Improving Knowledge in Projects

Eric D. Brown

Aligning Technology, Strategy, People & Projects

http://ericbrown.com

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About the Author

Eric D. Brown is a consultant, doctoral student and author in Dallas TX. Eric's consulting practice focuses on assisting organizations with aligning information technology and business strategy and developing, deploying and managing information technology systems. In addition, I help organizations bring business and technology together to ensure that every technology implementation is performed in such a way as to maximize business value.

Eric is also the founder of the Dallas / Fort Worth Entrepreneur Network, a networking group focused on entrepreneurs in the Dallas / Fort Worth area and the Dallas Technology Network, a networking group focused on technology executives in the Dallas / Fort Worth area. Eric has also sat on the CompTIA's Workforce Advisory Board and has served on the Board of Directors for various volunteer organizations.

Eric is currently working on a Doctor of Science in Information Systems degree from Dakota State University and has previously earned his MBA from the University of Texas at Dallas with specializations in Strategy and Project Management, an MS in Electrical Engineering from Oklahoma State University and a BS in Physics from Southwestern Oklahoma State University.

Read more about Eric at http://ericbrown.com

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Introduction & Motivation

In the project management world, a considerable amount of research exists to describe the reasons behind the success and/or failure of projects in the information technology space. Most of this research focuses on failures being caused by such things as: lack of executive sponsorship; lack of project management methods, lack of change management processes, project scope size and project duration (Reich, 2007).

While these causes of failure are quite common in IT projects, the largest stumbling block in IT projects, and one of the largest and most unrecognized reasons for failure, is the lack of proper knowledge management methodologies throughout the project management lifecycle.

This paper provides a brief review of the literature within the knowledge management space, and more specifically, how to manage knowledge transfer, sharing and application in projects. The research area focused on in this paper considers the area of knowledge transfer and knowledge management in projects.

The first section, titled 'Research Question', addresses the research question that will be at the heart of the proposed research. The second section, titled 'Research Methods', discusses the proposed methodologies that will be used in this research project. The third section, titled 'Literature Review', provides an overview of existing literature on the subject. The fourth section, titled 'The Framework', provides an overview of the framework to be generated during this research while the fifth section, titled 'Expected Results', provides an overview of the expected results of this research. The sixth and final section, titled 'Conclusion', closes the paper out and provides a roadmap for future research in this area.

Research Question

The question at the heart of this research can be summed up fairly easily…but isn't easily answered. The at hand is: *Can a framework containing 'best practices' be developed that can be use to improve knowledge transfer and sharing in project based groups and organizations?*

Research Methods

There has been a considerable amount of research performed in this area as evidenced by a quick search of academic literature (Disterer, 2002; Karlsen & Gottschalk, 2004; Leseure & Brookes, 2004; Lytras & Pouloudi, 2003; Mitchell, 2006; Reich, 2007; Rice, Oconnor, & Pierantozzi, 2008; Santhanam, Seligman, & Kang, 2007). The previous research has covered a broad range of issues and areas and provides a very good base to build upon to build a framework for best practices and guidelines for use in projects.

The first step in this research project will be to perform a literature review of articles and research projects that discuss knowledge management in IT projects. The second step will consist of distilling the information from the literature review into a framework that implements some of recommended knowledge management practices for projects.

Once the framework has been built, it will be socialized with a select few senior project managers around the world to gather their input and to 'true up' the framework. With feedback from industry practitioners implemented into the framework, the next step would be to design a survey to collect data from a larger number of project managers and project team members. This data collection will further provide insight into the soundness of this model.

The final step of this research project will be to implement the framework into a concise and easy to use project knowledge management methodology. This implementation will be done in a real world setting within an information technology department within a medium sized

organization. During this 'real-world' implementation, the surveys and personal interviews will be conducted to gather feedback on the knowledge management framework and develop best practices that can be used in future implementations of the framework.

Literature Review

Most project management methodologies claim to be interested in knowledge management none of these methods offer any real guidelines or practices for gathering and maintaining knowledge throughout the project lifecycle. Disterer (2002) argues that traditional project management is overly concerned with efficiency and effectiveness of project team members which makes the act of capturing knowledge a lower priority during a project (Disterer, 2002). This is compounded by the fact that the knowledge needs of future projects isn't within the context of the current project requirements so project managers and leaders do not focus on these efforts (Disterer, 2002). Leseure & Brookes (2004) take this claim a step further by stating that knowledge transfer is one of the largest issues in projects today when they write "Knowledge is generated within one project and then lost. Failure to transfer this knowledge…leads to wasted activity and impaired project performance" (Leseure & Brookes, 2004, p. 103).

Leseure & Brookes' designed a research project that would attempt to benchmark knowledge management practices within projects to help provide a broader and more qualitative evidence of knowledge management methods in projects. The results of this research pointed to two main areas that could improve knowledge management in projects: collecting knowledge in projects; and managing tacit knowledge (Leseure & Brookes, 2004, p. 106). By focusing on these two areas, organizations can help to improve project knowledge management.

Kasvi, Vartiainen, & Hailikari (2003) performed research on how knowledge is managed in projects and what knowledge management capabilities are required for proper knowledge management in projects (Kasvi, Vartiainen, & Hailikari, 2003). The researchers used interviews to gather data on knowledge management capabilities and practices in various organizations. The results provided interesting feedback on organizational knowledge practices in projects and led the authors to observer that "knowledge management practices were weak and unsystematic" (Kasvi et al., 2003, p. 578) and that paper documents and interactions with colleagues were the most important sources of knowledge.

Research by Karlsen & Gottschalk (2004) addresses the topic of factors that affect knowledge transfer in projects (Karlsen & Gottschalk, 2004). The authors used surveys to gather information from project managers and organizations on knowledge transfer in projects. The survey results showed that organizational culture plays a key role in knowledge transfer within projects and should be the main area that organizations focus when looking at knowledge transfer methodologies capabilities.

Research by Slaughter & Kirsch (2006) extends the concept of the importance of organizational design and culture on knowledge management with the introduction of Knowledge Transfer Portfolios. This research, which was conducted as a field study in the area of Software process improvements, provides some very interesting ideas on organizational design and knowledge transfer and outlines the following three items as being key for knowledge transfer within organizations: Proximity, Frequency of Interactions and Relationships (Slaughter & Kirsch, 2006).

Reich (2007) has developed a framework for knowledge management within IT Projects which seems promising. In this research, Reich proposes a three level framework that addresses

what knowledge management in IT projects is, a typology of critical IT project knowledge and identifies the top ten knowledge-based risks found in IT projects (Reich, 2007). The author provides a significant amount of information about knowledge management in IT projects and does a very good job of outlining the framework. In addition, key principles for knowledge management in IT projects are provided for use in helping build strong knowledge management capabilities within IT projects. The framework and guidelines provided by the author provide quite a few areas for further research, specifically around validating the framework and elaborating on its use in IT Projects.

Reich's framework will be the basis for the framework that will be developed within this research project and is described in more detail in the following section.

Expected Results

The expected result from this research project is an extension of Reich's (2007) framework for knowledge management in projects. It is hoped that this framework that can be used to build 'best practices' for knowledge transfer and sharing within project teams, and therefore, a repeatable knowledge transfer and sharing methodology for use in projects. This framework is something that will hopefully be used successful by practitioners to build knowledge management practices within project teams.

In addition to the expected results above, the outcome of this research will hopefully help future researchers understand more closely how knowledge is transferred and shared with project teams.

The Framework

It is the goal of this research project to build a framework that contains best practices for knowledge management, is easy to use and easy to implement. This framework will hopefully adderss the following questions: *What mechanisms provide better knowledge sharing and transfer in project based groups and organizations*? Additionally, *are there practices that can be followed that would allow knowledge transfer to occur more easily within project teams?*

Reich's framework is a good place to start as it provides a framework that is built upon sound principles and research in the IT project space. Reich defines IT project knowledge management as:

> Knowledge management in the context of a project is the application of principles and processes designed to make relevant knowledge available to the project team. Effective knowledge management facilitates the creation and integration of knowledge losses and fills knowledge gaps throughout the duration of the project (Reich, 2007, p. 8).

The second part of Reich's framework consists of the typology of IT Project knowledge. This typology contains four distinct types of knowledge: process, domain, institutional and cultural. A brief definition of these types of knowledge follows:

- **Process Knowledge**: knowledge that project team members have regarding the project (tasks, methodologies, timelines, structure, etc) (Chan & Rosemann, 2001; Meehan & Richardson, 2002; Reich, 2007).
- **Domain Knowledge**: knowledge that a project team or member has about the industry, technology, processes, current situation, business and products (Chan & Rosemann, 2001; Reich, 2007).
- **Institutional Knowledge**: knowledge that a project team or member has about the organization (Reich, 2007).
- **Cultural Knowledge**: knowledge about the organizational culture as well as cultural backgrounds of the project team members (Reich, 2007).

The third part of Reich's framework consists of knowledge-based risks in IT projects. The author has listed ten risks that can affect knowledge in IT projects. These risks are:

- Lessons aren't learned
- Flawed team selection
- Changes in the project leadership team
- Lack of knowledge of project team roles
- Poor knowledge integration
- Poor knowledge transfer within projects
- Changes in project team
- Determining "who knows what" (knowledge maps)
- Project team changes between phases
- Failure to Learn

Using the knowledge contained within Reich's framework, and using knowledge generated during the literature review, the following seven topics must be considered as key pieces of this framework in order for it to address project knowledge management:

- **Continuous Learning / Lessons Learned** – Ensures that all 'lessons learned' are documented and shared throughout the organization and applied in future projects.
- **Organizational Design** – Develops proper project teams to ensure that the necessary knowledge transfer mechanisms can be implemented per Slaughter & Kirsch's (2006) research
- **Organizational Culture** – Works toward building a culture that is pre-disposed to sharing knowledge.
- **Human Capital Management practices** – Covers the human capital management aspects to ensure proper motivation for project teams.
- **Project Selection** - Covers proper project selection as well as team member selection.
- **Risk Management** – Covers the aspects of project risk management as well as knowledge-based risk management as described in Reich (2007).

- **Knowledge Typology Management** – Covers the four types of knowledge outlined in Reich (2007) including Domain, Process, Institutional and Cultural Knowledge.

There is a considerable amount of research and thought that needs that needs to go into develop this framework but an initial model of this framework is found in Figure 1. This model provides a high-level overview of the areas that must be considered when developing project knowledge management practices.

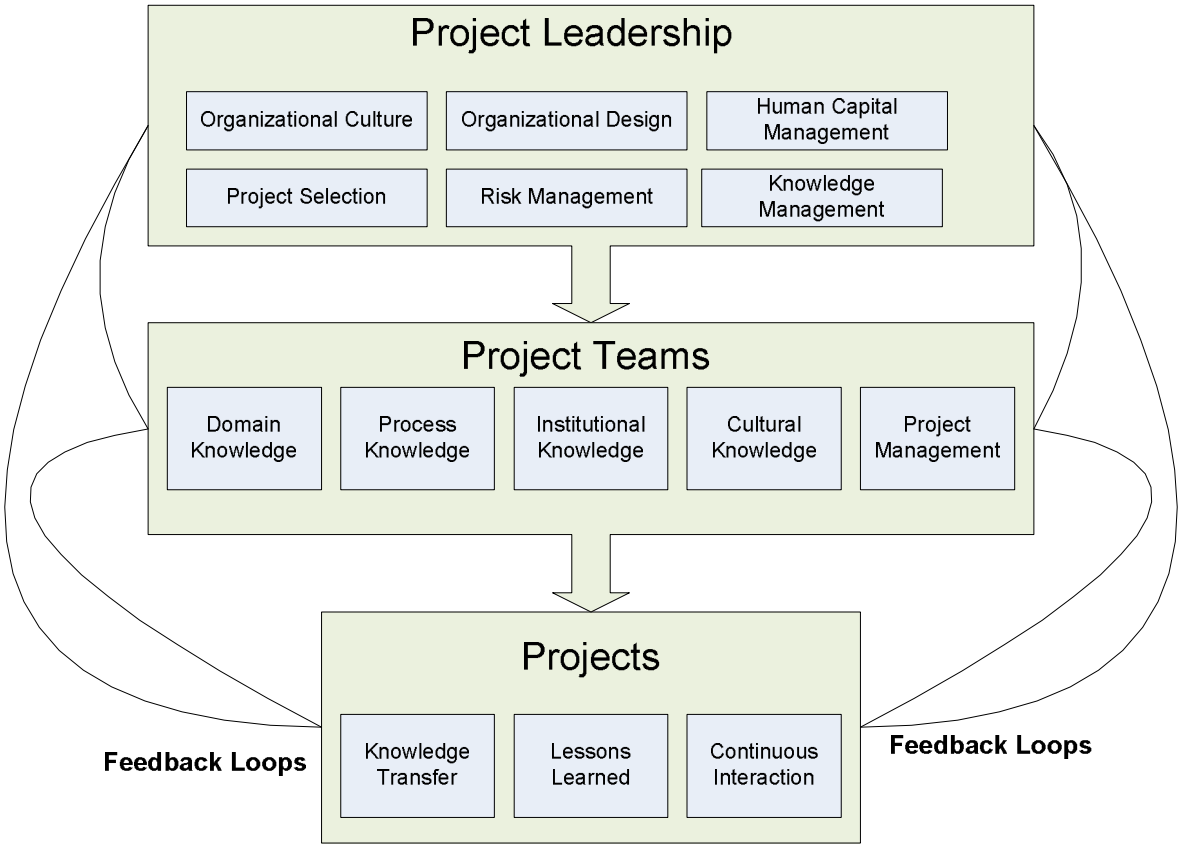

Figure 1: Project Knowledge Management Model

The model is separated into three 'sections' plus feedback loops. The three sections are: Project Leadership, Project Teams and Projects. Each section contains the areas of focus for that particular project entity and outlines the areas of responsibility. A description of each section as well as the feedback loops follows.

- **Project Leadership** – the project leadership section covers the higher level 'strategic' aspects of project knowledge management and contains Organizational Design, Culture, Human Capital Management Practices, Project Selection and Management, Risk Management and Knowledge Management.
- **Project Teams** – the project teams section covers the individualistic aspects of project knowledge management and contains the knowledge types (Domain, Process, Institutional and Cultural) as well as project management methods and processes.
- **Projects** – the projects section contains the more 'tactical' aspects of project knowledge management and includes Knowledge Transfer, Lessons Learned and Continuous Interaction.
- **Feedback Loops** - In addition to the three sections, the model contains feedback loops that are used to ensure that continuous feedback is provided from each layer of the project knowledge management model. For example, project teams will continuously communicate with each other throughout projects regardless of which projects they are working on. Project Leadership will always been 'kept in the loop' on all projects.

This framework provides an easy to recognize area of responsibility for the seven key topics that must be considered to ensure proper knowledge management in projects.

As an example, let's consider Slaughter & Kirsch's (2006) research on Knowledge Transfer Portfolios. One of the key outputs of that research was to show that organizational design plays a key role in knowledge transfer. Using the model shown in figure 1, it is easy to see that organizational design lies solely on the shoulders of the organization's leadership to consider.

There is still a considerable amount of research that needs to be completed in order to create supporting data to support this framework. Although not complete, the model does show areas in which organizations can begin to consider making changes to improve project knowledge management.

Conclusion

The extent of knowledge management in most project management methodologies begins and ends with the 'lessons learned' document that is created after the completion of a project. This document is a good exercise, but doesn't do much to manage knowledge *during* the project or ensure that knowledge is transferred between project members because project members must know to read the document to receive any value from it.

It is widely reported that project failure rates are still very high (Ahn, Joo, Cho, & Park, 2005; Owen, Burstein, & Mitchell, 2004; Pawlowski & Robey, 2004; Reich, 2007; Scarbrough, Bresnen, Edelman, Laurent, & et al., 2004). Industry research shows fifty to sixty percent of all projects are considered failures (IT-Cortex, 2007). While most research blames these failures on poor project management and/or lack of executive sponsorship (Reich, 2007), the fact that there is very little knowledge transfer and sharing between project teams has to play a key role in allowing these failures to occur.

By building a framework that can be used to help improve knowledge transfer within project teams, it is hoped that the failure rate due to knowledge-based issues will drop significantly. This framework, which still is the early development stages, should help organizations understand the underlying requirements for project knowledge management, provide best practices for knowledge management in projects and provide a way to build a corporate culture that is focused on sharing knowledge.

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