Using Storytelling to Reflect on IT Projects

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Abstract

The existing systems development literature emphasizes project participation and written documentation as mechanisms for gaining and sharing knowledge. These mechanisms facilitate individual learning, but provide limited support for the development of a shared understanding and learning from other people’s experiences. Using storytelling theory supported by experiences from a workshop and interviews with IT practitioners, this paper proposes a workshop design to assist group knowledge sharing at post project reflection meetings. The storytelling approach to reflection constitutes a process whereby tacit knowledge possessed by individual project participants from different IT projects can be externalized and collectively shared and expanded. The suggested design lets the participants both reflect on their own practice through comparison with others and creates a process through which they can learn from other partakers’ experiences.

Argument

This paper argues for a particular design for reflective knowledge sharing. The design process involves groups sharing stories about (finalized) IT projects in reflective workshops. Evidence in support of this design, being worthy of further consideration, is provided in the form of knowledge sharing, narrative theory, and learning mechanisms literature, as well as through an illustration of these being applied in a five mode structure for reflective workshops.

Knowledge Sharing

“We are not nearly as good at evaluating and acting on and drawing lessons from those evaluations as we are at planning” (E-business employee, AstraZeneca, Denmark).

It is widely recognized in both literature and practice that capturing, sharing, and deploying the hard, but valuable, lessons learnt from IT development projects is not an easy task. Generally speaking, the systems development literature suggests two different ways of learning from, and sharing one’s own
and others’ experiences. One approach emphasizes the learning experience, greater problem domain knowledge, and reflective ability that developers gain as they participate in a succession of projects over time (Schön, 1983; Mathiassen, 1998; Truex, Baskerville, and Travis, 2000; Fitzgerald, Russo, and Stolterman, 2002). It is argued that knowledge belongs to and is shared by the individual developer through project participation. A second more methodical and formal perspective (Truex, Baskerville, and Travis, 2000; Fitzgerald, Russo, and Stolterman, 2002) prescribes written project documentation and retrospective reflection, e.g. post-mortems, as a necessary means for explicating personal knowledge. This, it is argued, allows for standardization and transfer of knowledge from the developer to documents, which in turn makes it possible to share the knowledge across development projects (Fitzgerald, Russo, and Stolterman, 2002).

The focus on project participation and written documentation as mechanisms for gaining and sharing IT development knowledge is in line with the theoretical distinction between tacit and explicit knowledge (Polanyi, 1962, 1967 in Alavi and Leidner, 2001; Nonaka, 1994). Tacit knowledge is embedded in action, experience, and involvement in a specific context and refers to all that the individual project participants know and take for granted, e.g. their mental models and situated know-how, but can not or do not articulate or explicate. In contrast, explicit knowledge is articulated and codified in records of the past such as project models, project documentation, project reflection reports, etc. Thus, knowledge is first and foremost personal, a state of mind; and only information, i.e. the explicit knowledge, which is actively processed in the mind of the individual through a process of reflection, explanation, and learning becomes personal knowledge (Alavi and Leidner, 2001).

Organizational knowledge creation is different from individual knowledge creation. To create organizational knowledge is to enable processes that shift between tacit and explicit knowledge conversion and move from individual experience to collective action (Nonaka, 1994). In line with this, Zollo and Winter (2002) suggest three mechanisms for learning. The first learning mechanism is experience accumulation, which refers to (tacit) ‘learning by doing’. The second learning mechanism is (verbal) knowledge articulation, while the third is knowledge codification which concerns the (written) explication of experience and improvement of future action (Zollo and Winter, 2002). We suggest that the three learning mechanisms can be used to organize the externalization process so that development knowledge possessed by individual project participants from different IT projects can be converted from tacit to explicit knowledge. However, it is important to notice that an individual’s or a group’s knowledge is only useful for others if there already is a certain level of shared knowledge or enough contextual information for it to be understandable by the receivers (Alavi and Leidner, 2001). The prerequisites for learning from one’s own and other peoples’ experiences are that a shared knowledge base is established and that development experiences are actively processed through individual and collective reflection.
negotiation, and expansion. We suggest storytelling, and in particular oral storytelling, as a relevant means for building a shared understanding, for making sense of past actions, and for envisioning the future (Bruner, 1990).

Ryan (2001) suggests five different approaches to the study of stories (narratives): the existential approach deals with the subject’s relation to other subjects and to the world; the cognitive approach describes narrative as an operation of the mind, as a way to create meaning; the aesthetic approach deals with textual phenomena both analysis and the construction of such; the sociological approach analyses the contexts in which narration takes place; and the technical approach defines narratives and narrative elements. In the organizational learning literature narratives are viewed from both an individual and an organizational level and concern stories as temporal order, as dialogical tools in interventions, and as meaning construction in order to understand and legitimize change (Rhodes and Brown, 2005). This is within the existential and the cognitive approaches. In the IT literature, narrative has previously been used as a way of looking at political explanations for IT implementation (Brown, 1998), as a basis for systems design and development (Clausen, 1994; Nielsen, 2004), as a technique relevant for IT requirements analysis (Alvarez and Ural, 2002), and for IT project post mortems (Desouza, Dingsøyr, and Awazu, 2005). These applications of narrative fall mainly within the sociological approach (e.g. Brown, 1998; Alvarez and Ural, 2002; Desouza, Dingsøyr, and Awazu, 2005). Our research is primarily in line with the cognitive approach, where stories are viewed as mental constructs (Polkinghorne, 1988; Bruner, 1990) and the aesthetic approach, where narratives are seen to be constructed with intention and made up of narrative elements (Bordwell, 1997; Iser, 2000; Abbott, 2002), i.e. a focus on narratives as both process (mental story construction) and product (story).

STORYTELLING

“All we have are experiences, but all we effectively can tell others are stories” (Schank, 1990) pp. 12.

The way humans understand their experiences, the social world that surrounds them, and their daily transactions is not as concepts, but as stories organized in narrative form (Bruner, 1990). We compare stories to incidents we have previously experienced and understand events in comparison to events we have already understood. The thinking process requires two fundamental processes: when we hear a story we extract the core from it and create a story that can be stored in memory and we recast the core when we transform it into stories that express an intention. (Schank, 1990)

A story can be defined as being sequential with events that evolve around actors. The sequences can describe incidents, states of minds, or actions. Storytelling consists of four elements (Bruner, 1990):

- A narrator’s perspective.
- Actions towards a goal controlled by agents.
- Sequences are established and kept.
- Sensitivity towards what is considered ordinary social practice within a given culture (the canonical). Stories function as explanations for deviations from accepted social practice, they excuse the extraordinary or create explanations for it (Bruner, 1990).

The oral story allows listeners, individually and in a shared space, to extract different essences from it and to compare the story to events they have already understood. In listening to a story the listeners expect it to follow the story form (Abbott, 2002) and they use these expectations to create meaning from the elements presented. The story form is: a story begins with a setting in which characters, problems, and time is presented; after this presentation, one or more episodes follow, each having a beginning and a development towards a goal; each episode includes a goal and attempts to reach the goal; the attempts are understood as the causes to the outcome; each episode links to the overall story, thereby creating the plot (Polkinghorne, 1988).

As no text can ever be told in its entirety the listeners will, when trying to make meaning of the story, fill in the gaps in the
text, known as narrative gaps (Iser, 2000). The information that is not received as story elements, the listeners infer from expectations, knowledge of the depicted area, and their cultural background (Bordwell, 1997). Storytelling is a common experience, but the reception is individual and each listener creates their individual story.

**STORYTELLING AND LEARNING MECHANISMS**

Introducing a narrative perspective on capturing and sharing project knowledge is in line with the understanding that knowledge can be divided into two primary knowledge forms; the story form of narrative knowledge and the paradigmatic knowledge form of formal science (Polkinghorne, 1988). Narrative knowledge aids the memory while experiences that are not structured in a story form are more easily forgotten (Mandler in Polkinghorne, 1988).

Narrative theory suggests that the individual’s knowledge exists as mental stories, in this case as stories about projects or project episodes. The mentioned way of learning through project participation operates within the area of narrative knowledge, where knowledge belongs to and is shared by the individual through his project participation over time. This is in line with the experience accumulation mechanism (Zollo and Winter, 2002). Further inspired by Zollo and Winter (2002), we refer to the act of telling and reflecting on stories as the narrative knowledge articulation mechanism. Oral stories are always told from a viewpoint, they have a narrator, the events are seen through somebody's eyes, they include the negotiation that went before and, as Bruner puts it, stories in the domain of negotiated meaning are especially well suited tools for social negotiation (Bruner, 1990). In contrast, written documentation typically presents facts and principles as they are; without a narrator’s voice, without the negotiation that went before the facts became facts. Written documentation operates within the area of paradigmatic knowledge and aims to identify facts (about how things are) and principles (about how to act or predict the future). This is in keeping with the knowledge codification mechanism (Zollo and Winter, 2002).

In the remainder of the paper, we use storytelling and the three learning mechanisms to design and analyze a workshop intervention, with a focus on the following concepts:

**Oral storytelling.** Story as: sequences of actions, involving actors, and goals organized in a plot, told from a narrator’s perspective, which offer explanations for the extraordinary and which are individually received and perceived by the listener.

**Organization of the externalization process.** Knowledge sharing through: conversion of experience into stories, articulation of stories, individual story reception, collective negotiation and understanding of the meaning of stories and their explanations, codification of explanations as principles for future action.

**RESEARCH APPROACH**

The research presented in this paper is based on action research with an aim to create change by improving a specific case, in a specific period of time, at a specific location (Toulmin and Gustavsen, 1996). Action research is a social interaction between the researcher as agent and observer and the surroundings, where a social act is played out in a specific social environment, thus providing a change in the environment. Action research involves two stages: a diagnostic stage, where the situation is analyzed and a therapeutic stage, where the change experiments take place and the effects are studied (Baskerville and Wood-Harper, 1996). The literature on action research is vast and varied, accounting for a number of different attitudes towards the change process. In addition, there is no methodological canon to be followed. There are commonalities though, as change and involvement are key elements in all action research processes.

For the empirical foundation we draw on a project reflection workshop and subsequent interviews held with practitioners engaged in IT development at the Danish branch of AstraZeneca. The workshop was initiated by employees in AstraZeneca’s E-business unit, who had observed that the
company had almost no experience in IT project documentation and reflection. The employees contracted one of the paper authors in the role of workshop facilitator. The workshop was performed in November 2004 as an afternoon session that lasted three hours. Ten AstraZeneca employees, including three from E-business, the manager of an internal IT department, and a number of educational and sales and marketing people participated as did the two authors of this paper.

The diagnosis was performed by the employees of the E-business unit and discussed with the facilitator/researcher before the workshop took place. The workshop process was linear and followed a rigorous predefined structure, specified by the facilitator who initiated and kept the workshop structure. The goal of the workshop was to create organizational change in order to improve the company’s IT development practices and avoid future failures of IT projects. The execution of the workshop emphasized the participants’ own interpretations and needs. These were later captured in three semi-structured interviews with E-business employees where the participants reflected on the workshop and how it influenced future development processes. The study of change and effects in the social environment (Baskerville and Wood-Harper, 1996) was part of the interviews organized around a focus on: the interviewees’ educational and practical backgrounds, their experience with IT project documentation and reflections on AstraZeneca in general and their impression of the workshop in particular.

The workshop was video-filmed and transcribed verbatim. Each interview lasted around 60 minutes, was tape-recorded and subsequently transcribed. In addition to the workshop and interview texts, the empirical data is made up of a variety of other documents, such as the initial correspondence regarding the purpose of the workshop and documents describing AstraZeneca’s IT projects; PowerPoint presentations from the workshop session; and a written report summarizing the workshop results.

The empirical material is in Danish. All included citations have therefore been translated into English by the paper authors. For each citation its origin, e.g. workshop, interview etc., and originator are identified, e.g. the three E-business employees, who participated in the workshop as well as the interviews, are identified by the first letter in their name: A., P., J..

**THE PROBLEM**

AstraZeneca is a UK/Swedish owned medical company specializing in asthma, cancer, gastro-, intestinal-, and cardiac diseases. In this paper, we report from the Danish branch of AstraZeneca, which is primarily concerned with sales and marketing of the company’s medical products. Our focal point is the local E-business unit.

The employees in the E-business unit do not have a formal education within the field of IT. Most have a medical background in nursing, medicine or pharmaceuticals, but many have taken IT related courses. The IT systems developed are aimed at patients or doctors, both medical practitioners and physicians. Some are training systems others are web-based information systems about specified diseases. The E-business unit defines its purpose and work tasks as facilitating communication and relationship-building via all types of media, e.g. Internet, CD-rom’s, video, paper etc., for the benefit of both external (patients and doctors) and internal customers (departments and IT project participants).

In AstraZeneca, the emphasis is on sales and innovative ideas that can increase the market’s awareness of the company and further sales of its products. As such, much time is devoted to identifying, planning, and performing new projects. In contrast, there is no tradition or procedure for evaluating and drawing lessons from these projects and project participants just move on to the next assignment. The development of projects is also performed without the support of an explicit project model.

AstraZeneca’s sales orientation, frequent job rotations among its staff, and a ‘polite’ culture that favors new ideas and enthusiasm over criticism mean that project documentation and reflection have little interest and cultural grounding. This in turn
means that knowledge in AstraZeneca belongs to the individual and that it is important to know who knows what.

The E-business unit was aware of the privileged status of new ideas and project initiation over project reflection of already developed products and performed processes. In August 2004, they therefore sent an email to their colleagues calling for their participation in a project reflection workshop.

"[W]e...have during the years been behind many IT-projects. Some projects have had success and others we prefer to forget...we would like to gather experiences from as many IT projects as possible – both good and bad – in order to learn what works and what does not. Are there commonalities in the projects that succeed and what prerequisites are there for success? Are there elements from previous projects that deserve a new life?” (Email)

THE WORKSHOP

The purpose of the workshop was to create a shared understanding of what might go wrong in IT projects, when and why projects succeed, and to collect these experiences in a manual for future IT projects. The workshop intervention was designed as an externalization process that contained five modes:

- Mode 1: Preparation before workshop.
- Mode 2: Oral project presentations.
- Mode 3: Game session.
- Mode 4: Evaluation.
- Mode 5: Results report.

The actual workshop session covered three modes (mode 2-4) and lasted three hours. Ten AstraZeneca employees participated. Of the ten participants, four people were asked to present four different IT projects in mode 2.

Below, we present and analyze the workshop intervention. First, we draw on narrative theory to analyze two project presentations as stories and to show that their oral nature and story form were central in providing context and creating a shared frame of reference among the workshop participants. Second, we look at the five mode structure of the workshop to show that together, and in the proposed sequence, the modes help establish a link between, and the making of, meaning from individual experience, project stories, and principles for action.

ANALYSIS OF PROJECT PRESENTATIONS AS STORIES

In the following we use the concepts of story as sequences of actions involving actors, goals and plot told from a narrator’s perspective, stories as explanations for the extraordinary, and the notion of individual story reception to analyze all the empirical material concerning the oral presentation of two projects from the workshop’s mode 2.

The decision support project. The workshop presentation that is most referred to in the interviews is the presentation of the decision support project – a project that aimed to provide decision support for general practitioners in four different areas of diseases through integration of electronic patient journals. The project required collaboration between several companies and hospital departments.

The presentation provided the listeners with an exceptional story because the project is widely known in the company as a huge failure. It became a story of surprise because it was openly presented even though no one dares to speak about it and because it presented facts that no one had heard before: As P. stated ”And the decision support project, that was killed years ago, it is practically a joke in this house. No one feels ownership, or responsibility for it, or feels like drawing consequences from the experiences. Despite that it cost us several million Danish Krones. It is a mistake someone once made and luckily those people aren’t here anymore.” (workshop).

When the presenter introduced the project as follows: “P.: I am the one who is going to tell you about the decision support project, which is the biggest and most expensive project that AstraZeneca ever has been involved in” (workshop), the listener was not only introduced to the presenter as narrator and knew that it was his version of the story that followed, the presenter was also aware of how to heighten the expectations amongst his
listeners and use the element of building suspense.

The presenter introduced several story sequences where the organizing principle, the plot, was time. The story sequences contained a number of episodes about the aim, how the project went, and why it went wrong. In most of the sequences the agent was presented as an unknown “we” that refers to the company.

When the presenter introduced the project, he introduced a story about huge losses: “P.: It is exactly five years since the project was stopped, so the period of limitation for crime has passed.” (workshop). He described a story that was a deviation from accepted social practice as projects are expected to go right or not to be mentioned and in doing so he had to explain what went wrong. The explanation became: weak project management, bad specifications, and as the time frame moved, the budget went as well.

For the participants the presentation provided new insight into the project, as one of the interviewees stated “J.: for the decision support project, it has been a ghost story in the company and it still is. It’s almost a funny story. And here it was great to hear about it in a specific way; what it actually was about, what went wrong.” (interview).

As shown earlier the presenter was conscious of the listener’s frame of understanding. When he referred to “the period of limitation for crime”, he knew that the listener had pre-knowledge of the project, and he referred to a shared understanding of the project as a joke that circulates in the company. The listener was, so to speak, present in the story. For the outsider the introduction of the decision support project made no sense, but the insider was able to fill the narrative gaps of the unspoken and create meaning from the introduction.

The asthma game project. The presentation of the asthma game project - a simple game and information about asthma aimed at children - was very different from the presentation of the decision support project. The presenter introduced the main character in the game - Lufte - as the agent. The listener was confirmed in the presenter as narrator via statements such as “He’s really cute”. Later in the presentation, the presenter became the agent, as the story was told from a point of view where she had been involved in development of the game. To keep a flow in the story during the presentation, she switched between Lufte and herself as the agent that controls the actions. In this quote from the presentation Lufte is the agent: “K.: So how he is born? We’re not quite sure, but maybe he came from the Swedish headquarters. I think he was a movie star at first” (workshop). Even though she switched agent, she kept herself as the narrating voice.

The sequences followed the simple project model and described a story that developed from introducing the setting – Lufte, the game, and the project - to the closing of the project. The story became about a small, simple, successful project. “K.: The process of decision and how it all began? Well I think it was quite simple” (workshop) and she continued using phrases that illustrate simplicity: “K.: A small article was made. We had a magazine then called Therapy. A medical practitioner went over [the game] and looked at it from a medical point of view, and this was the article. And that was it.” (workshop). By pointing to the simplicity and the ease of the project, the presenter established a common understanding of small projects as being successful projects. This was in line with the participants’ frustration that huge and complicated projects are difficult to handle and may, as in the case of the decision support project, turn into disasters.

During the evaluation (mode 4) a shared understanding of simple projects as successful projects was confirmed: “S: the reason why we brought that Keep it Simple forward is, (…). The only example that went without huge problems, that’s the asthma game project.” (workshop).

While listening to the presentations the participants used their individual expectations, knowledge of the depicted area, and background to understand and evaluate the presentations and they adjusted the presentations to their present situations. This was evident in the interviews that followed, as the participants referred to very different benefits from the workshop.
“A.: The asthma game project confirmed that the simplest solutions often can be the best. And the decision support project confirmed that we must be cautious of external partners.” (interview).

“P.: I do believe I have carried some things with me, because I have become more insistent on making demand analysis and cost-benefit analysis.” (interview).

Even though the story is individually perceived, the presenter can, by control of the construction of the story process - the events, the episodes and the sequences - establish a shared story (Abbott, 2002). During the workshop, the oral storytelling helped the participants gain both individual knowledge about the projects and a shared understanding of projects they have not participated in. The narrative form created a forum for explanations of events never accounted for before and provoked the presenters to find explanations for the extraordinary events. Table 1 summarizes the analysis and shows that the two project presentations contained all the elements of oral storytelling.

**ANALYSIS OF WORKSHOP STRUCTURE**

In the following we use the concepts of knowledge sharing through conversion of experience into stories, articulation of stories, individual story reception, collective negotiation and understanding of stories and their explanations, and codification of explanations to analyze the workshop structure’s ability to support the process, whereby tacit knowledge becomes shared and codified.

**Mode 1: Preparation before workshop.** The four presenters were asked to send a brief description of what they knew and remembered about the IT project they were to present to the facilitator. In this way, their immediate impressions and prejudices were recorded. As one of the presenter’s stated: ”P.: you asked us to write a spontaneous description of our project ... and I actually discovered that I had some prejudices about that project [the decision support project]” (interview). The presenters were then asked to consider their presentation in relation to a simple project model that focused on development process, roles, and user involvement. “P.: the fact that I had to present meant that I had to look at the project as a project with a purpose, and with some stakeholders, and a budget, in a way which I had not done before … so this method was important, you were forced to look at the project as a whole.” (interview). Through facilitated preparation via inquiry into first impressions and a presentation template structured around a simple temporal project model, the presenters were prompted to explicate and (re)examine their individual experiences and to turn them into a concrete story that had purpose, actors, events and outcomes (cf. the experience accumulation and narrative knowledge articulation mechanisms).

**Table 1. Analysis of Project Presentations as Stories**

<table>
<thead>
<tr>
<th>Narrator</th>
<th>Decision Support Project</th>
<th>Asthma Game Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story sequences</td>
<td>Episodes about the aim, how the project went, and why it went wrong</td>
<td>Episodes about the setting and the successful completion of the project</td>
</tr>
<tr>
<td>Actors</td>
<td>“We”, refers to the company</td>
<td>The game’s main character and the presenter</td>
</tr>
<tr>
<td>Plot</td>
<td>A story about a huge failure, almost a ‘crime’ conducted in the past</td>
<td>A story about a small, simple, successful project</td>
</tr>
<tr>
<td>Explanations for the extraordinary</td>
<td>Weak project management, bad specifications, missed deadline and budget</td>
<td>A simple project is a successful project</td>
</tr>
<tr>
<td>Individual story reception</td>
<td>The project was openly presented revealing unknown facts and a much more nuanced story than normally assumed</td>
<td>The emphasis on simplicity and ease resonated with the listeners’ own experience that complicated projects turn into failures</td>
</tr>
</tbody>
</table>
Mode 2: Presentation. The narrators presented their projects and, based on the spontaneous project descriptions, the workshop facilitator summarized the lessons that could be drawn across projects. During the presentations, the listeners wrote their insights as perceived individually on pieces of paper (keyword cards). “J: I’m pleased to listen to people because this means that you can ask questions.” (interview). “A.: I think that it was good that concrete things were presented. I think that was the strength. Otherwise it becomes very flimsy. During the presentations you got some wow-experiences that actually were stronger than the [game] afterwards…during [the game] you had had the insight, so it was…put into words. So the presentations were extremely important.” (interview). By means of oral storytelling, the project presentations became collective accounts which could be questioned and compared to the listeners’ own experiences. The keyword cards made it possible for the workshop participants to engage in active listening by capturing the insights that were meaningful to them in writing as and when they occurred. This served as a first step towards codification as the keyword cards facilitated an individual formalization of the presentation.

Mode 3: The game. After the four presentations, the ten workshop participants engaged in a game, inspired by design games (Buur and Soendergaard, 2000; Pedersen and Buur, 2000; Nielsen and Pedersen, 2002) (see Figure 1). The participants were divided into two groups and asked to take turns to organize the keyword cards into categories and to give each category a headline, according to rules that resemble Scrabble®.

The participants became players, who took turns to organize keyword cards on the table, e.g. “no project owner”, “no clear agreement with necessary external partner”, “different admin systems”, “unidentified partners” to form a category and to argue for the chosen headline - in this case “Roles”. “J: I have one [card] with unidentified partners. That’s what it says: unidentified partners. That suddenly a partner appears that you didn’t expect. P.: You could make such a headline. You could call it unidentified partners. JC: Could it be just roles?” (workshop). When all players had placed their cards on the table and the game was considered over, each group presented their collection of cards and headlines to the rest of the forum. The presentation of categories served to create a common understanding among all participants and framed the later discussion of future actions (mode 4). The participants were surprised to find that the two groups had formed almost similar categories. It gave them an understanding that these categories had significance. “P.: but I think that for us who where present, I can feel it when we talk, I can feel it when A. and I talk, or when J. and I talk, that it has sharpened our focus on considering an IT project as any other project. That it isn’t something unique that is allowed to flutter about as a big colorful bird.” (interview). The game session made the participants articulate their understanding of the stories presented and it forced them to organize their individual knowledge into a shared and codified form, i.e. agreed upon statements such as ‘different roles’, ‘the aim’. However, these statements were not yet turned into principles for how to perform IT projects in the future, e.g. ‘define the different roles in the project’, ‘formulate the aim’.

Mode 4: Evaluation. The final discussions served as a means to look forward and to create principles for future actions. Additionally the discussions operationalized the individual and the common understanding created during oral presentations (mode 2) and formalized during the game (mode 3). At this point in time, it was important that the facilitator questioned the principles to avoid oversimplification of complex relationships. In the workshop, the discussions resulted in ideas of forming a think tank and a list of criteria for
evaluating IT projects before they start. However, as the participants came from different parts of the organization, the organizational changes are difficult to implement directly. Instead the changes are performed individually and according to each participant’s role and job situation. The knowledge codification mechanism was in operation in this mode, and made the participants focus on prescriptive principles and served as a platform for common organizational development.

**Mode 5: Results.** The result of the workshop included project stories and principles for action. After the workshop, the results were documented in a written report. The report served three purposes: for the initiators it justified the workshop toward management, it secured the workshop knowledge, and acted as a memory aid for the participants. Through knowledge codification the common result and the lessons learned were summarized as a manual for future IT projects. Table 2 summarizes the evidence in support of the workshop design’s ability to facilitate effective knowledge sharing across IT projects.

**REFLECTIONS**

In this section, we discuss the workshop design’s application to other settings and identify limitations and areas for future research.

The ideal background for using the workshop design is a number of projects that can form the pool of project experiences. There is no final answer to how many it takes. In this instance the pool was made up of four projects and it is our estimate that it provided a reasonable background for extracting common experiences. How often the workshop should be applied depends on how often projects are completed. In the interviews that followed the workshops, the participants suggested that the workshop should be held once a year as this seemed appropriate given the number of projects finalized within the company. “A.: It should be once a year or every half year. Not more. We don’t have that many projects” (interview). Another workshop participant’s states “J.: I think that it [a workshop] is a really good idea to put it in the beginning of a project. And after a project, you might add. But to me it would be two quite different matters.” (interview).

The workshop design is not limited to IT projects, but can be carried out in all project organizations as long as a given workshop session focuses on projects within the same domain. Otherwise it might be difficult for the participants to create a common reference point and to transfer knowledge. To bring out as many viewpoints as possible in a workshop session, it is preferable to include participants with different experiences, different roles, from different projects and organizational levels. Decision makers are especially important as they can provide the means to implement the lesson learned.

| Table 2. The workshop design’s support of knowledge sharing across IT projects |
|-----------------|-----------------|-----------------|
| Concepts                              | Modes          | Empirical based arguments                                                                 |
| Conversion of experience into stories | Mode 1         | Workshop presenters agree that facilitated preparation forced them to look at their project experience as a concrete whole with purpose, stakeholders, and events, i.e. as a story |
| Articulation of stories Individual story reception | Mode 2         | Workshop participants agree that the oral project presentations were extremely important as they provided concrete examples, individual insight and opened for questions |
| Collective negotiation and understanding | Mode 3         | Workshop participants agree that the oral presentations provided the (individual) insight, but the game helped them put it into (collectively) meaningful words |
| Codification of explanations         | Mode 4, Mode 5 | The discussion resulted in ideas and principles for future action. The workshop result was documented in a written report. Organizational implementation of the results is not covered by the workshop design. |
The facilitator plays a central role. In this instance the facilitator was from outside the company, but this is not a requirement. However, it is important that the facilitator follows the proposed process, addresses oversimplified conclusions, and ensures that summaries are made during the workshop and in writing. The written summary was, in the AstraZeneca case, a report provided by the facilitator. It could also be an observer who writes the summary, but not a participator because the involvement that the game-like setting requires will make it impossible to both participate and sum up.

The design is based on the empirical material from one workshop intervention and later interviews with select workshop participants. This has been an important first step, but more workshops are needed to test and tune the design. In this case, the chosen project presenters were apt storytellers and the presentation template structured around a simple temporal project model was enough to prompt them to explicate and turn their individual experiences into project stories. This may not always be enough. This raises the questions of: a) how it will affect the workshop sequence and content if the project presenters are introduced to the storytelling technique and encouraged to use this to organize and present their projects and b) what will happen if the other project participants are introduced to the story form and explicitly encouraged to look for the extraordinary and for the causal relationship between events, their explanations, and the overall goal? Thus, given the emphasis we place on oral storytelling, more research is needed to investigate: a) the role of the project presenters, i.e. how different project presenters act, what they emphasize as storytellers, how this influence the workshop, and which techniques can best support the project presenters, and b) whether or not the workshop participants should be introduced to the story form. In addition to testing and tuning the design more research is needed to understand if and how application of the workshop intervention influences action and how the link between the design and organizational change could be strengthened.

**CONCLUSION**

This paper reports from a project reflection workshop and subsequent interviews held with practitioners involved in IT development in the Danish branch of AstraZeneca. It draws on knowledge sharing, narrative theory, and learning mechanisms literature as its analytical foundation. The paper shows that narrative knowledge articulation makes it possible to tie the tacit (unarticulated individual knowledge) and the explicit (explicated facts and principles) knowledge dimensions together, and on this basis, to design reflective workshops that facilitate collective elicitation and sharing of lessons learnt across IT projects.

Using storytelling theory and our empirical material, we propose a particular design structured as a workshop intervention with five modes (preparation, oral presentation, game session, evaluation, result). Oral storytelling permeates the workshop as the foundation for establishing a link between individual project experiences, concrete stories, and abstract principles. Through its sequence and focus on oral storytelling, the workshop design creates a process which lets participants across projects both reflect on their own practice through comparison with others’ and learn from the other partakers’ experiences. The result of the workshop intervention is stories about IT projects in the past and principles for how to perform new projects in the future. For the participants these stories and principles become shared, mutually connected, and each provides meaning to the other.

**REFERENCES**


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