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Special Issue on

Exemplars and criteria for applicable design science research

Design science research (DSR) in information systems, as we refer to it today, has been with us for nearly forty years, e.g., (Nunamaker, 1971, Chen, 1976, Bonczek et al., 1979), although it was not defined in its current conceptual form until more recently. Papers in recent decades have introduced, defined, and provided guidance for producing and publishing DSR outcomes (Walls et al., 1992, March and Smith, 1995, Hevner et al., 2004, Gregor and Jones, 2007, Peffers et al., 2007, Kuechler and Vaishnavi, 2008, Hevner and Chatterjee, 2010, Gregor and Hevner, 2013). The objective of this special issue is to emphasize and enable IS researchers to accomplish more in terms of DSR’s raison d’être, the development of artifacts that can be applied to the solution of real world problems, e.g., (Hevner and Yao, 1979, Nunamaker et al., 1989, Goldkuhl, 2012).

Today, however, more than twenty years after the DSR concept was introduced to IS research, it seems to go without saying that, while there has been much research published about DSR, there hasn’t been as much research as we might hope that applies the DSR research paradigm to carry out IS research. Researchers have observed that it is difficult to publish DSR results in the best journals (Conboy et al., 2012) and have offered explanations, such as the comparative immaturity of DSR, when compared to applied social sciences (Winter, 2008), the low emphasis on practical relevance in the most highly regarded journals (Lyytinen et al., 2007), the expectation among the highest regarded journals of scientific theoretical contributions (Baskerville et al., 2011), and the uncertainty for DSR outcomes coupled with a quest for perfection (Weedman, 2008).

Recent DSR research has sought to frame the argument for the value of DSR knowledge contributions through concepts and guidance that distinctly differentiate DSR from design in practice (Baskerville, 2008, Gregor and Hevner, 2013). Steeped as we are in social science traditions of research contribution, this is an approach that is consistent with the culture of our discipline. Others have expressed concern that such guidance may be rigidly applied in ways that prevent DSR from being an attractive paradigm for research, particularly for the junior researcher (Österle et al., 2011). If it is taken to require theory development and testing, as well as rigorous artifact design, demonstration and evaluation, might the junior researcher be advised to stay away? Exemplars of successful application of this guidance to produce middle range theory with potential direct applicability to practice might do much to allay these worries (Kuechler and Vaishnavi, 2008).

What makes a DSR outcome practically applicable, as well as a valuable contribution to knowledge? Across the academy we find other ideas for design research objectives that may suggest alternate concepts for DSR knowledge contributions in IS. For example, in architecture, Buckminster Fuller called for a “design science revolution” approximately 50 years ago (Cross, 2001) and design research contributions have been described as “knowledge and rules which decrease the designer’s reliance on intuition and rules of thumb in solving problems” (Hillier et al., 1972). In landscape architecture research proposes “clear goals; adequate preparation; appropriate methods; significant results; effective communication; and reflective critique” as criteria for contribution (Milburn et al., 2003). Contemporaneously, researchers call for ‘practitioner led research’ and wonder how to evaluate the resulting contribution (Rust et al., 2007). In human computer interaction researchers have proposed ‘extensibility’ as an alternative value to ‘generalizability’ in design research outcomes (Zimmerman et al., 2007). In
engineering, technical innovation contributions are defined as: "significant, discontinuous event[s] characterized by novelty at [their] conception and success in application" (Mueser, 1985), while in mechanical engineering artifacts are variously valued to the extent that they meet functional requirements “simply and independently”, “with minimal deviation from desired performance”, include “well defined performance and cost goals”, and incorporate performance “robustness” (Finger and Dixon, 1989). Similarly diverse disciplines as construction, art, and manufacturing are concerned with evaluating the contribution from design research efforts. Might it be possible to develop a well grounded and rigorously defined concept for knowledge contribution that is an adaptation of one used in another academic domain, but that potentially has value for use in IS research (even if the term, ‘science’, might no longer apply)?

Applicability crosses domain lines, so that what is designed and executed by IS may be implemented in marketing, operations, or finance. Should not the DSR paradigm be diffused across these boundaries? One might imagine opportunities for collaborative DSR research, particularly in domains in which systems support disruptive innovations, such as marketing and customer relationship management, big data analytics, supply chain management and e-commerce, service design, etc.

Two kinds of papers represent the ends of a dimension that characterizes the scope of this issue: (1) exemplar papers that have accomplished the production of DSR artifacts with utility clearly associated with potential practice and (2) papers that develop theory and other guidance for the production and publication of applicable DSR.

We would anticipate papers of the first kind to represent the majority of successful contributions to this issue:

- Exemplar DSR efforts that both produce a noteworthy contribution and an applicable artifact.
- DSR efforts that show admirable and imitable processes to produce high quality publishable outcomes.
- Papers that engage researchers and/or practitioners across disciplinary boundaries to produce applicable artifacts.

The issue might or might not also include one or more outstanding contributions of the second kind:

- Theory or guidance for the production of applicable DSR contributions that merit publication in the best journals.
- Papers that leave the social science paradigm to argue convincingly for DSR contributions other than truth, e.g., beauty, novel invention, etc.

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Papers may be submitted to the special issue anytime before May 15, 2015
  o Submit using the EJIS online paper submission system at http://ejis.msubmit.net.
  o Select the Special Issue during submission.
  o Follow the EJIS formatting guidelines at http://ejis.msubmit.net.
  o Note that papers should be no longer than 8000 words.

References


