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CONFERENCE PAPER

Transferring project management knowledge: lessons learned in open standards projects

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Synopsis

Significant Project Management knowledge is generated by practitioners, usually presented as 'practitioner lessons learned'. However, the role of the academic as *only* project management sense-maker, excluding practitioner knowledge-creator, is questioned. An alternative view is that some academics are also important members of the project management community of practitioners because their project management skills are necessary to do collaborative industry research.

Research design

Participant observation as a team member of an ICT project for development of open standards for construction.

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Relevance for practice / education

This dual role of academics informs reporting the outcomes of ICT projects developing open standards for construction management systems.

Main findings

The ‘practitioner lessons learned’, success or failure, stories of three USA National Institute of Building Sciences ICT development projects are interpreted through academic sense-making. In addition, identification of the importance of transferring this knowledge within the academic project management community of practice is reported.

Research implications

These lessons should be incorporated into the design of new open standards projects to gain construction industry acceptance, implementation and adoption. In this case, an academic project, CONie (*Construction to Operations for Network information exchange*) is proposed as an open standard for Road Network Asset Management in Australia and New Zealand.

Keywords

Practitioner Lessons Learned, Open Standards, COBie, CONie

Introduction

Morris (2016) designates the role of the academic to making sense of the “lessons to be learnt from the challenges faced by the practitioner community” (p. 367). The concept of ‘practitioner lessons learned’ (Carrillo 2005) is important within the diversity of project management literature. For example, Kerzner (2013), in the 11th edition of an engineering project management textbook, writes that ‘lessons learned’ from experience are an important part of project risk management. The ‘lessons learned’ concept has also been considered from an organizational perspective (Schindler & Eppler 2003), a knowledge transfer perspective (Newell 2004), a learning perspective (Milton 2010), a systems perspective (Duffield & Whitty 2015) and a project perspective (Sense 2007).

In addition, the concept of ‘practitioner lessons learned’ can be considered from a variety of theoretical viewpoints. Discussions in the literature, from a number of disciplines contributing to project management research, are based on the learning curve (Lu et al. 2013), learning styles (Harfield et al. 2007), practice theory (Reich & Hager 2014) and communities of practice (Garrety, Robertson & Badham 2004).

For this research report, ‘practitioner lessons learned’ are considered from a project perspective and from the theoretical viewpoint of communities of practice. In this instance, a community of practice assumes common knowledge of project management ideals (Aerts Doms & Haezendonck 2017). Projects are regarded as temporary and unique (van den Ende & van Marrewijk 2014; Carrillo, Ruikar & Fuller 2013), thus ‘practitioner lessons learned’ are not institutionalized, but passed-on by individuals through ad hoc vehicles linked to communities of practice (Garrety, Robertson & Badham).

Morris (2016) also writes that projects, of one form or another, are a significant contributor to global economic activity. A considerable part of that activity is due to the construction

industry. For example, all Organization for Economic Co-operation and Development (OECD) countries average five percent of value-add from construction activity. In Canada and Australia, the industry has added a continued growth of value to production activities (from seven percent to over eight percent) between 2007 and 2015 (OECD 2017). This means that topics that concern the construction industry have important global economic, political and social consequences.

The construction industry economic contribution to the global economy means an expectation of continued improvement of industry productivity. For the last 20 years, predictions of improving productivity have been based on the growth of Information and Communication Technology (ICT) for construction project management (Henderson & Ruikar 2010; Hughes & Thorpe 2014). ICT software and systems are closely linked to open standards (Cerri, & Fuggetta 2007) and thus, 'practitioner lessons learned' from ICT projects developing open standards have been reported in the academic literature (East et al. 2011; Laakso & Kiviniemi 2012).

However, Morris's (2016) distinction between the roles of academics and practitioners does not take into account the fact that many academics must also be considered as project management practitioners, and thus project management knowledge creators. Even though their community of practice is within the academy, not the commercial sector, their collaborative research projects with industry partners (Gürses, Seguran & Zannone 2013) follow the basic structure and processes of project management (Kerzner 2013).

Therefore, the designation of project management practitioner for academics suggests an alternative definition of 'practitioner lessons learned' compared to Morris' (2016) definition that is limited to commercial practitioners. Currently, there is little written on the topic of academic research project management practitioners (Edkins et al. 2014; Walker et al. 2008).

The purpose of this report is two-fold; first, to report on the development of three ICT open standards projects by adding a theoretical framework to make sense of the 'practitioner lessons learned'. Second, to explain how those 'practitioner lessons-learned' have been transferred to an academic/industry research project thus, providing support for the concept of the alternative concept of academic as practitioner within a community of project management practice.

The balance of the paper supplies a description of the research in six sections. Section two outlines the research design. The three sections following provide narratives of three ICT information exchange development projects: SPie, ELie and COBie. These stories of success and failure and "practitioner lessons learned" provide the context for a project management community of practice. Section six illustrates the importance of utilizing 'practitioner lessons learned' to transfer knowledge to communities of practice. This section also identifies an alternative role for project management academics by suggesting they are also members of the project management practitioners community of practice and thus can be creators of 'practitioner lessons learned'. This concept is illustrated using a current ARC Linkage Project: *CONie Open Standard* that is scoped with both pragmatic and abstract "practitioner lessons learned". The final section summarizes the paper and proposes new avenues of research.

Research Design

The concept of 'lessons learned' in the project management literature can be interpreted as an indication of the historical practitioner focus of the project management discipline (Kenley & Harfield 2014). Learnings arise from doing, thus practical research, rather than simulated

research, is an important project management research method (van den Ende & van Marrewijk 2014). In addition, the findings from this type of field research are often presented in research reports to both academia and industry as ‘lessons learned’ (Deakins & Dillion 2005).

Therefore, this interpretative study (Scales, Sankaran & Cameron-Ros 2015; Denzin 2002) is constructed from specific real-life ICT development project participant observation using inductive logic (Simard & Laberge 2015). The participant observation research method was possible because one of the authors of this paper was involved in the ICT development projects undertaken by the U.S. National Institute of Building Sciences (NIBS 2017).

A narrative, rather than an analytical account of the project is provided. A narrative account is more compact (Czarniawska 2013) for the purposes of these long-term projects. Stories focus on processes and outcomes, rather than on the project details of who, where and when commonly used in reporting short-term project management research (Aerts, Doods and Haezendonck 2017; Newell 2004). The narratives of the projects in this report were part the US ICT development program of this century as part of the global construction industry move to digital and visual technology for project management (East & Smith, 2016).

These ICT development projects were part of the search for a globally acceptable solution to a ‘nebulous’ problem of how to move the *ideal* of integrated construction project delivery into a global reality (Rowlinson 2017; Eadie et al. 2013). Because of the collaborative nature of such projects, the concept of ‘practitioner lessons learned’ is their primary organizing principle. This means that ICT open standards development projects are an example of Morris’s (2016) contention that project management knowledge is generated by practitioners.

NIBS (2017) aims to improve the performance of US buildings by reducing waste. To operationalize this mission, the NIBS supports the creation of open standards (Percivall 2011) linked to the global digitalization effort of construction project management (East, Nisbet & Liebich 2013). Thus, providing a mechanism for a significant contribution towards increased construction industry productivity improvement through an integrated construction project delivery process (Kenley & Harfield 2014). In-depth discussions of this process and building information modeling are beyond the scope of this paper because of the limitations of space (Rowlinson 2017). In addition, the concepts and multiple meanings of open standards, open specifications and information exchange, are considered under the common word ‘standard’ because this is not a technical report (Cerri, & Fuggetta 2007).

In the construction sector, integration is centered on building information modeling (BIM), which provides a BIM-enabled ICT environment (Eadie et al. 2013). A BIM-enabled environment is the application of the culmination of several collaborative ICT development open standards projects (Yan, Xie & Meng 2014). The success of these projects, by paid and volunteer experts, (Barlas et al. 2014; Percivall 2011) provides input into Industry Foundation Classes (IFC) – the building blocks of the BIM-enabled environment. The ultimate aim of IFC development is acceptance of the open standard *ISO 16739 Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries*.

The ‘lessons learned’ from the projects that developed the open standard for IFC should be of interest to project management academics and practitioners. The next sections provide stories of success, failure and ‘practitioner lessons learned’ from three NIBS ICT development projects. Incorporated into the narratives are theoretical suppositions provided from academic sense-making (Morris 2016).

Lessons learned: be incremental, not aspirational

In many countries and regions, the development of IFC is under the auspices of buildingSmart (East, Nisbet & Liebich 2013). In the US, the NIBS contribution to IFC is the National Building Information Modeling Standard, v3 (NBIMS^{3TM}). The development of the standard (Cerri & Fuggetta 2007) involved a number of ICT information exchange specifications. This paper reports on the ‘practitioner lessons learned’ for three of these projects: SPie (*Specifiers’ Properties for information exchange*), ELie (*Equipment to Layout information exchange*) and COBie (*Construction to Operations for Buildings information exchange*).

The ‘practitioner lessons learned’ in this section relates to SPie. The narrative is not a success story. One type of information contained in construction documents is that of manufacturers’ product data. The SPie open standard was intended to deliver manufacturer product data to the facility operator by passing manufacturers’ information through the construction contract (East et al. 2011). SPie development changed through a number of iterations. However, after six or seven different approaches were tried, no construction contract has used an SPie standard.

Open standards ICT projects have an “open” collaborative project structure, relying on volunteer experts. Experts from the manufacturing sector did not take advantage of the opportunity to participate. In this case, diversity of individual manufacturers and manufacturer peak bodies had the opportunity to provide updated product data in a useable format through the numerous iterations. However, to date this project has:

- failed to achieve United States national **consensus about the properties required** for manufactured or engineered equipment
- failed to identify an **agreed-upon format** for the exchange of such information
- failed to create a **critical mass of industry organizations** that interface with manufacturers and/or suppliers to develop, update, and catalog such information.

At the time of the project, there were approximately 10,000 building product manufacturers with catalogs of products that could have contributed in the SPie information exchange development (East et al. 2011). This large number of possible datasets, suggests that explaining the failure of SPie at the project level is not appropriate.

However, considering the project from an industry level might provide an explanation. We do have proof that the fundamental structure of an industry cannot be transformed rapidly (Carrillo, Ruikar & Fuller 2013). Radical (short-term and major) whole industry change has been advocated in a number of major government reviews of the construction industry, as well as individual researcher studies. Change management models, tools and advice are aimed at this type of radical total-industry change (Lichtenthaler 2007).

The problems associated with the radical-whole industry approach are linked to the nature of the construction industry. The main production unit of the industry is a temporary organization (such as the SPie project) based on sub-contracting labor provision formed to construct a unique structure (Jarkas & Horner 2011). The lack of operational permanence is why radical whole-industry change is advocated, and why attempts at implementation have been an ineffective method of increasing industry productivity (Hughes & Thorpe 2014; Kenley 2003).

An incremental theory of change rather than a radical theory of change is one obvious option. The idea is that ‘small but significant’ change can in the long-term, be the most effective method of implementing industry-wide change. In addition, focusing on individual

projects, the unit of industry production (Kenley 2014) is also an obvious fit-for-purpose as a way of changing industry practice (Dangerfield, Green & Austin 2010).

Lessons Learned – Focus on aspirational goals of future contexts will not be designed. Simply stated: innovate for today, the future will take care of itself.

The project obviously has ‘failed’ because the problem of obtaining industry-wide building products datasets is much larger than obtaining an outcome for only one ICT development project. The nature of adding new levels of information organization, such as defining ICT open standards properties or information exchange formats as digital datasets, for an entire industry is not an easy task (Rowlinson 2017).

The lesson to be learned is that to really be successful in industry transformation, research and development projects must have modest goals (Lichtenthaler 2007). The goal of total industry transformation is unlikely without a complete national mobilization backed by long-term political support plus significant capital resources.

Lessons learned: be specific, not abstract

The attempt by NIBS to support the BIM-enabled construction project environment provides examples of a number of basic project issues. A major issue for all research and development is how to narrow the scope of a project. The aim of an ICT project is to make an effective shift from a general problem to an implementable solution. For example, the original conception of the *Equipment to Layout information exchange* (ELie) specification was too general.

The ELie project was envisioned as one way to capture the information contained in schematic system drawings provided alongside traditional construction handover information (East 2014). Given that equipment schematics all held similar graphic artefacts, it was assumed that a single standard project could identify the information-based transformation of those drawings, even though each specification is based on only the relevant geometric information. Could this be an example of the two universal limiting factors; the optimistic human tendency and the need to sell impossible project outcomes (Dangerfield, Green & Austin 2010)?

However, a systematic review of the problem by the ICT project team, with the input of end-users, found that the underlying knowledge represented in the three major building service systems (temperature control, electrical power, and water) were very different. Thus, the expected single project, of necessity, became three discipline-specific specification projects.

These three specifications are now part of the US-NBIMS v3TM (NBIM 2017). Each information exchange specification HVACie, WSie and Sparkie is a specification for a major building service requiring specialist construction knowledge; HVAC system standard (Hitchcock 2012), water system standard (Chipman et al. 2013b) and electrical system standard (Chipman et al. 2013a).

The importance of describing the ‘failure’ part of the ELie project is to stress the inappropriateness of a top-down solution (Garrety et al. 2004; Vanhoucke 2012) for open standards projects. Open standard definitions that are too general have been rejected by stakeholders, such as associated construction project disciplines, software developers, and ultimately owners, who place required construction project management specifications into project contracts (Larson & Golden 2007; Manderson, Jefferies & Brewer 2015).

The subsequent relative success of the discipline-specific HVACie, Sparkie, and WSie projects are credited to a bottom-up solution based on specific knowledge domains (Barlas

et al. 2014). The end-users of each specification are the professions and trades involved in construction projects. These are many and varied; each has a distinctive language and practice re-enforced by the educational system (Harfield et al. 2007). These specialist knowledge domains are re-enforced in law to ensure the health and safety of the built environment for the end-users.

The basic project management dictum ‘define the scope’ is not easy, as many experienced project managers will attest (Dangerfield, Green & Austin 2010). In this instance, an ICT project, attempting to identify a generic information exchange specification for an entire building, would never have been successful. Open standards projects developed from a top-down approach (Vanhoucke 2012), without detailed domain and process-specific knowledge, are considered too general or abstract by end-users (Gürses, Seguran & Zannone 2013).

Lessons Learned – Be specific allowing each construction knowledge domain to be led by their own constituents. Generic solutions may be elegant from a data modeling perspective but are likely not to be implemented.

When considering the complexity of most commercial construction projects, the necessity for individual trades and professions to have defined standards seems obvious (Poerschke et al. 2010). However, decision-makers of a program of ITC development projects may only consider the outcome of their program, not how the outcome will be implemented by the end-users. Thus, the continuing search for project success factors from the top-down rather than the bottom-up (Henderson & Ruikar 2010).

Lessons Learned: Be Complete, Support Implementation

Although the project management literature from a variety of disciplines continues to stress the need for ‘well scoped’ projects, that is not the usual story. Considering that all projects can be negatively affected by two universal limiting factors; the optimistic human tendency, and/or, the need to ‘sell’ impossible outcomes of a proposed project (Dangerfield, Green & Austin 2010), the miracle seems to be that some are not. For example, the NIBS open standard, *Construction to Operations for Buildings information exchange* (COBie) went from initial discussions to an internationally recognized open standard in under a decade. Truly, a success story from an ICT open standards development perspective.

One of the priorities for BIM, more efficient life-cycle management, should also include reducing the administrative workload (Zhang, Beetz & Weise 2015). However, a significant source of effort wasted in construction projects tends to stem from the arduous task of managing phase documentation and product manuals through all project phases. Traditionally, facility management information specified in building construction contracts was created at the end of the construction process (Larson, & Golden 2007). It was delivered to the facility operator prior to the fiscal completion of the project, as shown in Figure 1.



Figure 1 Building construction handover information

Evidence of the waste inherent in the handover process is that most building owners maintain one or more full-time data clerks. They retype (a small fraction of the) information from the paper documents into automated systems that support maintenance management. Retyping and transcribing are common activities during the capture and use of construction information, despite the fact that virtually the entire set of information can be traced to an electronic source (Dangerfield, Green & Austin 2010).

At the same time, change is gradually taking place. Some facility managers are now specifying and receiving *digital information*, not *paper documents*. More importantly, this transformation is taking place because facility owners are beginning to specify a precise set of information, in an open-standard format. This is the first stage of transforming the construction project handover phase from a document-centric to an information-rich practice (Kenley & Harfield 2014).

This is possible because transferring construction project information to building facility managers is an effective project outcome of an ICT open standard project. Capturing the operations, maintenance, and asset management information from building projects is possible using COBie—*Construction to Operations for Building information exchange* (East 2014).

COBie is the successful result of the development of an open standard ITC development project. It is part of the US-NBIMS V3™ (NIBS 2017). It continues to gain industry acceptance because it smoothly merges building asset information by defining:

- the specific set of managed assets
- the asset's located in a building
- the asset information needed to ensure proper maintenance
- the common classification.

Essential to the specification of COBie is the recognition that facility managers require a different level of detail from the level of detail needed by building designers and builders. They are concerned with the precise location of each piece of equipment. Designers and builders require building tolerance details measured in millimeters, as found in 3D object modeling

and automated design-resolution software (Utiome & Drogemuller 2013) in a BIM-enabled environment.

However, once the building is built, millimeter level of detail is typically not required. The maintenance technician checking the operation of a piece of equipment only requires knowledge of “spatial containment.” In fact, the maintenance technician will likely ignore a detailed 3D model, unless the equipment is being completely replaced (Korpela et al. 2015).

A significant part of the success of COBie is linked to the incorporation of the ‘practitioner lessons learned’ from both the SPie and ELie projects. This transfer of knowledge within a community of practice assisted the ICT open standards development practitioners to accept that some aspects of professional practice **could not** be changed (Lichtenthaler 2007).

As noted above radical industry change takes time. However, a small but sufficient change process can be led by individual changes of the process (Dangerfield, Green & Austin 2010). In this instance, knowledge transfer within a community of practice was a mechanism advantageous to the COBie development project team. The bottom-up ICT development process meant working with building facilities managers to learn about the actual processes that were affected by building information needs (Poerschke et al. 2010).

The ‘practitioner lessons learned’ from the SPie project was not to focus on the long-term aspiration. Focusing on an outcome of innovating for today, the COBie project rejected the new contractual paradigms of the collaborative BIM-enabled environment. The pragmatic reason was the slow pace of construction industry BIM uptake (Eadie et al. 2013). Thus, development of COBie stuck to the still most common design and construction contract as the basis of the data required for information exchange. This allows COBie to be managed through existing quality control and quality assurance procedures based on external testing (Fallon et al. 2013).

The standard was developed by understanding and implementing the ‘practitioner lessons learned’ from the ELie and SPie ICT open standards development projects. COBie focuses on incremental industry change and a bottom-up, end-user implementation outcome for practitioners based on innovation rather than aspiration.

Lessons Learned – The concerns and contracts of each party in an information exchange process, and the management of the standard itself must be considered, documented, and tested before the specification for the standard is ready to be adopted.

COBie was approved as part the US National Information Building Modeling Standard in 2011. Implementation of COBie as a global industry requirement will take longer because owners and practitioners are limited by how legal decisions (Larson & Golden 2007) and local quality control/assurance regimes (van Nederveen & Bektas 2013) effect construction contracts. The success of COBie is remarkable within these constraints.

Practitioner lessons learned: linking communities of practice

Morris (2016) designates the role of the academic to making sense of the project management ‘practitioner lessons learned’. However, his distinction between the roles of academics and practitioners reduces academics to commentators of project management practice. This paper argues that is not the case.

Some academics actually have a project management community of practice within the academy, if not within the commercial sector. It is important to note that this type of project management community of practice should not be confused with the teaching of project management community of practice (Edkins et al. 2014; Walker et al. 2008).

For example, academics undertake research projects with industry partners. These collaborative efforts follow the basic structure and processes articulated in the project management literature. For example, the Australian Research Council Linkage Projects are funded by both government and industry (ARC 2017). The outcomes of these research projects are expected to sustain economic growth when implemented by industry.

One example, LP160100524-*CONie open standard* research project is intended, by both academic and industry partners, as part of the global ICT open standards development program to support a BIM-enabled construction industry. The design of the project is based on the ‘practitioner lessons learned’ from the ICT open standards development projects delineated above.

Previous sections were written from the perspective of the role of academic as sense-maker. The balance of this section is written from the alternative perspective of academic as project management practitioner.

This section reports on the transfer of precise ‘practitioner lessons learned’ as the basis of a collaborative academic/industry ITC research project for road construction and road asset management. In this case, the role of the academic is not as Morris (2016) suggests, to make sense of the ‘practitioner lessons learned’, but to apply those lessons as a practitioner would to a new project that is informed by experience in making sense of practice.

Clearly, the ‘practitioner lessons learned’ presented in the preceding sections provide those embarking on an ICT project with assistance in designing and managing a project. Both pragmatic and abstract understanding of a proposed research project can be formulated from these specific lessons (Carrillo, Ruikar & Fuller 2013; Duffield & Whitty 2015; Milton 2010; Newall 2004; Reich & Hager 2014).

Table 1 outlines both the pragmatic and the abstract lessons that have been incorporated into the proposal for the ARC LP160100524-*CONie open standard* research project. Both the pragmatic and abstract ‘practitioner lessons learned’ are compared in table 1 to give some idea of the influence or the two perspectives for the academics who wrote the project proposal. The discussion below indicates this process.

Scoping a project with or without client input is a major skill set for project management practitioners. The process is the same for academic researchers developing a collaborative project with industry. The purpose of the academic, to make sense of these learned lessons, has been presented in this paper. However, an even more effective way of making sense of these lessons would be for academic research to utilize the lessons. Indeed that was the process of defining the scope of ARC Linkage Projects 160100524. Table 1 outlines both the pragmatic and the abstract lessons that have been incorporated into the scope of this project.

For *Construction to Operations for Network information exchange* (CONie), no attempt at radical industry change was considered (Carrillo, Ruikar & Fuller 2013; Utiome & Drogemuller 2013).

Identification of the problem of handover that aims to change from the current construction paper-based information to the required digital-based information was agreed as a narrow scope of work. The project for road asset management in Australia and New Zealand is considered incremental change and current project delivery focused. The larger global BIM-enabled environment is a long-term, future-focused aspiration and well beyond the CONie project scope.



Table 1 Comparison of information communication technology (ICT) project pragmatic and abstract lessons learned

Lesson Learned	Pragmatic	Abstract
Lesson 1 SPie	Focus on aspirational goals of future contexts will not be designed. Simply stated-innovate for today, the future will take care of itself.	Acceptance of open standards through incremental, not radical industry change
Lesson 2 ELie	Be specific allowing each knowledge domain to be led by their own constituents. Generic solutions may be elegant from a data modeling perspective, but are likely not to be implemented.	Open standards implementation because of a bottom-up not a top-down method of data collection and analysis during development
Lesson 3 COBie	The concerns of each party in an information exchange process, and the management of the standard itself must be considered, documented, and tested before the specification for the standard is ready to be adopted.	Open standards adoption based on integrating practical limitations as open standard mechanisms

Lesson 1 outlined in table 1 was thus integrated into the CONie project scope. It proposes a project problem that is focused on a mechanism for ICT open standard development that is currently possible.

As noted in lesson 2 of table 1, a bottom-up approach is considered more effective for ICT open standards project implementation. Obviously, the requirement is for a working standard directly related to the experience of those using that information in daily practice. For the CONie project, each of the industry partners wants to be providers of knowledge on ‘how things work’ in their current asset management systems. But more importantly, the industry partners see themselves as champions for the CONie development project because it provides for a comprehensive inclusion of knowledge about a wide variety of asset management systems users (Gürses, Seguran & Zannone 2013; Kenley & Harfield 2014).

Lesson 2 is advice for research methods to consider fit-for-purpose (Dangerfield, Seguran & Zannone 2010). Asset Managers, Operations Systems, Maintenance Work Orders, and New Capital Works need to be able to depend on accurate and usable information to enable the best service for all road network stakeholders. The CONie project scope includes methods to ensure the input of these end-users into all phases of the open standard development.

The constraints, as noted in table 1 suggest the structure needed for an ICT open standard. The lesson, that limiting factors should be considered when conceiving the project, is an important issue for all project management practitioners. The difficulty of containing a project is exacerbated by over-reaching at the beginning. CONie scope was written in collaboration with the developer of COBie (East 2014), thus, taking into account constraints at both the project management and the project context. Australia and New Zealand construction project delivery are also based on contract deliverables; thus formation and data limitations are industry or project defined as part of the current local legal systems.

Lesson 3 focuses on accepting limiting factors that are evident at the scoping stage of a project. In the specific case of a research project, this means actively searching for problems

that will not be solvable and eliminating them from the scope of the project (Hughes & Thorpe 2014; Jarkas & Horner 2011).

Applying these ‘practitioner lessons learned’ from the US NIBS ICT open standard development projects was instrumental in writing the research proposal for the development of the CONie open standard for road networks in Australia and New Zealand. The academics writing the proposal consider themselves as members of a community of practice of project management practitioners, as well as being project management sense-makers. Therefore, it is possible that the knowledge transfer mechanisms from this combination were an important factor in acceptance of the proposal for LP160100524-*CONie Open Standard* by project funders.

Conclusion and Future Research

In his reflection on the field of project management Morris (2016) distinguishes between the roles of academics and practitioners. He designates the role of the academic to making sense of the lessons to be learned by practitioners. He suggests that project management knowledge is generated by practitioners over-coming challenges on the job. This paper provides an alternative role for academics, as members of the community of project management practitioners.

This claim is based on the collaborative work of the authors of this paper; they all have roles as both academics and project management practitioners. All three are authors of academic conference papers and journal articles, and during the last 25 years, they have been collaborating in research projects with a multiplicity of industry partners. One of the authors worked on ICT open standard development projects linked by the US National Institute of Building Sciences (NIBS). This allowed him to be a participant observer associated with three information exchange projects. Thus, the identification of project success or failure described in this paper is based on “practitioner lessons learned” that can be transferred to another knowledge domain within academic information exchange ICT projects.

Academics can apply skill sets as interpreters of ‘practitioner lessons learned’ in addition to being members of the project management community of practitioners. This combination provides the foundation for a current ARC Linkage Project: *CONie Open Standard* that aims to develop a *Construction to Operations for Networks information exchange*.

The idea that academic researchers are not just project management sense makers, but an important component of the project management community of practice, and thus creators of ‘practitioner lessons learned’, may not be new. However, the concept is clearly under-reported in the major project management literature. Growing this topic area could provide an interesting stream of publications driven by the current need to identify academic research impact.

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