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Exploring Win-Win Contracts: An Appreciative Inquiry into IT Project Management

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Abstract:

IT project management research largely adopts a negative approach with an emphasis on risks, problems, and failures. Although that approach has led to important theoretical and practical insights, this study adopts a positive approach to explore complementary ways to improve current practices. Accordingly, we report from a small software firm, TelSoft, in which we applied Appreciative Inquiry (AI) to identify "win-win contracts" as a generative metaphor for IT project management and to develop action strategies to manage scope, time, cost, and quality in TelSoft's IT projects. As a contribution to the IT project management literature, we show how the generative metaphor and related action strategies were developed at TelSoft and discuss relationships to existing theory—most notably Theory W. In addition, as a contribution to the participatory change literature within the Information Systems discipline, we show how AI and the four steps of initiating, inquiring, imagining, and innovating were applied at TelSoft to learn about existing strengths in IT project management and to improve current practices through a series of workshops for project managers. We present the AI process in detail and discuss our experiences in relation to other approaches to participatory change.

Keywords: IT project management, win-win contracts, Appreciative Inquiry, generative metaphor, participatory change.

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INTRODUCTION

Information technology (IT) projects pose complex challenges because of the rapid pace of technological change, the invisible nature of software, the ever-present pressure to add new system features, and the difficulty of managing change during IT implementation (Ramesh et al. 2002). Moreover, decision makers' support for a project may cause them to continue project trajectories even in the face of negative information (Keil et al. 2007, Keil et al. 2000). Consequently, IT projects frequently fail to meet their targets for scope, budget, time, or quality (The Standish Group International 2004). In response to this situation, IT project management research most often adopts a negative approach with recurring themes such as understanding failed projects (Ewusi-Mensah 2003; Lyytinen and Robey 1999), managing risks (Ropponen and Lyytinen 2000, Schmidt et al. 2001), and reducing project escalation (Keil 1995, Mähring et al. 2008). Arguably, this line of research has led to significant insights and important contributions to theory and practice.

Unfortunately, focusing on problems and failures may disengage practitioners and be counterproductive in improving practice (Cooperrider and Whitney 2005). Hence, literature in IT project management has alternatively focused on sharing stories about successful IT projects (Petter et al. 2007), on emphasizing win-win contracts among stakeholders as stated in Theory W (Boehm and Ross 1989, Frankl 2008), and on understanding how IT project managers may contribute to creating success (Sauer et al. 2007). In this paper, we therefore start out from the premise that a positive lens may stimulate change and contribute with complementary insights. Specifically, we report from a small software firm, TelSoft (a pseudonym), where we applied Appreciative Inquiry (AI) (Cooperrider et al. 2004a, Cooperrider and Whitney 2005) to improve practices through a series of workshops with IT project managers. AI is a participatory approach to change that focuses on the organization's positive core; that is, its strengths, achievements, best practices, and capabilities (Cooperrider and Whitney 2005). AI engages people actively and energizes the organization in creating successful change in part through generative metaphors that capture positive experiences among the participants and stimulate them to reflect and learn (Bushe and Kassam 2005, Bright et al. 2006).

There is a long-standing tradition of adopting participatory change approaches within the IS discipline. This tradition has roots in the human relations school of organization and management, and has over the past several decades developed into a considerable variety of approaches with different terminology and assumptions about how to facilitate change. Continuing this tradition, there has been a recent interest within IS to adopt AI when studying and designing IT in organizations (Asif and Klein 2009, Avital et al. 2007, Carroll et al. 2009, Faust 2009), including a special issue of *Information and Organization* (Avital et al. 2009). So far, however, there are few studies reporting on the challenges of actually applying AI to organizations engaged in IS practices (Gonzales et al. 2009, Holmberg et al. 2009, Baaz et al. 2010, Gonzales and Leroy 2011), and none of these relate to IT project management.

Against this backdrop, this research seeks to contribute to the project management and to the participatory change literature within the IS discipline driven by two research questions:

- How can we develop action strategies for managing scope, time, cost, and quality in IT projects based on Theory W (RQ1)?
- How can we facilitate participatory change in IT project management based on Appreciative Inquiry principles (RQ2)?

CONTRIBUTION

The study reports from application of Appreciative Inquiry principles and the four steps of initiating, inquiring, imagining, and innovating to develop IT project management competencies within a small software firm, TelSoft. The generative metaphor of "win-win contracts" helped the participants translate positive experiences into improved project management practices and it established important links to Theory W within the IT project management literature. This led to a new development program for IT project managers within the software company and to the following win-win action strategies to manage scope, time, cost, and quality as a contribution to IT project management theory: manage customer responsiveness (scope), negotiate realistic schedules (time), two-phase funding reduces uncertainty (cost), and up-front discipline pays off (quality).

Through our collaboration with project managers at TelSoft, we identified "win-win contracts" as a generative metaphor that captured important IT project management experiences at TelSoft, and we used the metaphor to develop win-win action strategies for managing scope, time, cost, and quality in TelSoft's IT projects. As a contribution to the IT project management literature, we provide a detailed account of how the generative metaphor and related action strategies were developed, and we discuss relationships to existing theory—most notably Theory W (Boehm et al. 1998, Boehm and Ross 1989, In et al. 2001). As a contribution to the participatory change literature within the IS discipline, we present the AI process and discuss our experiences in relation to other approaches to participatory change.

The remainder of the paper is structured as follows: We start by reviewing the IT project management literature and presenting the basic AI principles. Next, we describe our action research at TelSoft in detail. On that basis, we present the actions strategies we developed at TelSoft related to managing scope, time, cost, and quality of IT projects and based on win-win contracting. We conclude by discussing contributions, limitations, and future research.

IT PROJECT MANAGEMENT THEORY

IT project managers need to possess a diverse set of skills related to processes, technology, developers, and customers (Webber and Torti 2004). Accordingly, Boehm and Ross (1989, p. 903) describe the IT project manager's challenge as accommodating divergent interests of key stakeholders into cooperative behavior. Customers want low budgets and quick schedules; users want lots of functions and a fast, reliable, and user-friendly solution; IT managers have ambitious goals but want no overruns and surprises; developers emphasize career tracks and design explorations over documentation; and those responsible for maintenance value documentation and a stable code base.

Core Challenges

To meet the needs of each stakeholder group, IT project managers must effectively manage the core functions of project management (Schwalbe 2005, Project Management Institute 2004): scope, in terms of requirements specification; time, as indicated by the project schedule; cost. as reflected in the project budget; and quality, in both process and the final product.

Within IT project management, scope is frequently documented in a requirements specification that lists the specific features of the enhanced system or expected results from IT processing. Given the dynamic environment of IT projects, it is unlikely that requirements will be well defined and stable at the beginning of the project. In fact, requirements uncertainty is considered a primary risk to be managed within IT project management (Schmidt et al. 2001, Hickey and Davis 2004, Atkinson et al. 2006). As a consequence, project managers are increasingly embracing ways of working that assume changing requirements and value close customer collaboration (Agile Alliance 2001, Beck 1999).

The project schedule is an essential time management component of any project plan. Objectively, the schedule details the list of tasks, assigns resources to these tasks, and provides time estimates. When considering time estimation, IT project management theory emphasizes the use of context-specific methods for estimating tasks that fit within the tradition and history of an organization (Bailey and Basili 1981). At the same time, IT project managers need to recognize the imprecise nature of time estimates and guard against Parkinson's Law, the tendency for time taken on a task to expand based upon the amount of time available (Gutierrez and Kouvelis 1991).

The high levels of uncertainty within IT projects (Wirth 1996) makes it difficult to predict up front the scope of the work or the time necessary to complete it. Yet the IT project manager is still expected to effectively manage project costs. A key task involves obtaining accurate cost estimates to use as a basis for the overall project budget. Several factors make cost estimation on software projects difficult; for example, historical project data may not be available to help predict future performance, developers frequently have a bias toward underestimation, and estimates are often requested before the requirements are fully understood (Demarco 1986, Schwalbe 2005). Recognizing these challenges, IT project managers can implement systems for capturing historical project data and can train personnel on cost estimation techniques to avoid biases (McConnell 2006).

Project quality management ensures that project outcomes satisfy customer needs (Project Management Institute 2004). Quality management is facilitated by procedures that routinely and systematically assess the resulting product. Quality management is also facilitated by careful planning and assessment throughout earlier phases of the project (Boehm 1983). Example techniques for ensuring quality include holding project kickoff meetings to clarify requirements with all stakeholders, conducting design and code inspections to find defects early (Fagan 1986, Fagan 1976), and setting and enforcing project standards.

Theory W

In the context of this study, we chose to focus on Theory W (Boehm et al. 1998, Boehm and Ross 1989, In et al. 2001) to explain why IT projects encounter problems in their core functions and how such problems can be avoided. As a succinct, memorable framework for IT project management, Theory W is consistent with a positive view and focuses on negotiating the complex set of stakeholder interests involved. The framework rests on two basic ideals: "plan the flight and fly the plan" and "identify and manage your risks." The first ideal states that IT project managers should commit stakeholders to a mutually acceptable plan and manage the project accordingly. The second ideal recognizes the dynamic and partly unpredictable nature of IT projects and states that project managers need to continually address risks to ensure that agreed-upon plans remain realistic. Theory W has inspired development of new IS theory, including contingency approaches to IT project coordination (Andres and Zmud 2002), software requirements management (Boehm et al. 1994, Boehm and In 1996), and IT risk management (Keil et al. 2002). The Spiral Model can serve as a framework to practice Theory W and negotiate the complex landscape of stakeholder interests in IT projects (Boehm et al. 1998).

Theory W holds that the primary job of the project manager is to make winners of each of the involved stakeholders, despite their different and often conflicting interests. In general, win-win contracts are used to describe approaches to everyday life, business, politics, and science in which stakeholders have certain overlapping interests and all stakeholders can win (Fisher and Ury 1991, Frankl 2008, Henderson 1996, Rosenzweig 2003). Lazar (2000) discusses win-win strategies in the context of engineering projects in general. When stakeholders engage in cooperative behavior, their moves will be reciprocal and aimed at developing win-win outcomes. Cooperative behavior is developed based on an interactive strategy in which expectations are shared and options are explored and negotiated between stakeholders. Achieving win-win outcomes is never guaranteed based on pre-existing conditions. In fact, unconditional agreement will in most cases lead to project failure because it does not address the diverging interests of stakeholders (Lazar 2000). Instead, cooperative behavior needs to be developed from the very start of each project, and once established it is a fragile state that easily erodes unless actively maintained through ongoing interactions (Lazar 2000).

While Theory W is intuitively appealing and has been used to develop IT project management theory, it has not been explicitly developed in relation to the core project management functions of scope, time, cost, and quality. Therefore, IT project managers who wish to apply win-win contracting need to make those associations and connections themselves. One of the objectives of this research is, therefore, to further explore how Theory W can be applied more directly to support IT project management practice (RQ1).

APPRECIATIVE INQUIRY

Adopting a positive approach to improve IT project management practice, we review the basic principles and practices involved in AI and position them in relation to other participatory change approaches.

AI Principles and Practices

There are a variety of methods available for applying AI to IS practice (Whitney and Trosten-Bloom 2003). Such interventions can be coordinated from the top down through action teams like in other participatory approaches. However, Bushe and Kassam (2005) found AI was most transformational when actions were bottom-up. People shared the vision of change, were motivated to participate, and were empowered to make change happen. No matter what method is used, the principles underlying AI remain the same: constructivist principle, poetic principle, positive principle, anticipatory principle, and principle of simultaneity (Cooperrider and Whitney 2005).

The constructivist principle emphasizes that reality is constructed from the perceptions of diverse stakeholders. Those perceptions can be detected through the language used to discuss organizational life as well as the things that remain unsaid. There are two important implications of this principle. First, AI values change processes with multiple stakeholders. For instance, the AI summit is an approach that values getting the *whole system in the room* over several days to creatively develop solutions and actions for change. Second, AI emphasizes the specific language used by participants and how knowledge can be created based on storytelling and use of metaphors. In fact, AI stresses development of generative metaphors to stimulate reflection and learning. Such metaphors are grounded in the situation and help the participants translate positive experiences into improved future practices. In one instance, *positive arrival experience* served as generative metaphor to help participants improve practices and performance in a large airport (Cooperrider and Whitney 2005).

The poetic principle views organizations as books to be read with a story that is collaboratively created over time. The story can be rewritten and the reader can choose which part of the story to focus on. This principle has led to collecting organizational stories as an important aspect of AI. Bushe (2001) describes an AI into leadership. Through identifying and retelling stories about instances of great leadership, employees gained a greater appreciation for

leadership. Metaphors can also facilitate knowledge creation through associating the unknown with the known (Madsen 1994, Kendall and Kendall 1993, Lackoff and Johnson 1990). The power of metaphorical thinking lies in the simplicity of the communicated content combined with the incompleteness of the metaphor and the likely mismatches between what it expresses and what is experienced. Metaphors communicate guidance towards possible new futures in a simple format, but they also invite reflections over and responses to current practices. Metaphorical thinking has been used as a general approach to understand organizations (Morgan 2006) and to help guide reflective practices (Schön 1983) by concrete examples rather than general rules.

The positive and anticipatory principles emphasize the positive core as basis for creating situational awareness. The positive principle states that positive thinking provides needed energy for the change process; the anticipatory principle states that thinking positively about the future will lead to positive actions. Hence, AI leverages the positive core to help the participants develop generative capability: "When successful, appreciative inquiry generates spontaneous, unsupervised, individual, group and organizational action toward a better future…it leads to new ideas, and it leads people to choose new actions" (Bushe 2007, p. 30).

The principle of simultaneity recognizes that diagnosis is integrated with action. In diagnosis, effective questions evoke surprise, resonate emotionally, facilitate building relationships, and encourage storytelling about the present and the future (Bushe 2007, Avital et al. 2006). Sample questions include:

- Describe a peak experience in which you felt most alive and engaged. (Cooperrider et al. 2004b)
- If your grandson were to work here in 5 years, what would you want it to be like for him? (Elliot 1999)
- Imagine you have just retired. What do you wish had been different for you or the people you worked with? What would make you feel that you accomplished something enduring? (Elliot 1999)

Also, by using metaphors during the inquiry process, actors exhibit less defensiveness than if they were directly discussing problematic situations (Barrett and Cooperrider 2001). As stories and metaphors are grounded in the situation at hand, guidance is provided without normative support from the AI approach.

Comparison with Other Approaches

AI adds to the considerable body of participatory change approaches within the IS discipline—that is, approaches that leverage the perceptions and interests of key stakeholders to support organizational change. Key contributions include socio-technical theory (Mumford and Weir 1979), organizational development (Pettigrew 1987, Pettigrew 1990, Cho et al. 2008), critical theory (Lyytinen and Klein 1985, Kyng and Mathiassen 1982), action research (Baskerville and Wood-Harper 1998, Susman and Evered 1978), systems theory (Checkland 1981, Checkland and Scholes 1999), and quality management (Humphrey 1989, Hackman and Wageman 1995). Although it is beyond the scope of this paper to provide a comprehensive review of these streams of literature, we compare and contrast AI to three other distinct participatory change approaches (see Table 1). These approaches have been widely applied to IS research and practice: they represent different assumptions about knowledge creation and how to build situational awareness, and they rely on different strategies for enacting and guiding change to improve the status quo. As discussed, AI uses stories and metaphors to create knowledge and develop awareness about the positive core of the situation at hand. Also as discussed, the participants' diagnostic activity is integrated with actions to change the status quo, and it is the resulting situational awareness, not predefined norms, that guide actions to improve current practices.

Table 1: Participatory Change Approaches

Approach	Knowledge Creation	Situational Awareness	Enacting Change
Appreciative Inquiry	Stories and metaphors	Positive core	Diagnosis integrated with action
Canonical Action Research	Problems and plans	Problem diagnosis	Diagnosis separate from action
Soft Systems Methodology	Real world and systems thinking	Rich pictures and systems models	Diagnosis integrated with action
Software Process Improvement	Processes, plans, and measures	Process assessment	Diagnosis separate from action

Canonical Action Research (CAR) (Susman and Evered 1978) has been promoted as a highly relevant approach to IT-related participatory change (Baskerville and Wood-Harper 1998, Davison et al. 2004). As a result, there are several CAR studies reported in the IS literature, including Davison and Martinsons' study (2002) on empowerment

and enslavement in IT-enabled process change and Lindgren et al.'s study (2004) on design principles for competence management systems. CAR includes one or more collaborative cycles of diagnosing, action planning, action taking, evaluating, and specifying learning. In each cycle, knowledge is created with a focus on problems in the current situation and action plans to address these problems. Initially, a systematic problem diagnosis creates situational awareness about the reasons, goals, and context for change. Subsequently, change is planned and executed as a distinct therapeutic stage separate from the initial diagnostic stage (Baskerville and Wood-Harper 1998, Blum 1955). Guidance for change is driven by the diagnosis and situated into the problem context without normative support from the CAR approach.

As an approach to organizational problem solving, Soft Systems Methodology (SSM) (Checkland 1981, Checkland 1990, Checkland and Scholes 1999) has found wide application within the IS discipline, including the Multiview method for IS development (Avison and Wood-Harper 1990). SSM has also been applied in several IS studies, including Rose's study (2002) of the role of interaction and transformation in IS development and Frederiksen and Mathiassen's study (2005) of contextual improvement of metrics programs within IT organizations. SSM combines problem-owners' real world experiences with systems thinking to drive learning and change through a cyclical and iterative process. As summarized in Table 1, knowledge is created through interaction between real world appreciation and systems thinking. Situational awareness is created using rich pictures expressing appreciation of problematic issues combined with systems models describing ideas for change. The therapeutic stage of action is intertwined with the diagnostic stage as actors debate rich pictures and systems models to negotiate how to improve the current situation. Guidance for change is, as a result, inherently situated without normative support from SSM.

Software Process Improvement (SPI) (Humphrey 1989, Müller et al. 2010) is a participatory approach to change IT and software organizations. SPI is "an applied academic field rooted in the software engineering and information systems disciplines. It deals with the professional management of software firms and the improvement of their practice, displaying a managerial focus rather than dealing directly with the techniques that are used to write software" (Hansen et al. 2004, p. 457). There are several models available, the most well-known being the Capability Maturity Models (CMM) of software processes and the IDEAL (Initiate, Diagnose, Establish, Act, and Learn) model of evolutionary change. Knowledge is created about current and future processes, plans for improving processes through dedicated action teams, and measures that benchmark existing process capabilities against industry best practices. In each cycle, initial awareness is created through assessment of current process capabilities. As exemplified by the IDEAL model, SPI typically separates diagnosis and action. The actions taken are guided by process norms integrated into the supporting maturity models or expressed through best practices.

Although there are fundamental similarities between these different approaches to participatory change, AI stands out as the only one that relies on stories and metaphors to leverage the positive core within an organization (see Table 1). Still, there are no studies that explore the relations between AI and the challenges in IT project management. Against this backdrop, one of the objectives of this research was to explore how AI principles could be used to facilitate change in IT project management practice (RQ2).

COLLABORATIVE PRACTICE RESEARCH

Our research is based on a three-year collaborative practice research (CPR) (Mathiassen 2002) project between a University Innovation Center (UIC) and TelSoft. CPR is a pluralist action research methodology, and we used it as a dominant approach to generate meaningful contributions about software practices through close collaboration with practitioners (Chiasson et al. 2009). As outlined in the following, this paper reports from Phase 2 of this three-year collaboration.

Research Collaboration with TelSoft

TelSoft is a small software firm with approximately 50 employees providing geographic information systems (GIS) software and services. Like other small software firms (Horvat et al. 2000), TelSoft is oriented toward known customers in a niche market. It has high reliance on committed employees who perform many different roles, and it has few resources devoted to innovation. In fact, TelSoft management acknowledges that the company's biggest asset is its people: experienced software engineers with deep knowledge of its products, systems analysts with strong customer relationships, and project managers willing to adapt quickly to customer requests.

There are two major groups within TelSoft. Software Development includes systems analysts, project managers, software engineers, quality assurance analysts, and their managers. Their job is to create new functionality requested by clients and maintain the existing software products. Map Services uses TelSoft's software to convert paper maps into digital format and to translate electronic maps from one format to another. In both groups, project managers play a critical role in the success of current projects and the ability to obtain future projects. In addition to managing scope, time, cost, and quality, project managers are expected to serve as client account executives

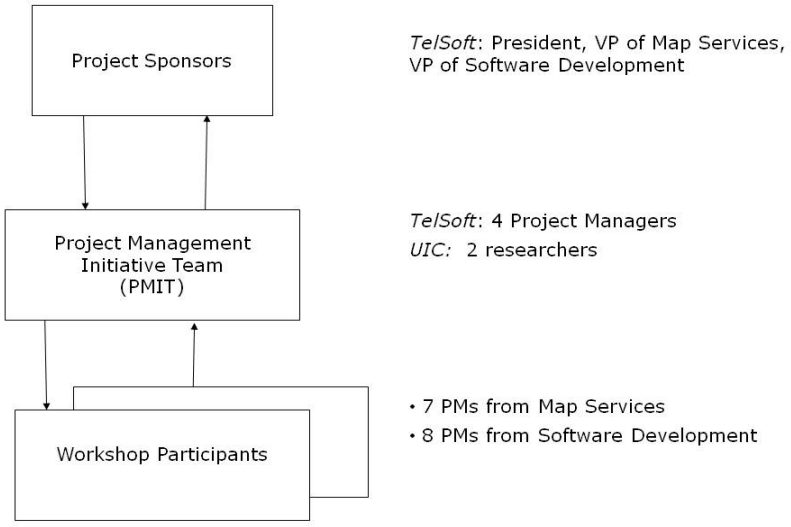
(Webber and Torti 2004), interpreting client needs to other employees and keeping clients informed of other TelSoft services.

At the time our collaboration began in 2004, TelSoft was forced to downsize its workforce, causing it to lose valuable customer and technical expertise, and also requiring that employees adopt additional roles and responsibilities. In addition, TelSoft was experiencing serious issues with their main customers: software releases were frequently shipped late, ran over budget, and contained deviations from agreed-upon requirements. These issues prompted the management team to invest in organizational innovation through the action research collaboration with UIC.

Phase 1 (October 2004 to December 2006) of our collaboration was guided by the IDEAL model (McFeeley 1996), an approach focused on identifying problems, analyzing the root cause, designing possible solutions, and planning action. The research-oriented goals focused on the process of becoming ambidextrous, dualities associated with ambidexterity, and design of interventions to resolve these dualities. The practice-oriented goal was to build sustainable levels of improved requirements engineering practice that aligned with TelSoft's priorities, traditions, and culture. Phase 1 involved a limited number of TelSoft employees and focused on drafting organizational-level policy changes. As a result, TelSoft implemented new software policies and streamlined the available portfolio of software processes (Napier et al. 2006, Napier et al. 2008, Napier et al. 2009, Napier et al. 2011). It was during this time that the need to improve IT project management capabilities was identified and became the focus of the next phase.

Phase 2 (November 2006 to February 2008) of our collaboration with TelSoft was guided by AI and is the focus of this paper. In contrast to the deficit-based focus of Phase 1, AI invited participants to appreciate the best of what is, envision what might be, debate what should be, and innovate what will be (Barrett and Cooperrider 2001). The research-oriented goals focused on learning how Theory W and AI principles may improve IT project management (cf. RQ1 and RQ2). The practice-oriented goals were to enhance IT project management capabilities across the organization, develop shared visions of improved IT project management, and energize individuals to take positive actions within their sphere of influence. The authors' involvement level was facilitative: our expertise guided the effort; however, practitioners took primary responsibility for improving practice. Accordingly, we worked with the sponsors to identify key roles in AI of leadership, core team, consultants, and participants (Cooperrider and Whitney 2005) (see Figure 1).

Figure 1: Organization of Appreciative Inquiry at TelSoft.

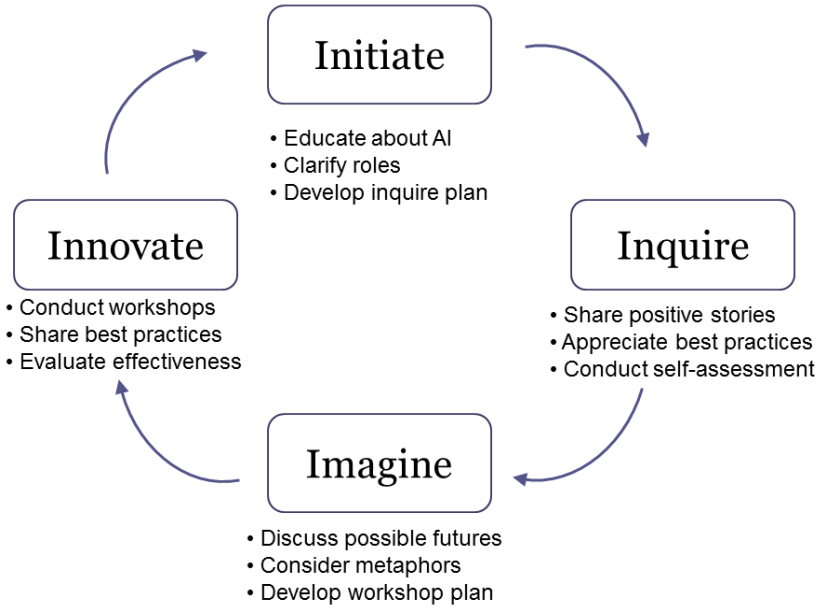


The project was sponsored by TelSoft's President, Vice President of Map Services, and Vice President of Software Development. They affirmed the use of AI, supplied project resources, and assessed the workshop design and contributions to enhanced IT project management capabilities. A core team, the Project Management Improvement Team (PMIT), organized and led the inquiry, conducted interviews, reviewed interview stories on best practices, made detailed project plans, developed generative metaphors, and organized the workshops. The PMIT consisted of the authors, two representatives from Map Services, and two representatives from Software Development. Finally, the majority of current project managers as well as others aspiring to become project managers participated in the workshops; they provided information regarding current practices, debated metaphors on desired future, and participated in building new IT project management capabilities for themselves and TelSoft. As a result, most of the key stakeholders involved in project management at TelSoft were engaged in this research collaboration.

Appreciative Inquiry at TelSoft

The AI was conducted over a period of one year and led to a series of ten workshops, each lasting two hours. The process was based upon the 4-I phases of AI (Watkins and Mohr 2001, Coghlan et al. 2003): initiate, inquire, imagine, and innovate (as shown in Figure 2 and detailed below).

Figure 2: The Appreciative Inquiry Process at TelSoft.



Initiate

During the initiate phase, the focus of inquiry is selected, and the project structure and plan are created. The key activities during the initiate phase included clarifying stakeholders' roles and responsibilities, educating stakeholders on AI, and developing an overall project plan (Watkins and Mohr 2001, Coghlan et al. 2003). The proposal for addressing TelSoft's continuing IT project management needs was presented to the sponsors on November 28, 2006, and approved to begin January, 2007. Over the course of four meetings in January and February, the PMIT learned more about AI and selected basic training material for the workshops on IT project management (Schwalbe 2005, Project Management Institute 2004); this material was later supplemented by research papers and case studies on select IT project management topics.

Inquire

During the inquire phase, the protocol for the appreciative interview is developed and conducted with as many people within the organization as possible. The key activity during the inquire phase involved gathering data from the participants about best practices in IT project management at TelSoft, future possibilities for improving work practices, and a self-assessment of their initial knowledge level of project management topics. A kickoff meeting was conducted on February 13, 2007, to introduce the project plan to the participants and prepare them for the program. Before any workshops were conducted, the PMIT developed an appreciative interview protocol (see Appendix A) and pilot-tested it internally. The interviews were conducted jointly over a three-week period by the research team in collaboration with TelSoft representatives serving on the PMIT. Each interview was recorded, and key insights from the interview were summarized. The PMIT met once during this time to discuss the process and consider common themes across interviews. Table 2 summarizes background information about the interviewed participants.

Imagine

During the imagine phase, the interview data is analyzed for themes of strengths, and creative work is done to generate provocative statements and metaphors grounded in the context of the organization. At TelSoft, the PMIT administered a survey to all participants regarding the topics they most wanted to see addressed during the workshops. The survey items were selected from the Project Management Competency Framework (Project Management Institute 2002) and designed to cover leadership and teamwork skills as well as content areas of IT project management (Schwalbe 2005). Fourteen of the 15 participants responded (93% response rate). Participants responded to prompts such as the following: "As a project manager, I am interested in further developing my skills in _____." Their response choices were: (1) Waste of time, (2) No interest, (3) No opinion, (4) Some interest, or (5)

Strong interest. With respect to developing IT project management skills, participants were most concerned with improving cost, integration, and scope management. With respect to developing leadership and teamwork skills, participants most valued increasing negotiation skills and maximizing potential. Among the top ranked topics were resolving conflicts, gaining the support of people who will implement your decisions, and promoting an environment of mutual trust and respect.

Table 2: Participants in IT Project Management Initiative at TelSoft

ID	Job Title	Years at TelSoft	PMIT Member	Best Practice Presenter	Competition Winner	Did not complete program
Software Development Group						
1	Quality Assurance Manager	10.5		Quality		
2	Software Development Coordinator, Business Analyst	21				
3	Project Manager	26		Scope	yes	
4	Product Manager	16				
5	Project Manager	6	yes			
6	Manager of Software Solutions	23	yes			
7	Software Team Lead	NA				
8	Manager of Software Development	13				
Map Services Group						
9	Senior Specialist	20				yes
10	Senior Project Manager	25	yes	Cost		
11	Senior Supervisor	12				
12	Supervisor	7-12				
13	Senior Specialist	21				
14	Specialist	7-12				yes
15	Project Manager	>17	yes	Time	yes	

Next, the PMIT reviewed the interview data for evidence of successful IT project management practices. The research team met to consider generative metaphors and related action strategies that could be used to guide the workshop sessions. The PMIT iteratively considered IT project management theory, existing best practices at TelSoft, and AI principles. Given the importance of scope, cost, time, and quality in managing IT projects (Schwalbe 2005, Project Management Institute 2004), we first developed the "win-win contracts" metaphor (Boehm and Ross 1989, Frankl 2008), to focus on effectively balancing the interests of project managers and their clients. In addition, we developed the "learn, learn, learn" metaphor (Lyytinen and Robey 1999) to emphasize the need to continuously learn from IT project practices. These two generative metaphors were used to organize the spring workshops (April 17th to June 12th) and fall workshops (September 12th to November 14th), respectively, and they were further applied to relevant project management knowledge areas. This paper focuses on how the win-win contracts metaphor was developed into action strategies for managing scope, cost, time, and quality in IT project management at TelSoft.

Finally, the PMIT completed the spring workshop plan by identifying TelSoft employees who could give best practice presentations. At several sessions, a project manager discussed specific practices at TelSoft that they already did well. This increased knowledge sharing across Map Services and Software Development and between individual project managers. Two representatives were chosen from Software Development to discuss scope and quality, and

two representatives from Map Services discussed cost and time management. Table 3 provides an overview of the spring workshop plan focused on win-win contracts.

Innovate

During the innovate phase, individuals within the organization take actions toward the positive future. All sessions were conducted as planned with intermediate assessment after the five spring workshops and subsequent adjustments and refinements to the plans for the five fall workshops. Thirteen out of 15 project managers participated in all workshops (two had to drop out because of structural changes within TelSoft). To encourage active participation and to stimulate changes in IT project management practices, the PMIT implemented the following components during each workshop session:

- *Workshop roles*: To discuss the assigned workshop readings, each session had these roles: the summarizer identified the three most important takeaways for a project manager; the applier suggested three ideas TelSoft could use to improve project management; and the devil's advocate identified three major weaknesses from a practical point of view. The discussion leaders prepared brief written responses and also presented them to the group.
- *Group discussion:* Each session included breakout group discussions of the readings in relation to TelSoft practices. A general template for group discussions was followed, answering questions such as: How does the reading apply to project management at TelSoft? Which current practices should be discarded or changed in light of the reading? Which new practices should be implemented in light of the reading?

Table 3: Overview of Spring Workshop Plan: Win-Win Contracts

ID	Workshop Focus	Course Preparation	Best Practice Presentation
1	Course Introduction	- Read Schwalbe Chapter 1, Intro to Project Management - Read Chapter 2, Project Management Theory and Information Technology Context	None
2	Scope: Manage customer responsiveness	- Read Schwalbe Chapter 5, Project Management Scope Management - Submit Personal PM Improvement Plan	Software Development: Emphasized systematic process for managing change requests from clients
3	Time: Negotiate realistic schedules	- Read Schwalbe Chapter 6, Project Management Time Management	Map Services: Described use of historical project data to create estimates and schedules
4	Cost: Two-phase funding reduces uncertainty	- Read Schwalbe Chapter 7, Project Management Cost Management - Submit entry for PM Competition	Map Services: Illustrated tools used for cost control to identify tasks that exceed budget
5	Quality: Up-front discipline pays off	- Read Schwalbe Chapter 8, Project Management Quality Management - Submit Personal PM Improvement Report	Software Development: Described extensive planning that occurs throughout the software release cycle to ensure quality

Outside of the workshop sessions, participants were encouraged to reflect on ways of improving IT project management capabilities through these components:

- *Personal improvement plan:* Each participant created an individual plan designed to improve his or her competency as an IT project manager. The plan included a description of the change, the perceived impact of implementing the change, practical steps for implementation, and an evaluation method. After two months, a progress report was collected.
- *Project management competition:* Each participant submitted a proposal that identified a specific improvement opportunity, discussed the expected business benefit, and recommended a plan of attack. Each entry was evaluated by the sponsors for possible implementation. In addition, special recognition was given to the most outstanding proposals. Within Software Development, the winning proposal was to develop a more specific template for the Project Scope Statement and require its use on all internal projects. Within Map Services, the winning proposal was to include additional technical and supervisory members during the project initiation stage. Doing so would help implement new projects and promote personal commitment to their success.

Assessing Appreciative Inquiry

After each workshop, the PMIT met to review material from each session. At the midpoint of the innovate phase, workshop participants completed a questionnaire (see Appendix B) assessing workshop effectiveness and the impact of the win-win contracts metaphor and associated action strategies. The PMIT then met to consider how the respondents' comments could be incorporated into the next round of workshops. Table 4 summarizes responses to questions about win-win contracts.

Table 4: Participant Assessments of Win-Win Contracts Metaphor

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I found win-win contracts and its variations a very strong metaphor for project management at TelSoft.	0	0	2	8	3
I have increased my knowledge about project **scope** management.	0	1	3	9	1
I have increased my knowledge about project **time** management.	0	0	2	11	0
I have increased my knowledge about project **cost** management.	0	1	4	8	0
I have increased my knowledge about project **quality** management.	0	2	6	6	0

Table 5: Summary of Data Sources

Data source	Phases	Description
Meeting notes and minutes	All	Notes and minutes from meetings with PMIT and project sponsors
Appreciative interview	Inquire	Transcribed interviews with participants regarding successfully managed projects at TelSoft, their own individual strengths as IT project managers, and specific project management techniques used at TelSoft
Questionnaires	Imagine, Innovate	Assessments completed by participants at the beginning to rate potential workshop topics and at the midpoint and end to assess workshop effectiveness
Workshop documentation	Innovate	Workshop plans, presentations, and discussions
Participant improvement ideas	Innovate	Participants' written summaries and critical responses to readings and their proposals for improving IT project management at TelSoft
Best practice presentations	Innovate	Presentations by TelSoft project managers highlighting the organizations' strengths in IT project management and considering how new knowledge could positively affect project management at TelSoft

To evaluate the effectiveness of the AI process (RQ2), the research team analyzed data from a variety of sources (summarized in Table 5). Written documentation included participant summaries and critical responses to readings, participant proposals for improving IT project management practice at TelSoft, and text from best practice presentations by TelSoft project managers. In addition, we analyzed the questionnaires completed by workshop participants at the beginning of the series to rate potential workshop topics and at the midpoint and end to assess workshop effectiveness. For the final questionnaire (see Appendix C), we received responses from 9 of the final 13 participants (69% response rate). We assessed the quality of workshop participant products, the participants commented on the usefulness of AI and the workshop, and the project sponsors provided general feedback. After the AI process was completed, the research team debriefed to contrast the deficit-based approach adopted in Phase 1 with the AI process from Phase 2. Insights from these evaluations are provided in the Discussion section.

To understand how Theory W and the metaphor of win-win contracts could support IT project management at TelSoft (RQ1), the research team reviewed the interview transcripts with all participants for comments related to scope, time, cost, or quality. The next section provides evidence of how the Map Services and Software Development groups helped develop the win-win contracts metaphor into action strategies for managing scope, time, cost, and quality at TelSoft.

WIN-WIN CONTRACTS AT TELSOFT

Scope: Manage Customer Responsiveness

During the inquire phase, several TelSoft project managers mentioned their strong commitment to customers. In particular, the ability to respond quickly in a dynamic environment was both appropriate and necessary for TelSoft to stay competitive in the market, as illustrated by the following remark:

> We're very much at the whims of our clients … When you're living on a project to project basis, you have to be flexible enough to turn on a dime and move resources around when you need them. *(PM #3)*

Although a customer-centric focus was encouraged, responses to changing customer requirements needed to be managed so as not to jeopardize relationships with other stakeholders. Software Development project managers, therefore, relied heavily on the requirements specification as a contract of what was agreed to with the client. On their most successful projects, they actively managed project scope by discussing and documenting changes requested by the client. This disciplined change control process not only helped Software Development prevent scope creep, better understand customer requirements, and provide rationale for schedule changes, but also helped the client know what to expect in the finished product. The need to temper flexibility while servicing customers was described by one project manager as follows:

> I'm sure there are times you give and take in the beginning of a project, especially when you're feeling out a new client, but there is a point when you should stop trying to please a client that doesn't know what they want. *(PM #9)*

Based on this evidence, we adopted the action strategy "manage customer responsiveness" to apply win-win contracting to scope management. On one hand, this action strategy stresses that TelSoft as a provider is responsive to its customers. On the other hand, it emphasizes that such responsiveness should be continually managed to strike a reasonable balance between customer and provider interests.

Time: Negotiate Realistic Schedules

Several TelSoft project managers mentioned competitive pressures to lower prices and meet aggressive deadlines. Even so, Software Development project managers stressed the importance of taking active ownership of the schedule instead of letting the customers drive software release dates. For Map Services project managers, schedules were closely tied to the piecemeal rate they negotiated with clients during initial project setup. On some projects, the pressure to be awarded the contract prompted TelSoft to underprice services, start work before all needed resources were in place, and make unrealistic productivity demands on workers. However, such tactics were not sustainable or profitable:

> [On] a lot of [projects], I don't feel they're win-win contracts. They almost always favor the client… We end up losing time and money. *(PM #13)*

On more successful projects, the pricing was set up more favorably for TelSoft, and the initial schedule contained realistic time estimates for work tasks.

Another aspect of creating realistic schedules included having plans at the right level of granularity. The Software Development project managers preferred schedules with high-level objectives that told the developers what needed to be done, but empowered them to complete the task however they saw fit. By contrast, Map Services project managers benefited from detailed schedules that identified a specific quantity of items to be converted. Such detail allowed them to leverage historical project data to create estimates. The idealized process was shared with workshop participants during a best-practices presentation and described during the inquire interviews by one Map Services project manager:

> We break our work down into clearly, clearly defined tasks and I guess through experience or having tracked them for so long, we know this task takes one week, this task takes six weeks … We build models that tell us when you start with new people and experienced people how long it's going to take to get them up to that in a week. [We] calculate what their actual contributions to the units and to the project [are] going to be over time. Well, we build our schedules based on that. *(PM #15)*

TelSoft project managers also understood that schedules would need frequent adjustment throughout the project life cycle:

> Originally we thought this task was, you know, this volume of work. Well, now it really looks like that body of work needs to be split into two separate bodies of work … Then let's reflect that in our organization and … in the tools we use to manage the project. *(PM #3)*

The action strategy "negotiate realistic schedules" reminds project managers to create win-win contracts by balancing different interests into a realistic project plan. In short, project managers should not overpromise in order to meet customers' desired deadlines or win another contract.

Cost: Two-Phase Funding Reduces Uncertainty

The nature of software projects at TelSoft made early project estimation challenging for Software Development. This was especially true because requirements were discovered throughout the entire project lifecycle and frequently changed. As described by the following Software Development project manager, it is usually only later in the process that knowledge increases and risks are reduced enough to make smarter decisions about estimation:

> [Developing] software is really a discovery process … Basically, your risks are high, your knowledge is low. Then, as you go through the discovery process you start to cross. *(PM #5)*

A two-phase funding process would allow stakeholders at TelSoft to first agree on funding of initial explorations and subsequently, once major uncertainties were resolved, negotiate funding of the remainder of the project. Map Services practiced two-phase funding in all projects. Also, one of the most successful projects recalled by one of the Software Development project managers used the two-phase funding approach:

> We generated a statement of work … We were able to actually do some of our technical designs before giving the customer a price. So, we largely had an idea of how we were going to construct the software and paid an architect to check it before we went in and developed it. *(PM #3)*

In summary, the action strategy "two-phase funding reduces uncertainty" applies win-win contracting to the challenge of managing project costs. This approach would result in benefits for both the development organization and the customer. The development organization is paid to spend time up front to explore requirements and create a thoughtful design. The customer receives a fixed price for the second half of the project while still having the option to request changes that are then cost separately.

Quality: Up-Front Discipline Pays Off

TelSoft project managers considered quality throughout the entire project. Map Services applied systematic sampling of converted maps to ensure data quality. As described in a best-practice presentation, within Software Development the quality assurance (QA) process revolved around the software release cycle. Quality planning was a pre-release activity requiring preparing estimates, developing high-level test cases, and determining test data requirements. QA occurred along with the release and involved determining regression test requirements, ensuring a clean build and installation of the testing software, executing test cases, testing defects and enhancements, and capturing test results. Post-release activities focused on QA and control: QA engineers prepared a test evaluation report, prepared official release of software, and updated regression checklists.

Although quality was considered throughout the project life cycle, TelSoft project managers emphasized the importance of projects getting off to a good start. When describing factors that lead to successful projects, several project managers mentioned having accurate requirements up-front:

> I think what made it a good project was obviously because the project—the process that we had with [the client forced us] to really define the functional requirements, system requirements and kind of nailing the specifications in front made that run smoothly. *(PM #4)*

> We were able to define all rules and the expectations of the project up front and it wasn't an ongoing process … I think that's the whole key in whether a project is a success or not. *(PM #11)*

Other aspects mentioned for successfully launching a project included providing high-quality training, acquiring needed technology, and determining appropriate test data. As work begins on a project, several TelSoft project managers discussed the importance of using kickoff meetings to clarify project objectives, help with project communication, and motivate team members. One Software Development project manager offered this explanation of the benefits of a kickoff meeting:

> Everybody got on the same page; even if they weren't working on the task, at least they knew how it fit in and that helps everybody develop a solid understanding of the whole thing we're trying to do … It just leads to better quality and a better sense of team spirit. *(PM #8)*

The "up-front discipline pays off" action strategy considers how win-win contracting relates to quality management. By investing early in quality, TelSoft could instill a proactive quality mindset among employees that resulted in less rework at later stages and a better product for the customer.

DISCUSSION

The reported collaborative practice research (Mathiassen 2002) into software practices at TelSoft helped us develop action strategies for IT project management based on Theory W (RQ1) and a process for improving IT project management practice based on AI principles (RQ2).

Win-Win Contracts in IT Project Management

Following AI, we identified win-win contracts as a generative metaphor that could help the participants translate positive experiences into improved future practices (Bushe and Kassam 2005, Bright et al. 2006). We used the metaphor to invite reflections over current practices and prompt participants to consider mismatches between what the metaphor expresses and what was experienced at TelSoft (Madsen 1994, Kendall and Kendall 1993, Lackoff and Johnson 1990). To further stimulate this process, we developed succinct win-win action strategies for each of the core functions of IT project management, again grounded in our experiences at TelSoft (see section above "Win-Win Contracts at TelSoft"). These strategies extend Theory W by contributing new knowledge on how to manage project scope, time, cost, and quality. Each strategy practices win-win contracting, focuses on core choices project managers must make, is directly actionable, invites reflections over and responses to current practices, and is easy to remember. In the following, we consider the relationship between these action strategies and existing IT project management theory (summarized in Table 6).

Table 6: Win-Win Contracting for IT Project Managers

Core Function	Action Strategy	Contractual Basis	Key Stakeholders	Related Literature
Scope	Manage customer responsiveness	Requirements specification	Customer Developer	(Börjesson and Mathiassen 2005, Napier et al. 2006, Lazar 2000, Haeckel 1995, Haeckel 1999, Boehm and Turner 2004)
Time	Negotiate realistic schedules	Schedule	Customer Developer IT manager	(Bailey and Basili 1981, Gutierrez and Kouvelis 1991)
Cost	Two-phase funding reduces uncertainty	Budget	Customer IT manager	(McConnell 1998, McConnell 2006, Boehm and Bose 1994, Mathiassen et al. 2007)
Quality	Up-front discipline pays off	Product	Developer Maintainer User	(Boehm 1981, Boehm 1983, Weinberg and Freedman 1982, Kasi et al. 2008)

IT Project Managers at TelSoft described the importance of being able to sense and respond quickly to changing customer demands (Haeckel 1995, Haeckel 1999, Börjesson and Mathiassen 2005); at the same time, they needed to systematically manage and communicate changes to all stakeholders. The "manage customer responsiveness" action strategy reminds IT project managers to be responsive while at the same time maintain appropriate levels of control. To achieve win-win outcomes on scope management, IT project managers need to ensure the requirements specification continues to meet the needs of customers as well as developers. For customers, the requirements

specification provides the acceptance criteria for the finished product. For developers, the requirements specification provides the foundation for detailed systems analysis and design. In a quest to please customers, IT project managers should not fall into the trap of unconditionally agreeing with customers. Rather than leading to win-win outcomes, such practices have been associated with project failure because they ignore the complex and dynamic nature of requirements management (Lazar 2000). IT project managers are, as a result, advised to continuously balance agility with discipline (Boehm and Turner 2004, Napier et al. 2006).

IT Project Managers at TelSoft expressed frustration with initial project schedules that promised too much while allocating too few resources. The "negotiate realistic schedules" action strategy expresses how win-win contracting requires IT project managers to balance different interests into a realistic project plan (Bailey and Basili 1981, Gutierrez and Kouvelis 1991). An approved schedule is the result of negotiation between stakeholders, representing a series of commitments and expectations: customers expect the deliverables to be ready by the deadline and agree to provide input needed to drive the development process; developers expect to have a valid requirements specification and commit to completing their assigned tasks by the given date and provide accurate status; and IT managers agree to provide sufficient resources to support the project schedule. Once the schedule is created, developers and other resources assigned to work on the project are expected to provide accurate status of how much time is remaining on each task. This information allows the project managers to provide status to customers and upper management and to take corrective action if needed.

At the beginning of a project, uncertainty is high; in particular, requirements are not well understood by either the customer or the IT manager (Mathiassen et al. 2007, Boehm and Bose 1994) and needed resources may not be identified (McConnell 1998). As a consequence, preliminary budget estimates may vary significantly from actual costs. The "two-phase funding reduces uncertainty" action strategy applies win-win contracting to the challenge of managing project costs. Under this approach, stakeholders would first agree on funding of initial explorations and subsequently, once major uncertainties were resolved, negotiate funding of the remainder of the project (McConnell 1998, McConnell 2006). At TelSoft, we emphasized an approach that deferred cost estimation until more was understood about system requirements. Map Services practiced two-phase funding in all projects, and Software Development began experimenting with two-phase funding to improve project performance as described above. Although this approach does not completely erase risks, it does provide a second opportunity to reassess and re-plan.

The "up-front discipline pays off" action strategy emphasizes the importance of instilling a proactive quality mindset among employees throughout every project phase. Project managers at TelSoft appreciated that quality assurance is much broader than testing a product after production. Research has also shown benefits of early quality assurance efforts such as walkthroughs, peer-reviews, and inspections (Weinberg and Freedman 1982). For example, discovering requirements errors during the production phase is estimated to be 100 times more expensive to fix than if that same error is found during the analysis phase (Boehm 1983). At TelSoft, Map Services applied systematic sampling of converted maps to ensure data quality, and Software Development empowered the Quality Assurance (QA) group by requiring written approval of the QA manager before products are released to customers. TelSoft Software Development also considered using project post mortems to generate lessons learned for future projects (Kasi et al. 2008).

Although the win-win action strategies we developed in this research are grounded in practices at TelSoft, our discussion shows that they also relate to the IT project management literature. Our research has in this way demonstrated how Theory W and the win-win contracts metaphor can be applied to the core functions of scope, time, cost, and quality in IT project management.

Applying Appreciative Inquiry

Our background in action research (Mathiassen 2002) and SPI (Napier et al. 2009) helped adapt the 4-I model (Watkins and Mohr 2001, Coghlan et al. 2003) as a framework for improving IT project management at TelSoft. The 4-I model allowed us to manage many stakeholders and assign appropriate weight to each phase. In addition, the progression through phases appeared natural, and the subsequent evaluations indicate the participants were satisfied with the process. Several respondents appreciated the opportunity to learn from their peers in what one manager described as "an open and non-threatening atmosphere for debating processes that lead to business success." Overall, AI helped the PMIT establish a set of action strategies for and develop a shared approach to IT project management. As a result, the participants had a positive experience discussing and exchanging best practices in IT project management across Map Services and Software Development.

Still, applying AI to improve IT project management at TelSoft was not without challenges. Although the respondents were very positive about improvements in personal IT project management knowledge and skills, they had more reservations when it came to the impact on current and future practices at TelSoft. Several respondents from

Software Development pointed out that previous improvements implemented during Phase 1 of our collaboration were no longer systematically followed and enforced. They feared that similar developments might seriously jeopardize the long-term impact of the IT project management initiative and training.

To further evaluate the usefulness of the AI process at TelSoft, we return to the underlying principles described earlier (Cooperrider and Whitney 2005). We compare and contrast our experience with other applications of AI to improve IS practices and with other approaches to participatory change within the IS literature (Table 1). The constructivist principle emphasizes stakeholder participation and using their specific language to share scenarios about the future. We adopted this principle in a number of activities at TelSoft. First, the workshop participants presented on best practices that had proven their worth within the firm. These practices were explicated, shared, and debated among all participants. Second, the participants shared key concepts and practices related to IT project management through roles of summarizer, applier, and devil's advocate. Third, the participants constructed new IT project management realities through personal improvement plans and competition entries. In this way, the participants merged local knowledge about successful practices at TelSoft with IT project management theory. When commenting on the most valuable aspects of the training initiative, one participant noted:

> I think just bringing some of the issues that we all deal with in project management to the table and being able to discuss them together was beneficial for all involved.

Similar positive experiences with the constructivist principle have been reported in relation to IT project requirements elicitation (Gonzales et al. 2009) and post mortem evaluation (Baaz et al. 2010). Together, these experiences confirm that broad participation and sharing scenarios about the future are key enablers of change, as expressed in CAR's collaborative approach to action planning (Susman and Evered 1978), SSM's engagement of problem owners to identify feasible and desirable changes (Checkland 1981, Checkland 1990, Checkland and Scholes 1999), and SPI's commitment of stakeholders to prioritize plans for dedicated action teams (Humphrey 1989, Müller et al. 2010).

The poetic principle views organizations as books to be read with a story that is collaboratively created over time. Adopting this principle during the inquiry phase, we engaged all participants in storytelling about practices at TelSoft. Our interviews helped the PMIT imagine how IT project management could be re-scripted through workshops and related activities. Later during the innovate phase, participants shared stories about current practices and experimented with building new scripts by confronting existing practices with IT project management theory. Previous studies have found the poetic principle can make it difficult to keep participants on track (Gonzales et al. 2009) and to find sufficient time for participants to formulate and reflect on narratives (Holmberg et al. 2009).

Similarly, in our case, the poetic principle led to open and in many ways unpredictable dialogues. However, contrary to previous studies, we followed AI's recommendation to support the poetic principle with generative metaphors. Developing the win-win contracts metaphor and related action strategies for scope, cost, time, and quality, provided additional focus and it invited participants to reflect over current practices and how they could be changed (Schön 1983). The use of generative metaphors offered simplicity and guidance to help participants leverage the richness that emerged from the many and quite diverse stories that were told during the change effort. This benefit was described by one participant as follows:

> The tie-in of every lesson to the concept of a win-win contract was valuable to me. It reinforces what should always be the driver for project management decisions and actions.

Storytelling and metaphors are not explicitly included in the other IS approaches to participatory change. However, there is a strong analogy within SSM between storytelling and use of rich pictures to capture and communicate personal appreciation of situations and between metaphors and use of systems definitions and models to express ideas for change. Also, storytelling has been advocated as a useful complementary approach to improve IT project management (Petter et al. 2007, Petter and Vaishnavi 2007).

The simultaneity principle helped us overcome the traditional barrier between inquiry and change. TelSoft sponsors and project managers were actively engaged in all AI phases and not merely subjected to an intervention planned and organized for them. This highly participatory approach allowed participants to learn from the initiation, inquiry, and imagining phases. Moreover, it helped develop the workshops beyond traditional teaching-learning sessions by engaging the participants in ongoing inquiry into own practices, the practices of colleagues, and possible new practices inspired by IT project management theory. However, AI suggests extensive participation by most, if not all, involved stakeholders. Following this suggestion literally, all 15 project managers, the sponsors, and the software developers should have been engaged throughout the change process. Such level of participation was simply not feasible at TelSoft. As a small software firm, TelSoft was constantly challenged and key resources were in high

demand for many purposes. In fact, having the PMIT formed with participation of four project managers, having strong commitment and active participation from the sponsors, and having 15 project managers participate in the workshops and related learning was itself a stretch. Envisioning having the "whole system in the room" over an extending period of time at TelSoft to jointly inquire into IT project management practices would not be feasible. Similarly, the other reported applications of AI in relation to IS practices (Gonzales et al. 2009, Holmberg et al. 2009, Baaz et al. 2010) are all based on quite selective representation of stakeholders, and there is also no recommendation of engaging most or all stakeholders in other participatory change approaches within IS. As a result, it appears necessary to negotiate a reasonable balance between the ideals of AI and what is pragmatically possible when organizing stakeholder participation.

Finally, the positive and anticipatory principles guided us to adopt a positive lens throughout all activities and to integrate reflections about future actions as integral parts of the process. Focusing on the positive core is indeed the one principle where AI stands out in relation to other approaches to participatory change in IS. In both CAR (Susman and Evered 1978) and SPI (Humphrey 1989, Müller et al. 2010), change is driven by explicit problem diagnosis followed by action planning and taking, and although SSM avoids focusing on a specific problem or set of problems, the approach does emphasis appreciation of "problematic situations" and involvement of "problem owners" (Checkland 1981, Checkland 1990, Checkland and Scholes 1999). Although the decision to adopt the positive principle was relatively straightforward, deconstructing the social network and belief system that was cultivated earlier at TelSoft was more challenging. The positive principle was experienced as being in stark contrast to the participants' earlier experiences with conventional approaches to SPI. For example, Phase 1 of our involvement was driven by inquiry into current software practices and focused on identifying problems and deviations from norms and on making processes more robust and repeatable. This mindset, with its focus on problems and continuous problem solving, was therefore an integral part of the participants' weltanschauung (Checkland 1990) and professional language. A similar experience with adopting AI into an IS context is described by Holmberg et al. (2009). In their study, they found software developers and managers had a traditional preference for and found great satisfaction in problem-solving approaches. It was difficult to change this mindset; as a result they suggested extensive AI training and facilitation is "critical for exploring the full potential of the approach" (p. 121).

In summary, AI shares fundamental features with other approaches to participatory change within IS. AI differentiates itself most notably from CAR and SPI because of their strong focus on problem diagnosis and on separating diagnostic activity from action (Table 1). AI has many similarities with SSM, but AI's strong emphasis on the positive core and on storytelling stands out as unique. Comparing our experiences with other AI studies related to IS (Gonzales et al. 2009, Holmberg et al. 2009, Baaz et al. 2010) suggest the following key lessons:

- Active participation of key stakeholders is required to facilitate change in IS practices with AI. However, having the "whole system in the room" over an extended period of time was not feasible at TelSoft or in the other reported studies. When organizing stakeholder participation, it is therefore necessary to negotiate a reasonable balance between the ideals of AI and what is pragmatically possible.
- Extensive storytelling can make it difficult to keep participants on track and find sufficient time for them to formulate and reflect on narratives. As we experienced at TelSoft, it is therefore important to consider AI's recommendation to support the poetic principle with generative metaphors. The use of metaphors can help participants leverage the richness that emerges from storytelling into actionable ideas about a possible future.
- Focusing on the positive core at TelSoft provided energy for change and helped participants think positively about the future. However, overcoming the traditional problem-oriented mindset is difficult and requires extensive AI training and facilitation. An important challenge related to adoption of AI is therefore managing the relationship between the history and context of intervention and AI's focus on the positive core.

Limitations and Future Research

As with any study, it is important to point out the limitations of our approach and findings. In applying AI at TelSoft, we had to adapt. Contrary to the ideals of AI, we selectively engaged with people at TelSoft and we did not include other stakeholders such as customers and end-users. Although the PMIT was active throughout the collaboration in designing and evaluating the program, other stakeholders played more limited roles: the existing project managers and those aspiring to become project managers participated in the workshops, and upper management sponsored the project and took part in its overall framing. Furthermore, the participants from TelSoft had limited knowledge about AI. The researchers shared knowledge about and principles for AI with the participants, but the researchers were responsible for the content of the project management training and took the lead in explicating the generative metaphor and related action strategies. A third limitation is in the data supporting the impact of the new development program for IT project managers. We rely on the self-reported perceptions of the workshop participants as opposed to systematic pre- and post-data on project performance within TelSoft. Finally, the single-case research design implies that our findings draw on the specific traditions and practices at TelSoft. Transfer of the presented approach

to AI to improve IT project management practices would therefore require careful examination of differences in context.

Considering future research, there are several opportunities to further explore and develop AI in the context of IT project management. The generative metaphor of win-win contracts and related action strategies for IT project management need to be validated and further developed in relation to project management practices. Such studies could take the form of action research in collaboration with specific projects in one or more firms. It would also be relevant to explore how AI thinking and principles may be further adapted to support innovation in IT organizations. Such efforts could draw on the extensive body of knowledge from applying other participatory approaches within the IS discipline. Some options include considering how principles for CAR (Davison et al. 2004) might help design research based on AI, how to use rich pictures (Checkland 1981) as part of collaborative story-telling in IT projects, and how to drive SPI initiatives from the very start based on AI.

CONCLUSION

The study demonstrates that AI and generative metaphors apply well to improving IT project management practice. Specifically, we demonstrated how appreciative principles and the four steps of initiating, inquiring, imagining, and innovating were used at TelSoft to learn about existing strengths and share visions of possible futures. Acknowledging that humans under these circumstances respond constructively to change, this led to a new development program for IT project managers. Also, we demonstrated how AI could help articulate contributions to manage scope, time, cost, and quality in IT projects drawing on core insights from IT project management theory — in particular Theory W (Boehm and Ross 1989). In conclusion, therefore, practitioners are encouraged to complement their current problem-oriented tool box with a positive lens on inquiry and intervention to more effectively improve IT project practices and deliverables. In doing so, it is important to keep the similarities and differences between AI and other approaches to participatory change in mind and to pragmatically adapt the appreciative principles to organizational realities.

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APPENDIX A: INTERVIEW PROTOCOL

Participant Background

1. Describe your role at TelSoft.
2. How much project management experience do you have?

TelSoft Work Practices

1. Think back over all the projects you've participated in at TelSoft—either as a project manager or participant.
    a. Pick a project that stands out as being well run. What were some things that made this a positive project experience?
    b. Consider the different areas of project management and point at where practices at TelSoft are strongest.
    c. Without being modest, what is it about your own project management skills that you value most?
    d. Imagine that you have just retired. As you review your project management experiences at TelSoft, what would you wish had been different—for yourself and those you worked with? And what memory makes you feel that you have accomplished something enduring at TelSoft?
2. Turn your attention now to future possibilities for improving TelSoft work practices.

a. Have you ever visited another company where you have seen things you would like to introduce at TelSoft?
b. Can you identify specific project management practices, techniques, or tools that TelSoft could benefit from adopting?

APPENDIX B: MIDPOINT QUESTIONNAIRE

Please check one box to indicate your level of agreement with each statement:
Scale: (Strongly Disagree – Disagree – Neutral – Agree – Strongly Agree)

1. I have adequate time to read the material provided before each session.
2. The textbook is a useful resource for understanding project management concepts.
3. I have increased my knowledge about project scope management.
4. I have increased my knowledge about project time management.
5. I have increased my knowledge about project cost management.
6. I have increased my knowledge about project quality management.
7. I find win-win contracts and its variations to be a very strong metaphor for project management at TelSoft.
8. I have generated new ideas for improving project management practices at TelSoft.
9. I have begun to apply the knowledge learned in my activities at TelSoft.
10. The Personal Improvement Plan (PIP) was an effective tool for improving my PM skills.
11. My level of participation during the workshop was appropriate.

If you were designing the fall session, what changes would you make in the workshop format?
Choices: (Remove this component – Reduce time for this component – No changes – Increase the time allowed)

1. Best practice presentations
2. Summarizer role
3. Applier role
4. Devil's advocate role
5. Textbook lecture
6. Breakout group discussion

Please use the space below to make specific suggestions for the fall sessions (e.g., time of day, workshop component, topics, length of session, learning activities, reading material).

APPENDIX C: FINAL QUESTIONNAIRE

1. Describe a moment during the Project Management Initiative that you felt was a real high point experience, where you felt that you had learned something significant to your work or personal development.
2. What do you think the people at TelSoft have valued most?
3. What value has the project brought to you as a person?
4. Often, unexpected positive things happen that we have not planned for or anticipated. Can you think of some unexpected positive development during the Project Management Initiative?
5. Describe in what ways, if any, the Project Management Initiative will have a long-term impact on project management practices at TelSoft.
6. Select the top 5 metaphors that represent the most important practices and visions for project management at TelSoft(1 - Highest, 5 - Lowest)
    - Win-win contracts
    - Manage customer responsiveness
    - Negotiate realistic schedules
    - Two-phase funding reduces uncertainty
    - Up-front discipline pays off
    - Learn, learn, learn
    - Create empowering environments
    - Proactively consider the unexpected
    - Practice switch hitting
    - The world is flat
7. Through the Project Management Initiative, to what extent have you further developed skills in _____? (Scale: Made things worse, No development, Don't know, Some development, Considerable development)
    - Resolving conflict in a win-win manner
    - Promoting an environment of mutual trust and respect
    - Working with others as a team
    - Interacting comfortably and effectively with team members
    - Welcoming conflicting opinions as a means to ensure complete information

- Listening effectively
- Taking a personal interest in developing each team member
- Facilitating career development with each individual in my projects
- Controlling costs and staying within budget
- Measuring performance
- Estimating costs
- Providing project oversight
- Planning for and controlling quality of project
- Managing project scope
- Managing business requirements
- Managing technical requirements
- Controlling schedules
- Developing schedules and assigning resources
- Tracking and managing To Dos and open issues
- Reporting performance
- Distributing information about project to key stakeholders
- Managing project team members
- Developing project team members
- Acquiring staff for project
- Executing project management plans
- Creating project management plans
- Managing and controlling outsourcing
- Controlling risks
- Identifying and documenting risks

8. Overall, how do you evaluate the impact of the Project Management Initiative on ____?
   (Scale: Made things worse, No development, Don't know, Some development, Considerable development)
   - Your personal project management knowledge and skills
   - Current and future project management practices at TelSoft

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