Smart Meeting Spaces for Knowledge Transfer

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Abstract. During May and June 2011, we ran two workshops with a theme entitled "Smart Spaces for Smart People". Although organized under the auspices of the e-Science Institute, the participants came from a variety of disciplines and brought a range interests. We placed a strong emphasis on facilitated discussion, with the clear intention to explore ideas about exploiting the interactions that could occur within smart spaces. Although the workshops formulated the view that no space is, or can be, inherently smart, we deemed certain components to be essential for a system to achieve smartness, most notably people; the role of hardware and software technologies is to confer capability. The lessons we learned are applicable to any smart meeting. We grouped our findings under four sub-themes that we identified as a basis for the successful planning and conduct of smart meetings. After examining the principal ideas associated with each sub-theme, we go on to consider how these ideas might influence strategies for exploiting smart meetings for knowledge transfer. This paper is the third in a series of three, each dealing with different aspects of the workshops and how they influenced our thinking about knowledge transfer meetings, particularly in the context of sharing research outputs.

1 Introduction

Knowledge transfer is a practical problem to which solutions can involve a range of methods and activities. In this paper, we focus specifically on meetings as activities contributing to the knowledge transfer process. Using the experience we acquired from running two *smart space* workshops we aim to explore how conducting meetings in smart spaces might enhance the knowledge transfer process. We ran the workshops under the auspices of the e-Science Institute with a theme title of "Smart Spaces for Smart People", with the original intention to explore interactions between the physical and digital worlds. However, the emphasis shifted to the productive exploitation of spaces, especially meeting spaces, ascribed as *smart*. We describe the workshop methodology in the first paper of the series [7] and explain how we collated the results and assessed the outcomes of the two workshops. In the same paper we clarify our basis for regarding smartness as *conferred capability*.

Although the aims and objectives of the workshops expanded, our initial approach was to consider smart environments in general, but with specific attention to research, teaching, and meeting spaces. For both workshops, we invited

participants with a range of interests, some of whom attended both events. We placed a strong emphasis on facilitated discussion, apart from the opening session, which included brief introductory presentations. The meeting rooms for both workshops contained audio-recording devices and for the first workshop, we also used video recording. Both meeting rooms offered wireless access to Twitter; for the second workshop, we also projected the Twitter feed onto a screen. Our use of Twitter had several underlying purposes, all of which are capable of being relevant to knowledge transfer:

- We wanted meeting participants to be able to capture thoughts and ideas at the time they occurred, but without interrupting the flow of the discussion.
- We wanted a time-stamped trace of the key points in the discussion, especially the perceived turning points.
- We wanted external parties who were interested in the workshops but unable to be present to be able to inject observations and questions.

Tweets from remote followers were few in number, but were usually relevant responses to points made in tweets from the meeting participants. Such use of Twitter could be valuable for knowledge transfer sessions. However, in our subsequent analysis of the workshops, we were aware that a contemporaneous Twitter feed could be distracting as well as beneficial.

For both workshops, we also used an independent note-taker, and the same person (CB) acted as facilitator for both workshops, using flipcharts to capture the key points raised during proceedings. These traditional capture methods were not only complementary to the audio- and video-recordings but also provided valuable insights into the factors important for effective meetings. The evaluation sessions of both workshops concluded that, in broad terms, having a facilitator was valuable for the conduct of what were intended to be *smart* meetings.

An important motivation for organizing the workshops was to explore techniques to improve the recording of research processes and outputs. We see a helpful analogy between knowledge transfer and the sharing of research outputs, allowing that the two endeavours might be on different scales.

We recognise that neither meetings in general nor the use of smart meeting spaces offer solutions for all aspects of the knowledge transfer problem. To cite just one example, it is unlikely that any smart system will materially assist the elicitation of tacit knowledge. Indeed, we have an intuitive concern that some individuals, when in a space ascribed as *smart*, might feel inhibited about disclosing some or all of their tacit knowledge.

2   The Role of Meetings in Knowledge Transfer

We fully accept that meetings are but one of a range of activities associated with knowledge transfer: the process is broad in scope and organizations have devised several ways to effect knowledge transfer. The transfer process involves more than just communication, but the effectiveness of the latter can materially affect the perceived satisfaction with the process. For the purposes of this paper, we assume

that the context of transfer is cooperative and that the structure and organization of the knowledge itself do not present hurdles to the process.

Knowledge transfer is more than a form of training, although learning is a key part of the process for the recipients. If the medium for knowledge transfer is a meeting, it is important to create a supportive learning environment. The University of Southampton encourages students to design smart learning spaces for themselves with the "Create Your Campus" competition [1].

Clearly, the calibre of the interactions between participants determines the overall effectiveness of any meeting. Reviewing the knowledge sharing literature in 2003, Cummings examines a variety of factors affecting knowledge sharing [2]. Considering physical distance, he explains the evidence in favour of face-to-face meetings facilitating knowledge transfer in terms of the relationships between the parties.

The effectiveness of knowledge transfer meetings will also depend on the support provided. The UbiMeet workshop [3,4] explored this issue, noting in the overview that, for meetings to be more engaging "requires relaxing the notion of meeting support from a particular panoply of conferencing and annotation technologies to more broadly any set of tools that enable synchronous communication amongst a group as well as tools that can help compensate for differences between different people's situations."

Unsurprisingly, the emphasis of UbiMeet was on technology, and solutions based on ubiquitous computing. Traditional forms of support, involving humans, also have a significant role, such as that of a *facilitator*. While numerous sources consider the role of a knowledge sharing facilitator, the key lessons are presented in a USAID wiki, derived from a program set up to assist agencies in Building more Effective Learning Organizations, the BELO program [5].

Knowledge transfer meetings can be non-formal, as exemplified by the Open Space method [6], which encourages groups to define their own tasks and to adopt their own approach to dealing with those tasks. The facilitator has a key function in bringing the group together, identifying the task, and steering the group towards completing the task.

3   The Conduct of *Smart Meetings*

For both workshops, it was always our intention to explore ideas about exploiting the interactions that could occur within smart spaces. In our paper about experimenting with smart meeting spaces, we expound the view that no space is, or can be, inherently smart [7]. We deem certain components to be essential for a system to achieve smartness, most notably people; the role of hardware and software technologies is to confer capability.

The lessons we learned are applicable to any smart meeting, regardless of its purpose. We identified four sub-themes as a basis for the successful planning and conduct of smart meetings:

- Joining up
- People

- Decisions and Provenance
- Capture and Retrieval

We also developed three key considerations relevant to those sub-themes:

- Designing – applies to all four sub-themes
- Capturing and Analyzing – applies particularly to *Decisions* and *Capture*
- Selecting and/or Exploiting – applies particularly to *Joining up* and *People*

We now examine the principal ideas associated with each sub-theme, and some of the questions arising from the three considerations. In the next section we will go on to consider how these ideas might influence strategies for exploiting smart meetings for knowledge transfer.

Joining up means ensuring that the processes of the meeting are as seamless as possible and minimally intrusive: participants should be free to focus on the project rather than the process, a goal equally appropriate for the *People* sub-theme. A joined-up meeting uses the collective power of the participants, local and remote, and including where applicable their social networks. To assist joining up, any applications should be collaborative and interactive, and any technologies deployed should be interoperable.

From the *People* perspective, the goal must be to facilitate human-human interaction and communication, which can be assisted by using calm (non-intrusive) technology. It will also be important to ensure accessibility and to promote reward and recognition for the contributions made by the meeting participants. We explore these ideas further in our paper about the human aspects of smart spaces [8].

An implicit function for the smart meeting support is to capture the cycle of information, which involves recording context, evidence, and identification. In most, but not all, cases, it will be important to monitor participation: who did and said what. These functions underpin the *Decisions and Provenance* sub-theme.

The *Capture and Retrieval* sub-theme is concerned with the more tangible products of the smart meeting. Data, information, and knowledge are all important, but it is the *metadata* that is likely to be most valuable for the subsequent retrieval, reuse, and repurposing of the knowledge transferred. Capturing a range of records, annotated with semantic links, is capable of providing an accessible and reliable resource.

Although we have noted the importance of using non-intrusive methods, 'constructive mediation' has a vital role nevertheless. Quoting from one of the lessons of the BELO program [5], "facilitators are crucial to engaging staff and keeping momentum."

The questions arising from the three considerations were numerous. We reproduce here a small selection, chosen for their potential relevance to exploiting smart meeting spaces for knowledge transfer:

Designing:

- When is a space *good enough* (to enable progress)?
- How do the space and activities interact? Is customizing appropriate?

Capturing and Analyzing:

- What is the context and what are the purposes of capturing?
- To what extent are unanticipated uses catered for?

Selecting and/or Exploiting

- What should be the balance between selecting resources for addition to a space and exploiting the characteristics of existing spaces?
- Do spaces become smart – or smarter - as people enter?

4   Strategies for Exploiting Smart Meetings for Knowledge Transfer

It is debatable how often the ideas discussed in the preceding section are realized in practice, but they are nevertheless capable of informing discussions about strategy. We consider three aspects:

- Bringing the knowledge into the meeting space;
- Maximizing the benefits for the people in the space;
- Enabling people unable to be in the space to share the transferred knowledge.

Simplistically, we can refer to these aspects as strategies for before, during, and after the meeting. An important principle is that the meeting space exists, notionally at least, throughout the transfer process, and not just while the meeting itself is in progress.

Applying that principle to bringing the knowledge into the space, prior preparation, capture of data and metadata during the meeting, and analysis after the event are all parts of the process. We describe these activities as *continuous curation*.

Here we are using the term *data* in a generic sense, allowing it also to encompass information and even knowledge. Awad and Ghaziri place these concepts in a pyramid, describing *information* as data "in formation" and *knowledge* as actionable information [9], as shown in Figure 1. Bellinger, Castro, and Mills propose *connectedness* as the key to understanding meaning [10], although we prefer to label the vertical axis in Figure 1 explicitly as *understanding*.

For a joined-up knowledge transfer process, we need access to the data and information that lies below the knowledge in the pyramid, possibly in more than one form. We need metadata to facilitate retrieval, and cross-reference links to enable exploration. To support continuous curation we need a *meeting log system*, a tool that we were very conscious of lacking during both workshops.

Such a log system would combine meeting minutes with short contributions from meeting participants, keeping entries in chronological order but allowing links to previous entries, and enabling tagging with keywords and filtering of entries by author. A log system would also provide the natural foundation for the comprehensive record, with semantically rich links to the data captured by the other technologies. We are not aware of any tool currently in existence that meets all the requirements we envisage for a meeting log system.
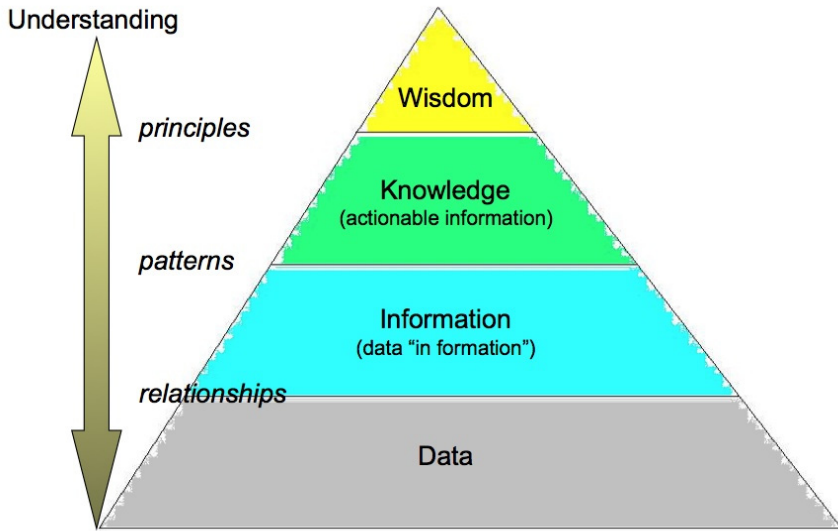
Adapted from: *Awad & Ghaziri* <u>and</u> *Bellinger, Castro, & Mills*

Fig. 1 The Data, Information, Knowledge, Wisdom (DIKW) pyramid

Linking is particularly important after the meeting, and even more so when transferring knowledge. Analysis after the event almost inevitably introduces editorial influence. Cross-links protect against consequential misunderstandings, because they allow people to check the edited record against the raw data.

People present in the space – participants in the knowledge transfer meeting – have an advantage with regard to confirming accuracy and, if necessary, veracity. People who were unable to be present but still require the knowledge will rely on links for navigating the meeting record. For example, a person who is unclear about the meaning of a particular item can trace back to the audio-record to listen to what the speaker actually said about the item. The person can also refer to the meeting log for any short contributions made during the period for which the item was under consideration. Moreover, people inspecting the knowledge transfer record after the meeting should be able to annotate the record. By doing so, they further enrich the knowledge: continuous curation never stops.

Although the workshops were not run on a large scale, with participants in several, distributed, locations, we remain conscious of the need to ensure that all contributions, however made, are effective, and that the record of knowledge transfer is accessible to people who were unable to be present but need to refer to that record subsequently.

5 Conclusions

We have analysed the results of two workshops that we ran with the intention to explore ideas about exploiting the interactions that could occur within smart

spaces. Building on those results, we have presented an assembly of ideas associated with the effective conduct of smart meetings, presenting these ideas under four sub-themes that we identified as a basis for the successful planning and conduct of smart meetings. We have also posed a small selection of questions that arise from three key considerations that the workshops found to be relevant to those sub-themes.

We have proposed a set of strategies for exploiting smart meetings for knowledge transfer, derived from our analysis of the workshop results and the ides that emerged. Although we base our strategies on ideas explored rather than experiments conducted, nevertheless we consider that the suggestions embodied in those strategies do offer routes to enhancing the knowledge transfer experience and improving the satisfaction of the participants in the transfer process, before, during, and after the smart meeting.

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