Building working platforms for the virtual team knowledge work: experiences from a research project

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ABSTRACT

Productivity in virtual teams is an important question to the knowledge society. This article reports on the use experience of an Internet-based communication platform called cAme. The tool was used by a research group having participants from four universities and five other organizations scattered across Finland. We start our article with discussion on the demands of virtual teams to such joint working platforms. Then we shortly present the Internet Standards Adoption (ISA) model as a possible model to understand also the dispersion and user acceptance of joint communication platforms in virtual team environment. Finally, we conducted a survey among the users of the platform. Our conclusion is that unless very user friendly, users search for solutions to their daily activities from their standard ways of working, such as exchange of attachments in e-mail.

Keywords: virtual teams, communication platform, knowledge sharing

1 INTRODUCTION

Productivity of knowledge work and that of virtual teams in particular is a key challenge for the modern society [1,2,3]. There are many critical voices telling that productivity in knowledge work is not up to the level it should be [4,5].

We formed a virtual team doing research work, also very basic knowledge work, over a period of three years. Although we consider our research work as productive, we are still worrying whether we really were using the right tools for our work, and which were the productivity impacts of our tool choices. Our work comprised mainly of individual and work group in dispersed locations. Investments were however done to get to know all team members personally, and so yearly 2-3 workshops where all should have attended were organized. Here people had a possibility to get to know each other. Our research team comprised a virtual team of some 30 individuals from 9 organizations. It was a genuine virtual organization, in operation over a period of three years. 80% of the staff of the virtual team remained unchanged over the whole working period of the virtual team.

In our literature study, we shortly go through some relevant theories on virtual teams and innovation adoption, also in our case the adoption of a software platform for team communication in a virtual team organization. After that, we report results of a small survey among our cAme users, focusing on the good and bad characteristics of the used tool

and tools for virtual teams platforming in general.

Our research questions are:

1 which are the critical factors that affect productivity in virtual teams?

2 how can collaborative platforms help in the work?

3 how did our tool, cAme perform in helping our virtual team?

Our research here comes out as a small survey.   However, it must be remembered that also the authors worked with cAme intensively over a period of three years.   Our own experiences of the tool cannot be without affecting our analysis of the answers from the survey. So the study has flavors of action research also.

2   VIRTUAL TEAMS

According to Gristock [6], virtual teams have the following characteristics:

- Mediated interaction
- Geographical dispersion
- Mobility
- Diversity of actors
- Asynchronous work time
- Temporary structure.

The characteristics that makes permanent arrangements, often leading the learning curve and so making productivity gains real, difficult in such an environment is the temporary structure of the work. Asynchronous working times and geographic distance, that allow communication only through electronic means, can be a hinder for productivity.

One useful framework on virtual contacting is presented in Figure 1 [7]. Through the original work was meant to cast light on electronic commerce, the activities of information dissemination, information communication, transacting and virtual distribution of goods are crucial even in the work of virtual teams.
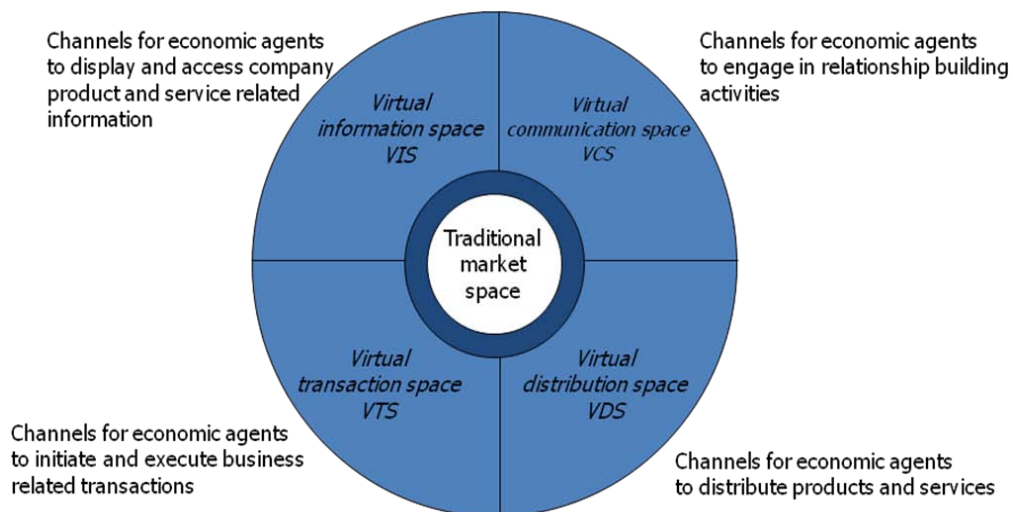

Figure 1.   The four communication spaces presented by Angehrn [7]

A dream could be to get a virtual team to become a virtual community, as described by Rheingold [8]: *"Virtual Communities are social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace"*. The message here is that virtual communities would be self-steering groups with internal motivation to get things done, so productivity would be no crucial thing, and external control would be very little needed.

A typical problem in virtual teams is that of social loafing. The concept is described as follows [9]):

- Social loafing..describes a person who provides less than maximum possible participation or effort due to motivation and circumstance
- Collaborative technologies (CTs) can mitigate the impact of social loafing in some ways
- Social loafing represents significant process losses for teams and reduced productivity gains for organizations.

As can be read, virtual team arrangements provide good opportunities for social loafing, and thus risk the productivity of virtual teams.

3   INNOVATION ADOPTION

In their article [10], they discuss how the internet protocol IPv6 is being adopted. The Hovav & al. Internet Standards Adoption (ISA) model is presented in Figure 1. According to this model, adoption speed and type depend on how good the innovation is (usefulness of features) and how much the environment values and wants the innovation to proceed (environmental conduciveness).

Usefulness of features
•Relative advantage
•Compatibility
•Observable benefits
      •Trialability
      •Observability
Can be high or low

Environmental Conduciveness
•Network externalities
•Related technologies
•Installed base/Drag
      •Inertia
      •Sunk cost
•Communication Channels
      •Available information
•Sponsorship
•Resources
      •Availability and allocation
Can be high or low

influences
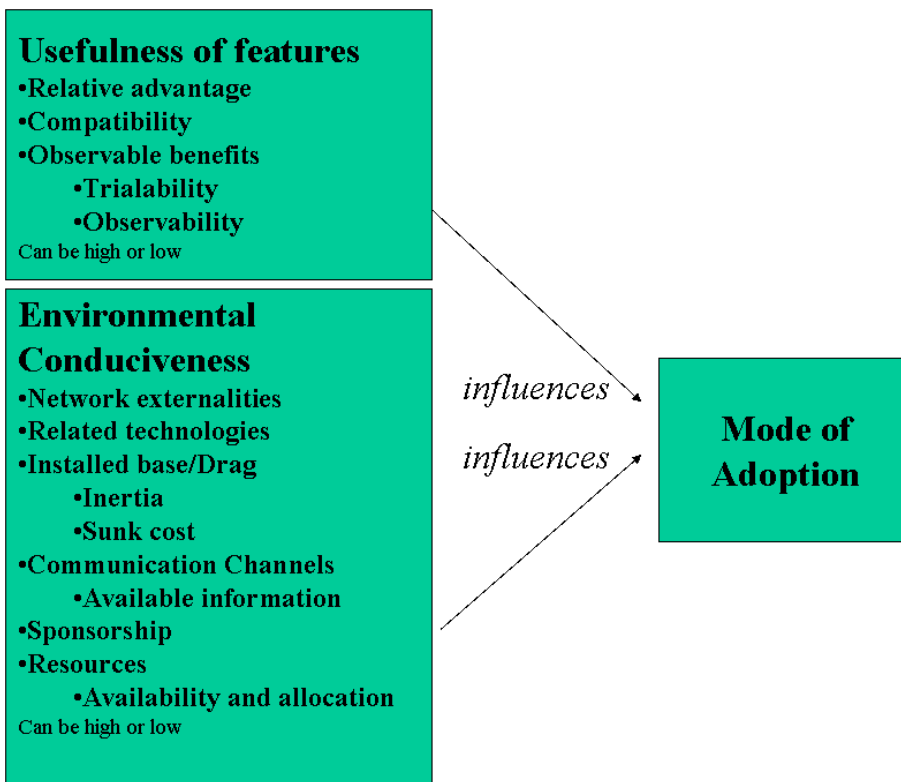
influences

Mode of Adoption

Figure 2   The Internet Standards Adoption (ISA) model by Hovav et al. [9]

The model is usable in our environment, as it explicitly stresses that tools can be adopted in different ways.   Further, it acknowledges richly the role of external factors such as social pressures, network externalities and sponsorship in the adoption of the tools.   The question of installed base is too very critical.   For example, in our analysis we discuss the difference between using e-mail or our tool cAme.   A crucial difference between these two tools is the installed base. This also leads to the fact that in the case of cAme, due to small user base, one can not expect to find very many positive network externalities. The upper part of the model, that of usefulness of the features, is not deviating very much of classical adoption models such as those of innovation adoption model of Rogers [11].

4   EMPIRICAL RESEACH

Our research work that could have used the cAme environment lasted officially three years and in practice a little longer. The cAme tool was taken into use in the first months of the work.   So, in principle, there should have been enough time to learn the use of the system, the learning investment of the system could have been amortized

over a longer period of time. As the system was taken into use quite in the beginning of the project, no other platforms could take over the position of an established platform before this system was taken into use. The platform was given free to the participant members and organizations, and its costs were covered by the central project management. So, cost considerations should play no role in the acceptance or non-acceptance of the system. The only thing that comes into mind in this respect is, that users do maybe not a value a tool that is given free to them.

We sent a questionnaire to all the institution members that participated in our team work during the last working year. The whole group was 27 members, and we got back 9 answers, also a response rate of 33%.Of the 9 respondents, 4 had used cAme in our project, one in other connections, and four did not use cAme.

Our first question was about the benefits of the tool. It did not turn out to be interactive tool, which would facilitate on-line or close to it work on documents simultaneously. Rather, the tool was used as database, through which even big amounts of data could be distributed efficiently.

Four respondents also did not use the tool. Astonishingly, there had been some difficulties with user education and engagement, as two respondents reported that they never got possession of the user ID's for the system. They clearly did not want to ask for it, as the group was anyway in an intensive interaction, exchanging ideas at least weekly. One non-user respondent said he had tried, but that the tool did not provide the value expected.

We further asked about examples of functional working platforms for virtual teams. Using traditional e-mail and attachments still seems to be the dominant way of working. Video-conferencing tools had too been tested, but the comments indicated, that in the case of these tools the media too strongly catches the attention, and too little attention is left to the actual work to be done.Many other tools were too mentioned. Among the ones in our sample, the names of Wiki, Adobe Connect Pro, Skype, Windows SharePointServer and MOSS came up.

One respondent wanted to have clear defined document paths reflecting work processes of the task, catering also for traceability and management of the work tasks. As virtual organizations are not permanent, expecting such services from the tool might be too much demanded. Some respondents also reminded us that their own organizations have standardized tools that they must use, and synchronizing material in many platforms is not possible.

One incident during our work that might have affected the application of the platform was the introduction of a new version of the tool to the last year. This version added a new layer to the software, allowing it to run more fluently and error-free on all browsers. Unfortunately, this extra layer made the tool slower and more complicated to use. Some users were dropped out after this version change.

One comment was that such a tool is better for idea generation and strategic work demanding just short documents, finally it is not agile enough even to work as a document database for bid data masses. This might be there because of the limited data management and metadata services of the tool.

5   CONCLUSIONS

Our conclusion is that such tools still seem to lack the needed functionality. Unless very user friendly, users search for solutions to their daily activities from their standard ways of working, such as exchange of attachments in e-mail. In virtual teams, reaching the phase of virtual information space as presented in the ICDT-model seems to be easy, but the other spaces are difficult to realize. Electronic mail, supported with personal meetings and phone conversations, seems to be so dominant way of working, that turning daily operational communication to some other closed

environment of platform seems to be difficult, if not impossible. Individuals are not willing to separate their communication space to several discrete platforms. In daily knowledge work, there are seldom structured transactions, and so the transaction space of the ICDT-model is not actual. Delivery of ready products, such as reports and manuscripts, again happen easily through the specific platform, but often these activities also take place through electronic mail. In daily operative project work, the information space and delivery space get mixed up.

Social loafing might be a problem in any virtual team. Modern platforms for virtual work usually contain very extensive and easy-to-use log functions, which serve the purpose of identification of social loafing. However, individuals can take advantage of the systems, and produce a lot of log history, without really actively contributing to the real work.

In our case, the users were not very happy with the used tool. In daily discussion, especially the cumbersome user interface of the tool, the difficulty of attaching files to structures, and slow functions caused a lot of dissatisfaction. In terms of the ISA-model, the external conduciveness of having a tool for the team was clearly a more dominant factor for adopting cAme than usefulness of the features of the tool.

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