

12-7-2010

Development and evaluation of Research-driven Information Systems

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Recommended Citation

Buijs, Paul; Meyer, Gerben G.; and Szirbik, Nick B., "Development and evaluation of Research-driven Information Systems" (2010).
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Development and evaluation of Research-driven Information Systems

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Abstract

We propose to create a methodological framework that can be applied to evaluate Research-driven Information Systems (RdIS) in a consistent way. This is done by picking those examples of RdISs that have been evaluated properly and making those evaluation processes standard. Our proposed methodological framework for the evaluation of RdISs can assist IS researchers in selecting the appropriate evaluation methods. Further exploration of the characteristics of RdISs has led to a better understanding on suitable methods to evaluate the potential applicability of RdISs in practice. A study of IS literature revealed that the evaluation of RdISs should be interpretive and multi-method of nature. An RdIS that was developed in our research group is evaluated using a method that was designed with the new methodological knowledge.

Keywords: Research-driven Information Systems, evaluation, novel information technology application

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Reference: Buijs, P., Meyer, G.G., Szirbik, N.B. (2010). "Development and evaluation of Research-driven Information Systems," Proceedings > Proceedings of IFIP 8.2/Organizations and Society in Information Systems (OASIS) . *Sprouts: Working Papers on Information Systems*, 10(108). <http://sprouts.aisnet.org/10-108>

Development and evaluation of Research-driven Information Systems

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While introducing Design Science, Hevner et al. [3] and March & Storey [5] suggested that Information Systems research should only address problems that are faced by the practitioners in organizations. In our opinion, researchers who develop an Information System (IS) can also be driven by generic problems, new technologies or paradoxes that are described in literature, or simply by scientific curiosity. In that case an IS is typically created to gain scientific knowledge [6] [8], and researchers seek for novel technological concepts with general applicability [1]. Although the development process does often not directly result in a specific solution for a particular problem in an organization, the scientific theory that is built can have a strong influence on the thinking and activity of professionals in the industry [4]. The novel technical concepts can be further developed into commercially interesting ISs and the professional domain can respond to phenomena that were discovered during research.

Our research is focused on the evaluation of Research-driven Information Systems (RdIS). RdISs are defined here as a subset of ISs, by means that RdISs have requirements that stem mainly from research driven goals instead of from a particular organizational problem. A study of literature on RdISs shows that much effort invested by the researchers in presenting an RdIS, is focused on the technical concept used in the system and tends to neglect to investigate and illustrate the impact the system can have on the humans using and operating the system. As a result of this, many researchers substitute proper system evaluation with mere testing or sometimes only descriptive analysis. A reason for this can be that the researchers consider their RdIS more as a tool, program, or algorithm, and they apply the evaluation methods that are appropriate for these instead of methods that are more proper for evaluation of ISs. Therefore, we consider that this is more a methodological blunder than the lack of practical possibility to evaluate an RdIS in the way the state-of-the-art methodological thinking suggest.

We propose to create a methodological framework that can be applied to evaluate RdISs in a consistent way. This is done by picking those examples of RdISs that have been evaluated properly and making those evaluation processes standard. Our proposed methodological framework for the evaluation of RdISs can assist IS researchers in selecting the appropriate evaluation methods. Further exploration of the characteristics of RdISs has led to a better understanding on suitable methods to evaluate the potential applicability of RdISs in practice. A study of IS literature revealed that the evaluation of RdISs should be interpretive [2] and multi-method [7] of nature. An RdIS that was developed in our research group is evaluated using a method that was designed with the new methodological knowledge.

Keywords: Research-driven Information Systems, evaluation, novel information technology application

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