Supporting Knowledge Management and Collaboration in Research Communities Using Automatically Created Research Portals

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ABSTRACT

Research portals have been proposed as a means of managing knowledge and fostering collaboration in research communities. However, implementing and maintaining a research portal is costly and involves a lot of technical knowledge. The purpose of this paper is to introduce a research portal generator designed to automatically create such portals. The generator provides a configurable set of knowledge management and collaboration features. The purpose of the generator is to ease the process of setting up and using a research portal. The paper contributes to promoting research portals as a means of sharing knowledge and facilitating collaboration in research communities. Following a design science research process, the authors derive objectives for a research portal generator, iteratively implement these objectives, and evaluate the functionality of the created portals against the current state of the art of 813 research portals. They demonstrate that portals created by the generator exhibit a consistently higher level of maturity than research portals currently present on the Internet.

Keywords: Collaboration, Design Science, Knowledge Management, Research Communities, Research Portal

1. INTRODUCTION

Contemporary research is defined by two main characteristics: on the one hand, research can be considered a cumulative effort (vom Brocke et al., 2009) in which new knowledge is created by building on and combining the existing body of knowledge. As scientific findings are typically communicated in journals and conference proceedings, creating new knowledge requires analysing a potentially huge number of publications. The Index of Information Systems Journals (Lamp, 2012), for instance, lists over 700 active journals that publish IS related findings alone. This number increases if one includes conference and workshop proceedings as well as monographs. The total number of publications that may contain relevant knowledge to solve a given research problem may therefore very well rank in the thousands. This calls for effective knowledge management support for research communities (Piccoli et al., 2000). Although knowledge management systems have gained much popularity in business (Schultze & Leidner, 2002), the adoption of respective approaches in research settings seems to be stagnating (Jones et al., 2006).

On the other hand, many current research efforts exhibit an interdisciplinary character (Metzger & Zare, 1999). Scientists from many different academic disciplines need to collaborate in order to solve a particular research problem. The IS discipline, by definition an interdisciplinary field, is a good example of such research (Österle et al., 2010). Design oriented researchers like computer scientists or mathematicians construct a particular artefact together with domain experts from other disciplines (e.g., new software or an algorithm). This artefact is later evaluated, for example, by social scientists in terms of its acceptance and usage by practitioners.

Against this backdrop of an increasing demand for knowledge management support as well as collaboration technologies, the use of so-called research portals has been suggested (Becker et al., 2012). Research portals are Internet-based knowledge management and collaboration instruments, which present research activities by answering questions like "who is doing research with whom?", "what is being researched?", and "what results have been achieved?". Thus, research portals foster the creation of virtual communities of practice (Lavoué et al., 2011) in research settings. They support internal communication in the community (Yu et al., 2010), but also have a strong focus on reaching external stakeholders and fostering the knowledge transfer between practitioners and academics (Rynes et al., 2001). Current research, however, indicates that these portals often do not live up to their potential: a recent study on the state of the art of such portals suggests that while some portals fulfil their purpose as knowledge management and collaboration instruments the majority of them provides only basic functionality regarding publication management and almost no collaboration features whatsoever (Becker et al., 2012). Thus, research portals are in most cases far from an accepted and frequently used technology.

The aim of this paper is to challenge this state of the art by answering the following research question: *How can a research portal generator be designed and evaluated against the backdrop of existing research portal solutions?* We propose a generator that allows for conveniently and automatically creating research portals offering a set of features that can be configured to the specific knowledge management and collaboration requirements of a given research community. The generator contributes to the knowledge management and collaboration efforts of research communities in providing a means to automatically create a research portal. It thus delivers the technological infrastructure for effective knowledge management and collaboration support in research communities. In doing so, advanced technical skills to create such a portal are no longer necessary. Hence, the purpose of the generator is to lower the threshold of setting up and using a research portal. Given the potential of research portals for knowledge management and collaboration in research communities, the generator thus represents a first step towards leveraging the adoption and usage of research portals. In addition, we evaluate the functionality of the

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