

Artifact and/or Theory? Publishing Design Science Research in IS

Panel

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Abstract

With the rising interest in Design Science Research (DSR), it has become crucial to understand what the acceptable components of a DSR paper are, in order to get published. Central to this is the ongoing debate on what constitutes an acceptable contribution in DSR - the artifact, the design theory or both? Two camps have emerged in this debate, and this panel is setup to engage thought leaders from both sides in a scholarly discourse. At the end, we aim to have moved a step towards collectively charting a path for the future of Design Science in the IS discipline.

Keywords: Design Science Research, Theory Building, Information Technology (IT) Artifact, Information Systems (IS) Theory, Research Method, ICIS Panel

Introduction

Design science research (DSR) is gradually evolving to be a research approach of import to be reckoned with in the information systems field (Rossi et al., 2013). This is evident from recent calls and editorials (Goes 2014; Gregor and Hevner 2011; March and Storey 2008; Winter 2008) encouraging the adoption of DSR in IS research. DSR has been argued to be an approach that positions IS research to be of both practical relevance and theoretical value. Despite the acknowledged importance and relevance of design science research to the field, there still remains a dearth of papers in the leading IS journals (Bichler 2014; Goes 2014; Gregor and Hevner 2013): “While design science research is widely recognized as one of the main paradigms of IS research, it has not experienced much publication success in a journal like MISQ.” (Goes, 2014, p. vii) A logical question would be - why?

While there might be several reasons for this, one of key concern is the issue of - what type of contribution is required and sufficient for a design science study? To answer this, there are two camps emerging on how to best position a DSR paper for publication (Gregor and Hevner 2013). There is the school of thought that maintains that the essential element of a design science paper should be the artifact (Hevner

et al. 2004; March and Smith 1995;) while another school of thought is of the opinion that DSR studies should have a design theory (Kuechler and Vaishnavi 2008; Gregor and Jones 2007; Markus et al. 2002).

The artifact camp argues that the essence of a design science is to create an IT artifact in the form of constructs, models, methods or instantiations that provide value in particular contexts and whose utility can be rigorously demonstrated and scientifically evaluated (Hevner and Chatterjee 2010; Hevner et al. 2004; March and Smith 1995). The goal of a design science conducted with this artifact paradigm would naturally tend to be focused on the building and evaluation of the artifact. In this camp, if the process of building the artifact has relied sufficiently on justified background theories and relevant knowledge, plus if the evaluation can be adjudged as rigorous, then such research likely qualifies as a scholarly inquiry in the DSR sense. In support of this thinking, Hooker (2004) argues that the concept of design theory is not feasible, if there is such a theory it is not of design since design is a creation process and it is pre-theoretical (Chatterjee 2015).

On the other hand, the design theory thinking (Gregor and Jones 2007; Kuechler and Vaishnavi 2008), requires not just the artifact but a theoretical formulation of the design principles in the form that satisfies the criteria for a theory. Such theories emerging from a design science study are then termed as design theory in line with Gregor and Jones (2007) anatomy of design theories in IS. Gregor et al (2007) and Kuechler et al. (2008) argues that while building an artifact is a valuable contribution of a design science project, it is the design theory that highlights one of the key theoretical contribution that can be claimed by such a study.

With this sort of divergent view, it becomes necessary to engage in discussion that could potentially shed light on what the critical issues are in DSR and what the way forward should be. Steps have already been initiated in this direction with the joint work of Hevner and Gregor (2013) which is positioned to serve as a guiding lens for the IS community on how to approach publishing impactful DSR papers. Similarly, Baskerville (2008) has equally outlined a number of things that design science research is not. However, just as the opinions are varied on the issue of artifacts and design theory, so are the views of reviewers varied. If a reviewer belonging to one side of these camps receives a DSR paper, what are the chances of such a paper, if viewed with a one sided lens? This is indicative of a need to have a discussion to bring this matter to fore and present both sides of the debate to the IS audience.

Considering that two of the highly referenced articles - Hevner et al. (2004) and Gregor and Jones (2007) – (Baskerville et al. 2011) on design science research in IS hold this seemingly contradicting view, is indicative of a need to engage in a scholarly debate to highlight where the differences lie and were the similarities are and possibly arrive at some form of consensus to help shape the path for future DSR studies in Information Systems. This panel is therefore proposed as a platform for enlightening the community about these issues and reinforcing the importance of DSR research as a valuable research instrument for the field.

Issues

The key issues to be discussed will primarily center on the role of artifacts and theories in design science. Of particular importance will be the issue of - should DSR papers have artifacts AND theories? If so what should the relationship be? And on a converse note, can DSR research be valid with only an artifact OR design theory? If so, what should be expected of a standalone artifact or theory?

Additionally, another related issue worth considering in the discussion of getting DSR papers published is the notion of contribution. At present, DSR research tend to usually have a problem statement they are poised to solve, which often translates to a practical contribution. This in effect makes DSR studies to have some degree of practical relevance in the context within which the study takes place. With the increased call for IS papers to have practical relevance and not only theoretical relevance (Benbasat and Zmud 1999; Hirschheim and Klein 2003) this is a strong point for DSR in IS. However, how should DSR and its related Action Design Research (ADR) studies be positioned so it does not appear to be mere consultancy wrapped in academic language? Even if a design science research clearly has practical application and valuable utility, how can we extract theoretical contributions from these? Or can a DSR paper get the approval of reviewers with only a well-designed and evaluated artifact? Should it?

Some scholars have lamented that many behavioral-focused IS research of recent time tends to forget IT as the artifact of study and drift into other research disciplines in social science (Nunamaker & Briggs, 2011, Benbasat and Zmud 2003; Orlikowski and Iacono 2001). Similarly, some IS scholars with technical inclination or backgrounds in computer science/engineering tend to see DSR as an opportunity to build software or develop algorithms. How then should we ensure that as the DSR research approach matures, we don't fall into the tendency of leaning too much on the "hard" (King and Lyytinen 2006) engineering side of IT? Do we need to re-articulate our definition of artifacts or is design theory the way out?

It is also of concern to some DSR researchers that what is required of a DSR paper appears to be almost herculean compared to other possible research approaches. Firstly, DSR requires a thorough building process of an artifact, which in itself is a conceptual activity as well as a creation exercise. Secondly, DSR subsequently mandates a rigorous phase of artifact evaluation using existing research methods (including those used in behavioral studies). Both of these two phases are arguably substantial research activities on their own. Would requiring a conceptual synthesis into a design theory impose another layer of complexity into adopting this research approach? Or is this a price researchers need to be prepared to pay if they adopt DSR?

These highlighted issues, among others, are some of the points to be explored in the panel.

Panelists

While the issues to be discussed in the panel are polar in nature, the panel is positioned to be a "way forward" type of discussion. However, the panelists have been selected to represent both camps as proponents and not necessarily as opponents of the other view.

Artifact Proponents

These are renowned scholars leading the discussion in design science research who also advocate for the value of artifacts in design science research - *Alan Hevner and Richard Baskerville*

Design Theory Proponents

These are also prominent scholars who have taken the lead in design science research and have sound experience in theorizing. They have leading roles in IS journals and hold respected views regarding design theories in IS research - *Shirley Gregor and Matti Rossi*

Panel Structure

The flow of the panel is structured in three segments.

- Panel presentation session (12 minutes)
- Panel interaction session (23 minutes)
- Open question and answer session (25 minutes)

For the first segment involving panel presentations, the panelists would be required to give a three (3) minute position statement with a maximum of three (3) slides each. The position and standpoint of each individual panelist should be presented to the audience with the presentations. The emphasis of each presentation would be the core domain of each panelist. The goal of the presentation phase is for participants to have a general introduction and understanding of the a) essential constructs, applicable examples and perhaps some historical background b) DSR publishing suggestions c) theoretical and artifact perspectives.

The second segment which is the panel interaction session would be a moderator facilitated phase with pre-planned questions to be discussed among the panelist. These questions will be hinged on the presentation contents and its relation to the panel topic – publishing DSR research and the role of artifacts and theories. The questions will be grouped into four defining themes a) Artifact and/or Theory debate b) Getting DSR papers published – tips and suggestions c) Rigor vs Relevance d) implications for research design.

The third and final phase will involve an open floor questions and answers session which will be guided by the panel moderator. Direct questions from the participants would be fielded to the panelist. Additionally, a web and mobile platform is planned as an additional channel for interactive real time engagement with the panelist. The session is planned to be an avenue for interactions and for participants to stimulate further discussions/debate.

Participation Statement

Alan Hevner, Shirley Gregor, Richard Baskerville, Matti Rossi and Abayomi Baiyere

Biographies

Alan Hevner

Hevner is an Eminent Scholar and Professor in the Information Systems and Decision Sciences Department in the College of Business at the University of South Florida. Emphasizing the synergy between research and practice; Hevner has been one of the main voices advancing the design science research approach as one of the valuable approaches that can be used to introduce relevance to IS research. His recent works have emphasized the link between innovations and IS research with a theoretical and practical balance. A significant number of his research contributions have been implemented and evaluated in business and industrial information systems; he was recently honored with a Lifetime Achievement Award for his contributions to the field of design sciences at the 2009 International Conference on Design Science Research in Information Systems and Technology.

Shirley Gregor

Shirley Gregor is a Director of the National Centre for Information Systems Research at the Australian National University, Canberra where she is the foundation Professor of Information Systems. Professor Gregor's research interests are varied and include design science and the theoretical foundations of information systems among others. She has led several large applied research projects funded by several renowned agencies. Her publications have been published in conferences and journals such as MIS Quarterly, Journal of the Association of Information Systems, International Journal of Electronic Commerce, International Journal of Human Computer Studies, European Journal of Information Systems and Information Technology & People. She was a Senior Editor for MIS Quarterly 2008-2010 and was Editor-in-Chief of the Journal of the Association for Information Systems 2010-2013.

Richard Baskerville

Baskerville is Board of Advisors Professor at Georgia State University, USA and a Research Professor at Curtin University, Australia. His research specializes in security of information systems, methods of information systems design and development, and the interaction of information systems and organizations. His interests in methods extend to qualitative research methods and the design science research paradigm. Baskerville is the author of *Designing Information Systems Security* (J. Wiley) and more than 200 articles in scholarly journals, practitioner magazines, and edited books. A chartered engineer, he is Editor Emeritus of *The European Journal of Information Systems*, and associated with the editorial boards of the *Information Systems Journal*, the *Journal of Information Systems Security*, and the *International Journal of E-Collaboration*.

Matti Rossi

Matti Rossi is a professor of information systems at Aalto University School of Economics. He has been the principal investigator in several major research projects funded by the technological development center of Finland and Academy of Finland. He has worked as research fellow at Erasmus University Rotterdam, visiting assistant professor at Georgia State University, Atlanta and visiting researcher at Claremont Graduate University. His research papers have appeared in journals such as MIS Quarterly, Journal of AIS, Information and Management and Information Systems. He has been a senior

editor of JAIS and Database for Advances of Information Systems and he is the current editor of Communications of the Association for Information Systems.

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