineers in conceptual ontologies construction processes. But, also the difficulty to understand the chosen abstraction arises. In this paper authors has been tested their proposed tool solution from a usability point of view.

Hernández-García et al. explore and evaluate the behaviour and attitudes of the non-shoppers' segment towards the acceptance of business-to-consumer electronic commerce (B2C-EC), a key success indicator in order to know the real Knowledge Society penetration in the overall citizens.

The concept of social role is a fundamental underpinning of the design and implementation of a wide range of learning information systems in Knowledge Society context Jonhson et al. defend that the roles that are designed into technologies often ill-fit the real roles of stakeholders in educational institutions, thus they use Positioning Theory to explore the relationship between role, social context and communication drawing, making recommendations for theoretical focus on understanding the particulars of practice and identification of specific technical issues of interoperability, based on the insights gained from the performed analysis.

Finally, Iskander et al. share their experience using multimedia modules in a Collaborative Research Experience for Teachers in STEM.

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## References

[Lytras, 10] Lytras, M.: "International Journal of Knowledge Society Research Editorial Preface," *International Journal of Knowledge Society Research (IJKSR)*, 1, 1 (2010).