

BLOGS ON VIRTUAL KNOWLEDGE WORK

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FOREWORD - EMERGING NEW WAYS OF WORKING

These blogs are about distributed, mobile and multi-locational knowledge work, the factors enabling and hindering it, and how these factors influence its sustainability. New ways of working are demonstrated through the increasing prevalence of telework, that is, work outside the main office from multiple sites, mobile work, and virtual collaboration from remote places. New flexible ways of working are emerging, but working practices are still formed, resulting in functional, leadership and management challenges. In the following sections, I will shortly describe the challenges and some ideas for meeting them as they are suggested in the blogs.

MULTI-LOCALITY, MOBILITY AND DISTRIBUTED COLLABORATION

The purpose of blogging was to inform companies that participated in our research project¹ about the newest developments in multi-locational, mobile and distributed work. A certain missing global mindset was found to be a joint challenge among companies. Global settings, when companies are operating in different countries and continents, introduce challenges of crossing geographical (How do I understand what others are saying?) and temporal (What time should we work together?) boundaries. In fact, it seems that even a minor disruption within a workplace is enough to represent a challenge. There is evidence that working 30 meters apart from other persons already decreases the frequency of communication between team members, which then may have disturbing effects on, for example, co-ordination.

Another purpose for blogging was to help companies in their efforts to develop their global practices. Therefore, the blogs provide much advice and numerous guidelines. Their message is that, by developing programs to support and enable distributed work, it is possible to increase productivity, reduce costs, and improve employees' quality of life.

There are many reasons for implementing new ways of working, such as the need for talented people working from diffuse geographical locations, the temporary nature of project work, the potential productivity benefits of a 24/7 work cycle, the need to understand and work in a local culture, and the new Generation Y entering

¹ **vmStan - Virtual and Mobile Knowledge Work (2008-2010).** vmStan is a collaboration project between Aalto University School of Technology and Science and Stanford University. It was funded by Tekes and participating companies (Cargotec, Kemira, Kone, Pöyry and Tieto). The target of the project is to perform world-class research as Aalto and Stanford collaborate on and transfer the results, together with the consultant partner Humap, to Finnish industry for the development of productivity and well-being.

working life already familiar with working online. Increasingly, climate change and other environmental issues have strengthened discussion of the needs to develop new ways of working that are environmentally sustainable.

One of the features of the new ways of working is that employees work only temporarily on any one particular team and are members of multiple teams at the same time. This creates a situation of multitasking and requires that workers pay attention to how to manage their time and attention serving on multiple teams. One of the blogs claims that heavy multitaskers who use several media at the same time are bad at multitasking! Often multitaskers are knowledge workers whose number has increased with the increasing complexity and knowledge intensiveness of working life and service production. It seems to be important to identify the nature of the knowledge work performed by each employee within an organization – as everybody engages in some knowledge work. They just engage in it to differing degrees and within different contexts. Therefore, profiling knowledge workers and the content of their work provides the basis to provide support for these employees. To identify supporting factors, it is necessary to analyze the requirements in physical, virtual and social spaces and develop practices for working in them. The message of the blogs is that these three spaces are embedded and integrated within any location where work physically takes place. The key issue is to find and identify the hindrances and enablers in these environments in order to create a sustainable multi-locational workplace.

THE INCREASED IMPORTANCE OF PHYSICAL SPACE

A physical space consists of all the material objects and stimuli and their arrangements, for example, in an office or a customer site where a remote employee works. Work distributed across multiple locations increases the meaning and importance of workplaces and working environments. In the past, management needed to pay attention only to the physical arrangements of the main office. Today, their employees use many other places for working, such as at customer locations, at home, in cars and on trains, and at hotels and public places like cafes. If employers are – and they should be – interested in enhancing their employees' productivity and supporting their well-being, they need to shift their attention to places outside their main office window.

A question repeatedly presented in blogs is: What is the best place to work with different types of jobs and tasks? The answer is not simple, as the "best place" is determined by several factors, such as the task to be done, the amount of interaction needed for it, and the resources provided by different spaces and the person him- or herself. Some companies have comprehended the flexibility needs and

have started programs to develop workplaces wherever their employees work. Two key points in the policy are as follows: first, profiling of employees based on their tasks and jobs, and, second, integrating human and organizational issues with physical premises and technologies by developing them simultaneously as a matter of company policy. In practice, this means offering flexible, multi-purpose work spaces in the main office when employees choose to come there and offering other places to work which have sufficient technologies, for example, in satellite locations like homes and drop-in centers. If everything goes well, the change can bring benefits, such as better job satisfaction, reduced turnover, lower real estate costs, less travelling and more effective use of time.

PRESENCE, VISIBILITY AND ENGAGEMENT WITH VIRTUAL SPACES

Within a virtual space, people meet and collaborate with the help of information and communication technologies, for example when searching for data and communicating with collaboration tools. The key enabler for new ways of working is technology enabling communication and collaboration over the Internet. The ability to access information and to social network in an intuitive manner is an enhancing power certified by Apple and Google. Technology also provides possibilities to be visible to others from afar within shared collaborative working environments.

During the blog writing, some rather new technologies became more widely used, such as advanced videoconferences and Virtual Worlds aiming to increase the naturalness of communication by supporting real-time, face-to-face meetings. Everyone knows that one of the main reasons to avoid working in distributed settings is the lack of face-to-face contact, which has been considered to have positive influence on the development of trust, identification and commitment. During last two years, due to the economic crisis, global companies have purchased these tools and have managed to reduce their travelling costs. Small 'born-global' companies utilize the freeware tools available on the Internet. As always, there are also pros and cons to these technologies. On the positive side, the benefits include strong feelings of presence among the partners and saving time, money and CO₂ when travelling less than before. Some of the disadvantages include the fact that, currently, only a limited set of locations at a time are available for meetings, videoconference equipment is expensive, and also the meeting times may be inconvenient.

The second newcomer in technology intended for organizational collaboration is Virtual Worlds, which probably offers to employees a more comprehensive engagement and presence than the former generations of collaboration technologies. During the project, different virtual worlds such as Second Life and Teleplace were

tested and had promising results. Virtual worlds differ from high-fidelity videoconferencing with their cheaper price, as they use the Internet. They can be used for collaborative meetings, for learning and training sessions, large events like presentations or conferences, for product launches by visualizations and simulations, and for product design. Virtual world applications contain many tools: you can share Word and PowerPoint documents as well as show videos and pictures in addition to talking and chatting. The advantages of virtual worlds are very similar to other online collaboration technologies; for example, they have lower travel costs, provide access from anywhere with an Internet connection, and contribute to rather strong feelings of presence and visibility. In addition, they can be tailored to the specific needs of an organization. The disadvantages include the still early age of the technology, which results in technological problems and low user-friendliness; for example, the interfaces of different worlds are inconsistent, there is no interoperability between worlds, and avatars can seldom capture users' real appearance. Finally, certain blogs call attention to the fact that there is hardly any research on their impacts on productivity, teamwork and the quality of interaction. In fact, other technologies like social media may also play a crucial role in the future in creating feelings of informal community among distributed teams and their members.

SOCIAL SPACES

A social or interaction space refers to the surrounding human social context and the network existing in each physical location in which people meet, formally and informally, team members, managers and other people, for example, when communicating in a meeting room, in a coffee room, in hallways, and in virtual meeting places. Intra- and inter-organization social space is important in many respects.

The challenges of social spaces arise when it is acknowledged that working in distributed settings is more complex than being located in the same place. The most meaningful challenge is related to communication. The reason for its importance is simple: collaboration is not possible without communication! How then to communicate and share knowledge effectively with members of different cultural backgrounds and languages, especially when they work from afar? It has been found that instead of building empathy, in some cases, cultural stereotypes are stronger and less favorable on global teams. Global teams frequently suffer from coordination problems, crises of trust, uncertainty and ambiguity, and unhealthy subgroup dynamics, such as conflicts. According to one blog, the typical reasons for conflicts include: diversity between the stakeholders, mistaken assumptions, stakeholder obscurity, and a lack of communication.

Some of these challenges are the result of cultural differences between the countries in which the team members are located. There are, concurrently, the means to overcome cultural barriers in distributed work. In one of the blogs, Professor Hinds mentions that these means for overcoming cultural barriers include site visits, liaisons, stability, removing threats and frequent communication. Also, increasing people's social competencies by training can help in communication and when crossing cultural borders. Luckily, it is possible to develop and maintain group-processes, for example, by arranging annual face-to-face meetings, communicating, balancing tight and loose control, appreciating diversity, and paying attention to both local and distant team members. Within this context, it seems important to learn to express emotions via electronic communication.

One example of new practices within the global workplace is the use of the "follow the sun" principle to reach a 24-hour working time. At first glance, this may sound like an extreme measure for intensifying work. In practice, however, it simply refers to rotating work from team members in the East to members in the West so that each sub-team works during its normal local business hours. However, this is usually managed only periodically, and needs well-defined and learned practices to succeed. Of particular interest are the observations made in one blog about a fully virtual organization with no specific location that people can visit whenever they choose. Researchers found the following practices to be most important for the proper functioning of a company: a high degree of accountability, regular and structured meetings, team protocols and etiquette, rewards, tools for interaction, a community of respect and trust, proactive management, careful recruiting, and a spirit of fun.

One of the challenges of social space concerns leadership and the remote management of distributed employees. Our own studies at Aalto University have shown that distributed team leaders perform several roles simultaneously. Traditionally, managers relied on their possibilities to observe and control directly what their employees were doing. This is, of course, also technically possible from a remote location, but it can be discouraging and will not motivate the employees. It seems that a manager's proactive and accessible style of communication is more important than control. With distributed work, frequent virtual communication, whether daily or weekly, depending on the situation, was important for knowledge sharing and maintaining a mutual understanding of goals and progress. In addition, it is important to provide autonomy and social support to motivate distant employees. Our own studies have shown that fairness in virtual teams matters; it is important in distributed settings that decisions are made in a transparent manner and that employees' voices are heard.

Distributed, global companies also need new ways of formulating strategies and policies. The message of the blogs is that it is necessary to consciously build policies and practices for working remotely and leading teams in distributed and multi-locational settings. In one of the blogs, the starting point of the integrated policy is formulated in the following manner: “Many different stakeholders have different expectations, requirements, and solutions to workplaces, e.g., facility, IT, HR, and financial departments.” These differences must be overcome and companies must globalize their new ways of formulating working policies, as one size does not fit all.

PRODUCTIVITY AND WELL-BEING OUTCOMES

New ways of working should be sustainable in order to achieve a balance between productivity and well-being. The factors influencing knowledge workers’ productivity is one of the main questions of this book. Blogs describe many factors that either hinder or support work. For example, excessive mobility may have detrimental effects. It is comforting to note that, by developing working practices, it is possible to avoid many of the hindrances that exist in distributed work. It seems that IT and its asynchronous use have a positive effect on productivity. On the other hand, some researchers argue that being able to read unconscious social signals plays an important part in productivity. Is this possible in electronic communication? One of the controversial topics is multitasking. Research shows that, at a certain point, multitasking may be detrimental to knowledge work productivity. One question concerns creativity: Is creativity possible in virtual collaboration? One blog discusses this topic by focusing on the role of team connections in creativity. It concludes that new knowledge is created and maintained within a duality of connections and disconnections: we need others to discuss and we need to be alone to reflect!

Well-being is the other side of the coin. One blog asks if virtual work is a health risk. It seems that, although e-mails, instant messaging, mobile phones and other wireless communication technologies offer people greater flexibility and control over their work, they are also widely perceived as sources of stress. Oftentimes, working from multiple locations means long working hours and working at unusual times. Face-to-face and electronic social encounters helped the people being studied to cope with the stress.

ABOUT BLOGS

The 55 blogs were written within the framework of the vmStan project by its researchers – Niina Nurmi, Petra Bosch-Sijtsema, Virpi Ruohomäki, Anu Hakonen and Marko Hakonen. In all, the content of the blogs is rich in its information. I am very proud of the book as it combines the newest findings on the developments in the research and development of multi-locational, mobile and distributed work. This book is a diary by researchers who, when smelling and tasting the new winds in fields, found inspiration in the environment of Stanford University during almost three years of collaboration.

The structure of the book is chronological: it begins on the 4th of May 2008 and ends on the 30th of June 2010. The blogs were written based on the discussions with participating companies and on the writers’ intuition about their needs. They were published in a joint collaborative working environment and were additionally sent via e-mails. Many thanks to all the contributors. This has been a great effort!

Virtually Yours

Otaniemi, 19th August 2010

Matti Vartiainen

1. CREATING THE GLOBAL MINDSET

As a result of the vmStan kick-off meeting in Otaniemi on March 13, 2008, the following development needs of the distributed virtual collaboration in the participating companies were defined:

- The global mindset
- New working methods to support distributed collaboration
- Collaboration technologies which enable virtual meetings and teamwork
- Feeling of togetherness with the distant team-members
- Proactive communication: Where? When? and How the work is proceeding?
- Clear and simple communication rules
- Slower progress in distributed than collocated teamwork
- More efficient processes for distributed projects
- Networking, sharing experiences and ideas

During vmStan project we TKK & Stanford researchers and Humap consultants will help you developing these issues among others in a way to more efficient global collaboration. We have several working methods for doing that during the project: face-to-face training workshops, Virtual Learning Café seminars, VITAL Web Tool, Virtual Well-being measurement, and this Virtual Knowledge Work –blog.

We will blog about these above mentioned challenges, your development needs starting with the global mindset.

For organizations operating on a global scale, developing a global corporate mindset has become a key prerequisite for successfully competing and growing in worldwide markets. The corporate mindset determines to what extent management encourages and values cultural diversity and regional potential while simultaneously maintaining a certain degree of strategic cohesion. Global organizations value employees who can succeed in distant teamwork and within the global marketplace. The challenge of global HR professionals is to select the individuals who

have the potential to succeed, and then to support their growth and development. Global management success is a combination of knowledge, skills and abilities.

Here are some tips for HOW TO DEVELOP A GLOBAL MINDSET:

1. **Think globally act locally** – Focus on big picture and changes in corporation's global business environment, while, at the same time, consider the local aspects and needs.
2. **Use multicultural teams** – In terms of mindset, multicultural teams help to facilitate reflection and learning through providing a broader perspective and specific knowledge about new trends and changes in the environment.
3. **Value diversity as a source of opportunities** – By utilizing the regional knowledge the organization has the capability to enter any market in the world it chooses to compete in.
4. **Enhance organizational learning** – Maximize the transfer of knowledge between different locations and the head office. Constantly challenge the habitual assumptions and be open to change.
5. **Network** – Both inside and outside your organization. Participate in training and social situations where you can meet diverse people and learn. Note, that interaction and communication, today, is made much easier through new information and communication technologies.

2. STARTER GUIDE FOR A NEW VIRTUAL TEAM

A virtual team has totally different social demands to succeed than a collocated team. When all of your team is in one office it is easy to interact. Even if you don't plan, it happens at lunch, coffee or in meetings. In virtual teams, you might not notice the needs of a distant team member before the damage is already done and some conflict arises. Here are 10 commandments for a starting virtual team leader:

1. **Create common vision** - Invest in creating a common vision and common understanding of roles, responsibilities and collaboration practices for your virtual team right from the start. Do it in face-to-face (f-t-f) meeting if possible.
2. **Book enough time for the process** - Creating the common understanding is much longer process than you might expect, if it is done virtually, due to the significant differences in seeing the vision of the global system from different locations.
3. **Kick-off F2F** - Meeting face-to-face can significantly improve future distant communication. Once you can "put a face to the voice" over the phone or icon online, you feel more comfortable in exchanging opinions with your distant colleagues
4. **Interact** - After the kick-off meeting you want to maintain the good team spirit by communicating frequently with your distant team members. Do not forget to clear up the vision after creating it, because it starts fading in people's minds when other responsibilities fills up their minds.
5. **Socialize** - When you travel or invite people to the kick-off meeting, you always try to squeeze as much as possible into the day, and you end up gaining not much more than you would have gained in a videoconference. So, make time, a lot of time, to interact with your team mates – also unofficially during dinners and other social events.
6. **Invest and use technology** - Even if you travel to meet you team mates regularly, the fact is that the team will interact remotely with you and others a lot. There are many good technologies (some are really cheap) for video or web conferencing, IM, collaboration tools, you name it. Learn all of them,

3. E-MAIL STRESS

choose the ones that will bring the most impact to your team and make sure everyone, and I mean everyone, is using them.

7. **Create communication plan** - Build a systematic communication plan for your team. A monthly web conference with the entire team is not too often, and a weekly or bi-weekly e-mailed newsletter keeps everyone up to speed.
8. **Time differences** - If your time crosses many time zones, it is difficult to find a meeting time that fall within the 9am-to-5pm regular working hours of all the members. Organize meeting hours so that take turns in compromising their personal time off work to accommodate the meetings.
9. **Intercultural training** - Teach everybody in the team to understand all the different cultures involved. You will get so many “Aha” moments and gain advantages when utilizing the diversity of the team members.
10. **Trust as a key value** - The biggest pitfall of a global team is lack of trust. The best way to build trust is to meet your team mates and start understanding their personality behind cultural differences. Act in a trustworthy manner to earn trust from your colleagues and show them that you trust them. Pay it forward!

Has the pace and amount of your work increased after starting global teamwork? The latest Stanford research argues that the e-mail volume and the time spent teleconferencing increase the stress and the hours you work – unless you have children less than 12 years of age living with you!

Stanford professor Steve Barley (Figure 1) from WTO Center presented their study on e-mail and stress in the Scancor meeting (<http://www.scancor.org/>) on Monday May 19, 2008 (Figure 1).

Although e-mail, instant messaging, cell phones and other wireless communication technologies offer people greater flexibility and control over their work, they are also widely perceived as sources of stress. In an earlier study of Adam (2002), managers reported that e-mail causes them more stress than either conflict with the boss or dealing with customers complaints.



Figure 1. Professor Steve Barley from Stanford WTO Center presented his study on stress and e-mail.



Figure 2. Scancor scholars as well as Stanford faculty present research papers in weekly formal seminars at Stanford.

WHAT PROFESSOR BARLEY ET AL. CLAIM TO BE SO STRESSFUL IN E-MAIL? AND HOW PARENTS OF YOUNG CHILDREN COPE WITH THE OVERLOAD?

First, Steve Barley and his team found that the volume of e-mail and teleconferencing increased the length of people's workday. They also found that the more time people spent handling e-mail, the greater their sense of being overloaded. People who attended meetings and teleconferences during the day and who handled large numbers of phone calls returned at the end of the day to swollen inboxes and their workdays prolonged. Similarly, global team members who worked across time zones invariably woke up to accumulated mail from coworkers whose day had already begun.

The mass of unopened messages in the inbox increased people's anxiety that there might lay crucial information which, if missed, would affect their ability to stay on top of their work and threaten their aura of competence. It felt and looked like one

was losing the control over the work. The size of one's inbox thereby symbolized an excessive workload that people could not complete in the course of a day's work. They worked on evenings and weekends to clean their inboxes.

However, parents of children under the age of 12 worked significantly fewer hours than their childless colleagues. They did not start their work days at 6 AM by checking their e-mail and they left the workplace earlier. But this didn't save the parents from being overloaded – rather they were more likely to feel stress.

The social norms, which obligated people to answer e-mails quickly, in some cases within hours, exacerbate this stress. People often became indignant when co-workers responded more slowly than they thought reasonable. Those who answered e-mail quickly enhanced their reputation significantly by doing so.

Social encounters helped to cope with the stress of the studied people. Unplanned face-to-face interactions at office provided social support and enabled people to handle important issues on the spot. Unplanned social encounters don't happen that easily in distributed teams, so other coping methods need to be identified and promoted in global teams.

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4. MOBILE WORK PRODUCTIVITY

Increasing the mobile workforce is something many high-tech companies consider nowadays. They want to cut costs of office spaces and push their employees into more mobile and home working arrangements. Employees carry wireless technology, at least mobile phones, laptops or PDAs, all claiming increased productivity. However, merely providing mobile workers with the technology does not equate to increased productivity. Our case study shed light on some hindrances for the productivity of mobile knowledge workers while they are visiting and working at their main office.

These hindrances were found during observations and interviews of an open office plan in a global technology company (Bosch-Sijtsema, Ruohomäki & Vartiainen, 2010). The office had recently changed to a setting with mobile desks that is desks for people coming to the office occasionally to interact with their colleagues. In addition to the main office, team members were working in several other places, e.g., home, customer sites, company's other sites in other countries, during their working week.

Spatial mobility in work, the need for physical travel between different locations to achieve work tasks, is becoming relatively common. Mobile work is a form of working at a range of locations, spending regular and significant amounts of time away from any office or home location they have (Hislop & Axtell, 2007). We found that firms are mainly interested in the physical workplace called the office and the other locations where employees work are, firstly, unknown to them (Vartiainen et al., 2007) and, secondly, not that interesting to the management. Company representatives mentioned in our interviews that as long as productivity and outcomes are positive and according to expectations, firms did not have to worry about the different locations people worked. However, in our study we found that mobility may have a negative impact on employees' productivity.

In this study, we focused on hindrances for mobile knowledge work productivity for employees who have no fixed office space or desk, but only drop in occasionally in the office and use mobile desks. Productivity of knowledge work is difficult to measure, because of its intangible character, and therefore we focused on the

one hand on perceived productivity of mobile workers versus employees working mainly full time at a fixed desk. On the other hand, with help of observations and interviews we studied hindrances of productivity for mobile knowledge workers.

KNOWLEDGE WORK (KW) IS THE CREATION, DISTRIBUTION OR APPLICATION OF KNOWLEDGE BY HIGHLY SKILLED (AND AUTONOMOUS) WORKERS USING TOOLS AND THEORETICAL CONCEPTS.

WE FOUND THAT PERCEIVED PRODUCTIVITY OF MOBILE WORKERS WAS LOWER THAN OF EMPLOYEES WITH A FIXED DESK AND WHO MAINLY WORK FULL-TIME AT THE OFFICE.

HINDRANCES OF PRODUCTIVITY

We observed several aspects as hindrances of getting the work done due to a stronger focus on mobile work and reduced office space:

Navigation - Mobile knowledge workers have to be able to find their way quickly in the office building in order to find the necessary facilities to perform their task.

Finding people - Mobile workers need to be able to find and reach their colleagues and teammates with whom they work regularly. From our observations we found that quickly finding and reaching colleagues, who also have mobile desks, is difficult.

Finding appropriate spaces for specific tasks - Mobile workers have to search for suitable and available space that supports their task (either quiet space or a social team space for interaction). For example, we observed that when a mobile worker received a telephone call, he started to walk around in search for a quiet area to make the call. When this space was not available he walked around with his mobile phone in order not to disturb others.

Disturbances - We also found that disturbances (like people walking around and talking on mobile phones etc.) in a more open office space with mobile desks for mobile knowledge workers is, on the one hand, positive for stimulating interaction

5. PRODUCTIVE TENSION

between mobile workers who occasionally come to the office. However, on the other hand the environment can be disturbing to the task that needs to be performed.

Storage problems - An important issue for mobile workers who only work on mobile desks is that it becomes difficult to take materials with you, and storing papers and documentation becomes more difficult. People have to carry all their material and take it home.

Loss of identity - People who only occasionally come to the office have no fixed space for their documents, material, and individual items like photos and trophies, which are often related to identification aspects of the workplace. Since employees did not have a fixed area or desk space, their social environment changed weekly or even daily making their belonging to a certain group difficult and decreasing informal interactions.

This is a short summary of the work performed on this topic. However, the work is ongoing and we will compare other cases in different countries on the topic of hindrances to knowledge work.

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Instead of avoiding conflicts, would you like to learn the art of productive fighting? The tension of different viewpoints in multi-cultural virtual teams may lead to more novel innovation if managed properly.

The ever-increasing job demands for global team members include enhanced responsiveness, flexibility, innovation and improvement. Success requires employees to get out of their comfort zones, work harder and longer hours, take on risk and additional responsibilities, and become more empowered.

Global teams face greater complexity than traditional teams in terms of task, context, time, technology and cultural backgrounds of people. As a result, global teams are fraught with tensions, contradictions and paradoxes, such as

HOW TO CREATE SYNERGY WHEN MEMBERS ARE SPREAD AROUND THE GLOBE?

HOW TO COMMUNICATE EFFECTIVELY WITH MEMBERS OF DIFFERENT CULTURAL BACKGROUNDS AND LANGUAGES?

Instead of trying to smooth over or resolve contradictions and disjuncture, Jennifer Gibbs (2009) from Rutgers University argues that tensions can be productive for global teams.

Focus on paradoxes rather than consistency - Diversity and tension can be an asset when managed properly, in allowing for improved decision quality and creativity to arise incorporating different skills, knowledge, and perspectives.

Create culture of productive tension - You have to change our own and others' perception of tension and conflict. Most people think of conflict as a battle to be won or lost, or a disagreement where one party is right and the other is wrong. Instead, a win-win, or collaborative approach suggests that conflict is a puzzle to be solved.

Don't try to solve a conflict right away - Instead, create "unified diversity" and allow space for irresolvable task related differences of views to coexist. It leads virtual team to discover different assumptions, shift perspectives, pose problems in fundamentally different ways, and allow more novel solutions. In a culture of productive tension people must actively listen for the unspoken, and often more powerful, messages.

Value the diversity of viewpoints - Before identifying solutions, bring all the unique viewpoints to the table. "Solutions" is plural because we always have more than one alternative. Some alternatives are more preferable than others, but until we create choices, we're playing a win-lose game. Let everyone expresses their ideas and perspective and share their different contextually "situated" knowledge. Motivate your team to analyze the problem from different perspectives and consider the external variables before presenting ideas for resolution. The diversity of team members is power.

**DIVERSITY IS THE POWER.
STRETCH YOUR LIMITS.**

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6. WHO'S GOT THE POWER?

Information is the currency of today's world. What is your intellectual property - your thoughts, your ideas, your knowledge - and with whom you are willing to share that?

**WITH THE INFORMATION YOU HAVE THE POWER.
WITHOUT IT YOU ARE POWERLESS.**

Your success is dependent on the knowledge your colleagues are providing with you and vice versa.

Virtually today, you have the access to all information created in the world, but you need to know where to look for it. Google's creators, Brin and Page, the most famous Stanford Ph.D. students realized that information is power. And somewhere along the way they cleverly came up with a plan to harness all that information - i.e. a smarter, more intuitive search engine that would index the entire internet making Google the keeper of the keys to all that information.

Google is one of the most successful start ups in Silicon Valley, because information is so valuable today's business. Because, it's so valuable, information also makes us so vulnerable, when we need it. You cannot find all the information by googling the internet, and you have to use other networks too. Your social and collegial networks can help you when you are looking for information for your work. Therefore, your social networks are one of your power sources and a part of your competence actually.

NETWORK IS POWER

The most desirable employees have wide social networks, who can lead them to the information and knowledge. At Nokia, for example, a huge range of routines and processes support and encourage employees to expand their personal networks. To start with, new hires are formally introduced to at least 10 people both within and outside of their departments. It's an effort that extends outside the company as well. Nokia has strong working relationships with the faculties of more than 100 universities, co-hosting conferences, sharing research initiatives and supporting postgraduate work.

THE KEY IS HOW YOU GET MOST OF THIS COLLABORATION.

A proposed benefit and a strategic reason of virtual collaboration is that it can bring together individuals with the needed knowledge, skills and abilities. But quite often, the virtual teams are challenged with coordinating the information sharing across the boundaries such as geographic distance and time separation.

Coordinating work across distant time zones can be a continuing battle. In order to coordinate the team tasks efficiently, virtual team leader needs role-based power and capabilities to distribute and gather information in real-time and to keep distributed tasks synchronized. However, the role power doesn't guarantee that the informant will provide you with the knowledge you are seeking.

Big time differences reduce the time available for synchronous interaction of virtual team members. Without overlapping working time the possibilities to two-way communication are diminished. Asynchronous e-mail communication is significantly slower when you have to wait for the answers to your e-mail questions till the next day.

And how do you know if you are still getting the answer tomorrow? You lose your influencing power over this informant with the distance and time difference. While you expect your team mates to reply to your e-mail requests on the other side of the world, they might have other priorities and other urgent tasks that run over yours. The closer—more visible—leaders can scream their urgent needs out louder so that your silent e-mail requests will be postponed.

VISIBILITY IS POWER

To increase your visibility by creating an online site where a team can collaborate, exchange ideas and inspire one another. Strong virtual teams often have a shared online workspace that all members can access 24 hours a day. This ensures that while different team members or groups are working relatively independently at times, they can continuously follow the progress and insights of other team members.

7. KNOWLEDGE WORK

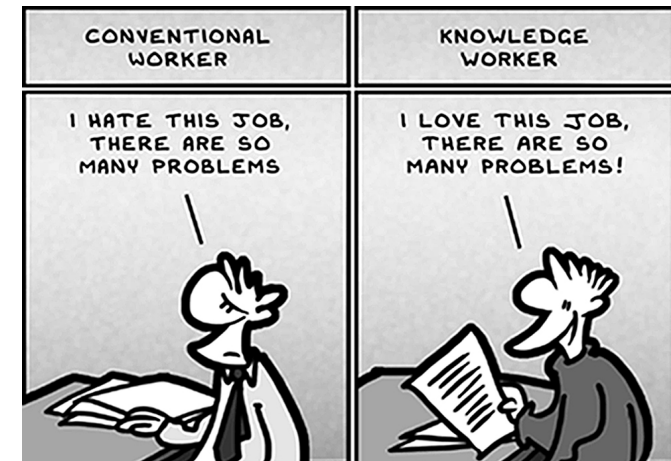
ONE DAY A MANAGER ASKED HIS COLLEAGUE A QUESTION:

*"HI JOHN, WHO ARE THESE KNOWLEDGE WORKERS?
AND DO WE HAVE ANY IN OUR COMPANY?"*

During last years, I have been discussing this topic with many company managers. Reasons behind the question above are twofold: Firstly, knowledge work has become more common in today's companies. Secondly, work has changed so much that managers are not always aware what kind of work is performed by the personnel of the company. Therefore it is worth reflecting the nature of knowledge work.

KNOWLEDGE – INTELLIGENCE – INTELLECTUAL CAPITAL

Knowledge workers are originally described as highly skilled or trained persons who deal with new technologies, for example, the information technology fields, such as computer programmers, systems analysts, technical writers and so forth. In practice, characteristics of knowledge worker are not so dependent on education, job title or on a hierarchical position in the company. Instead, knowledge workers are nowadays defined primarily by the nature of their work. Their benefits to a company are in developing business intelligence, increasing the value of intellectual capital, gaining insight into customer preferences, or a variety of other important gains in knowledge with business profits.



KNOWLEDGE WORK INVOLVES CREATION, DISTRIBUTION OR APPLICATION OF KNOWLEDGE. IT IS TYPICALLY DESCRIBED AS AUTONOMOUS AND UNPREDICTABLE. KNOWLEDGE WORK IS PERCEIVED AS NON-ROUTINE, COMPLEX AND SITUATION-SPECIFIC. IT IS ALSO RELATIVELY UNSTRUCTURED AND ORGANIZATIONALLY CONTINGENT.

Based on a broad literature study (Bosch-Sijtsema, Ruohomäki, & Vartiainen, 2009), we define knowledge work as the

1. creation, distribution or application of knowledge (intangible resources) as task contents;
2. by highly skilled and/or trained workers who have autonomy in their work;
3. who use tools (e.g. ICT) and theoretical concepts;
4. in order to produce complex, intangible and tangible results;
5. to provide a competitive advantage or some other benefit contributing towards the goals of the organization.

WHO ARE THE KNOWLEDGE WORKERS OF YOUR COMPANY?

Related to the question at the beginning, it may not be so important for managers to make a distinction of who is a knowledge worker and who is not, but more important is it to understand the nature of their work in order to support them. I have heard from some managers of high tech companies their conclusion that actually everybody can be called a knowledge worker in their organization and they should be treated in a similar manner.

Finally, I would like to ask you to reflect on the questions asked at the beginning related to knowledge workers. How would you answer on them in the context of your own company?

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8. WORKPLACES OF KNOWLEDGE WORKERS

Knowledge work is performed in different workspaces that have impact on the way work is performed. Recently, I have been studying a new open place office of one ICT company. The company managers asked researchers' help to evaluate their modern workplace solution. Company managers are interested in to know how their new office supports knowledge workers. After discussions with company representatives, we formulated the research question in the following way: *Where does knowledge work take place in the office? How do people use different workplaces? What are hindrances and enablers of knowledge work?*

For studying these questions, we have designed an observation method that focus on knowledge workers and their workspaces. Next, I would like to invite you to have a guided observation tour with me - just to see an office environment in a new way and to share findings of the case company.

HOW ABOUT AN OBSERVATION TOUR IN AN OFFICE WITH A PROFESSIONAL WORK AND ORGANIZATIONAL PSYCHOLOGIST?

We will walk together in the main places of the office environment. We start from entrance and lobby, we continue to workstations and meeting rooms, and finally cafeteria and lunch room. We stop in each place to make observation and make notes according to an observation scheme.

The observation scheme is divided into observation of physical and social workspaces. Concerning the physical workspace we observe artifacts, facilities, sense environment, views, lightning, acoustics and sources of disturbances. Observations of the social workspace concern individual and collective work behavior and how the personnel use different places. It includes workplace policy, signs of concentration, potential disturbances, social interaction and communication. We document observations, analyze findings and then report results to the company representatives.

With this observation method (Ruohomäki & Bosch-Sijtsema, 2008), we can find results e.g. in the following fields:

1. Lay-out related items refer to the current office places, like specific walking paths, noisy and disturbing places, under- and over-utilized places.
2. Interaction related items, e.g., where people interact, how often, with how many, formal or informal interaction.
3. Workplace policy related items, like communication and signs to create an understanding of the new way of working.
4. Ergonomic aspects of using available tools and facilities.

The case company provided different types of workplaces in their large open plan office. Workplaces used for mainly individual tasks were dedicated and mobile desks, quiet rooms and phone booths. Workplaces for team work were meetings rooms and open team areas. Both individual and collective tasks occurred in cafeteria and lunch room, lobby and corridors as well as near copy machines.

ENABLERS OF KNOWLEDGE WORK

In the case company, we observed the following *enablers of knowledge work*, i.e., issues that support working:

- Knowledge workers used workplaces in a flexible manner and effectively.
- Knowledge workers had good opportunities for informal and formal interaction.
- Mobile knowledge workers navigated easily in the office to find an appropriate workplace according to their tasks at hand.
- Color coding of different functions of workplace was clear and helpful in orientation.
- Written workplace protocols were visible and useful, e.g., how to use quiet rooms.

HINDRANCES OF KNOWLEDGE WORK

We also observed the following *hindrances of knowledge work*, i.e., issues that make it difficult to get work done:

- Many disturbances and interruptions in the open space, e.g. people passing, telephone calls and other uncontrolled sudden noises.
- Lack of privacy and confidentiality, e.g. difficulty in finding places for confidential talks or phone calls.
- Continuous carrying of tools, like laptop and mobile phone, and materials in hands.
- Lack of storages, e.g. for tools and papers, to keep them at workplace instead of carrying home.

Open plan offices can provide a variety of spaces for knowledge workers. They typically need space both for silent, concentrated individual tasks and space for collaborative, team tasks. Our observation study showed that an open plan office can support interaction and create a lively, but restless work environment. Disturbances and interruptions in concentration make knowledge work fragmented. These disturbances can be seen as hindrances and hidden costs of effective knowledge work.

Based on our experiences (Ruohomäki & Bosch-Sijtsema, 2008), this observation is quite simple and a fast evaluation method to provide an overview of the office environment including its hindrances and enablers of observable aspects of knowledge work. It provides descriptive information how well the environment supports knowledge work and easily generates suggestions for improvements.

An observation study in your office might open your eyes to see work environment in a new way and to get useful improvement ideas for future. What would you think about a walk-through with a work and organizational psychologist in your company?

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9. NEW WAYS OF WORKING - NEWWOW

Warm regards from sunny California! I hope that you have enjoyed relaxing summer holiday and have a fresh view to your work. I have just arrived from an excellent symposium of the New Ways of Working Network (NewWoW) focusing on distributed work, and I will share with you my experiences in my next blogs.

REASON TO IMPLEMENT NEW WAYS OF WORKING

First, I will report you company news based on the NewWoW symposium in San Jose, the capital of Silicon Valley. Managing distributed work in companies is highly relevant topic in California nowadays. A growing number of US companies are finding that by developing programs to support and enable distributed work they can increase productivity, reduce facility costs, and improve the lives of their employees.

In a recent survey, companies reported that 63% of their new product development teams are geographically distributed, and 22% globally distributed. At the outer edges of distribution, one high tech company recently reported that one-fifth of its employees had never met their bosses face-to-face.

BASED ON US COMPANY MANAGERS' EXPERIENCES, THE PRESSURES PUSHING TOWARDS DISTRIBUTED PROJECT TEAMS INCLUDE, E.G., THE FOLLOWING REASONS:

- Increasingly corporate innovation necessitates project teams consisting of people from several or a number of organizational units, often dispersed geographically.
- Project teams are typically temporary, with team members belonging to multiple project teams, so collocation is impractical.
- Outsourcing spreads knowledge, products and production globally.

- Work may be transported electronically around the globe on a 24/7 work cycle, with work passed from one region of the world to another every day
- for example, the specifications written in Silicon Valley today are satisfied overnight by software programmers in Asia and available the next morning in Silicon Valley.
- Products and marketing need to be adapted to local cultures, but often ride on platforms that serve the entire company.
- Talented knowledge workers are scattered globally, and if you want to attract and retain them you can't remove them from their families, cultures and countries.
- New generation of workers entering the workforce now, have spent their entire lives communicating with other people electronically, and may prefer working remote rather than at a convention office.
- It's increasingly difficult to find a work/home/life balance or provide child care, an urgent need particularly when increasingly both parents must work.
- Thousands of employee hours are wasted in commuting to work, with workers arriving at work and at home stressed, even exhausted.

Additionally, news of several media in California Bay Area, tell about the expensive price of oil is decreasing dramatically business travels of companies. At the same time, concern for environmental sustainability creates pressure to reduce air travel and long commutes by car. Therefore, we may assume that geographically distributed work will increase, and need for good organizational practices, technologies and workplace solutions is growing globally.

NEWWOW

Second, I would like to introduce you NewWoW. It is a network of member companies and academics exploring new ways of working such as distributed work. The NewWOW network is a network of organizational innovators - people who are transforming their work environment or preparing to do so. Many members are early adopters of distributed work such as Sun Microsystems, Cisco, Nokia and others. Over the past two years the Network has reviewed the research on distributed work and virtual teams, conducted benchmarking studies of leading companies as well as identifying good work practices that are essential to effective distributed work.

NewWoW takes an integrated approach to workplace change, combining corporate real estate, human resources, and information technology. Network members are

an intriguing mix of experts from the fields of organizational development and design, technology and real estate/facilities. The NewWoW is enriched by the contributions of respected academic researchers as well as knowledgeable consultants who participate in events and report preparation, sharing their insights and latest research.

I have the honor to represent Aalto University School of Science and Technology within this network of experts. I was invited to this four days symposium, and to next one as well, by PhD *Joe Ouye* the founder of NewWoW. He is an experienced architect and visiting professor and principal of research for design. The other founder is PhD *Jim Creighton*, experienced psychologist and consultant in participatory processes and teamwork. They are both working with companies from Silicon Valley to rethink how their employees work and the nature of their real estate and workplace.

NewWoW is a small and active group of members with long term interaction and engagement. Therefore, the same persons come to several symposiums to meet and learn from each other (Figure 1). The number of participants is max 30 persons to promote deep level dialogue and mutual learning. This NewWOW is one good example to promote collaboration between companies and academic researchers - that is very important theme both in USA and Finland.

Finally, it is worth reflecting these experiences in the context of our VmStan -project that have some similarities and opportunities with the NewWoW. We have a great network or a group of company members, researchers and consultants here as well with long term engagement. We all share common interests related to distributed work both in practice and in academic arenas. We organize common seminars, virtual learning cafes and share our blogs. We are in the process of creating and improving our common practices.

P.S. To gain an understanding of resources available through the New WOW, go to the public page www.newwow.net and have a look.



Figure 1. NewWoW symposium in Silicon Valley. In front of the photo from left to right Kriste McGee and Eric Richert (Sun Microsystems) and Patricia Roberts (Jones Lang Lasalle). (Photo by Virpi Ruohomäki).

10. INTERCULTURAL COLLABORATION IN GLOBAL TEAMS - PRESENTATION BY PROFESSOR HINDS

Professor Pamela Hinds of Stanford University, Center for Work, Technology and Organization (Figure 1), was an invited keynote speaker in the NewWoW Symposium in Silicon Valley July 2008. As an academic member of NewWoW, I had the honor to be her opponent. Hind's presentation on "Intercultural Collaboration in Global Teams" included the following points:

- The motivation for considering culture in distributed work.
- A definition of culture and some of the challenges in its conceptualization.
- An overview of some of the challenges in intercultural distributed collaboration.
- A discussion of the relationship between culture and work practices.

Pamela Hinds got interested in the role of culture in collaboration after 9/11, the attack on the world trade center in New York. Her bachelor's degree was in political science and foreign affairs and she discovered when starting research on global teams that she had a naïve view that global teams could actually make the world smaller - that as people worked together across national boundaries would create a sense of connection that would tie people together. What she found in her studies of over hundred global teams, however, was something quite different. Instead of building empathy, she discovered that, in some cases, cultural stereotypes were stronger and less favorable.

Although an increasing number of organizations are relying on technology-enabled geographically distributed teams, these teams often are difficult to manage and fall short of performance expectations. Global teams frequently suffer coordination problems, crises of trust, and unhealthy subgroup dynamics. Some of these challenges are the result of cultural differences between countries in which team members are located.

One of the first questions is to think about what we mean by culture. Hinds found useful a broad definition by Spencer-Oatey that describes culture as "a fuzzy set of attitudes, beliefs, behavioral norms, and basic assumptions and values that are

shared by a group of people, and that influence each member's behavior and his/her interpretations of the meaning of other people's behavior".

For understanding intercultural collaboration, Hinds presented a nested view of culture (Figure 1). The message is that one must look at the context in which people are embedded to be able to understand and anticipate collaborative behaviors. In this view, values are present, but they are intertwined with the context in which people are embedded and that act upon people. The institutional culture, e.g., corporate culture, is also a strong determinant of behavior. People are often working across their contexts that place different constraints and expectations on behaviors.

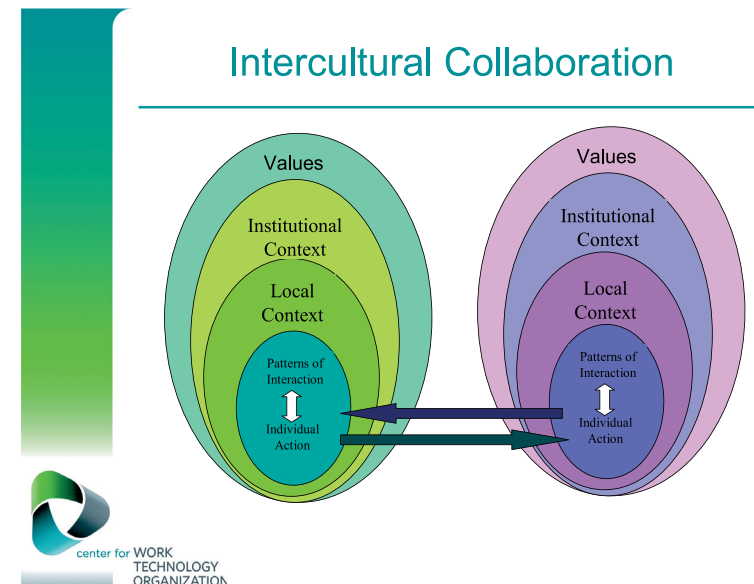


Figure 1. A nested view of culture. The Center for Work, Technology & Organization (WTO) is a research center located within the Department of Management Science and Engineering at Stanford University's School of Engineering. <http://www.stanford.edu/group/WTO/cgi-bin/index.php>

This model has important implications for how we think about building collaborative systems. We have an opportunity to think not only about the single cultural context in which it will be embedded, but the multiple cultural contexts. In doing so, we may be able to reduce the inevitable tensions that arise as people work across these incompatible contexts. For example, systems that reveal more about the context in which people work might help to build understanding of these constraints and limitations under which people are operating.

Based on her research and literature, she suggested some good practices to promote intercultural collaboration in global teams:

- Site Visits - Site visits enable people to get to know one another and to get situated knowledge in a way that enhance collaboration.
- Liaisons - Cross-cultural liaisons who have experience of the context and culture at both sites are valuable for teams. They can interpret the behavior of coworkers at both sites and transfer contextual information as they bridge subgroups.
- Stability - It takes time to learn about cross-cultural differences, understand distant team members' context, and adapt for the good collaboration. For long-term, interdependent team, stability aids this process.
- Remove threat - It is highly important to create an environment in which people feel secure enough to let their guard down and learn from their distant colleagues. Team members who feel afraid of e.g. losing their jobs or position, have difficulty working through their cultural differences. Site visits and liaisons can help reduce anxiety and increase efficiency.
- Communications - Frequent and inclusive communication is critical, and informal communication is essential. Communication should take place between those who are interdependent, map to the workflow. Ensure that everyone has access to the information that they need.

To conclude, culture is intertwined with and inseparable from social and institutional context. Trying to change it is hard and requires understanding and adjustment. Intercultural collaboration and teamwork is an understudied area with as many questions as answers. Pamela Hind's research provides a systematic basis for discussion of this topic (Figure 2). *Future aim, for all of us, is to increase mutual understanding in our multicultural world.*



Figure 2. NewWoW members from left to right are: Shirley Wong (Cisco System), Daniel Coleman (Collaborative Strategies), Peggy Stritch (Cisco), Pamela Hinds (Stanford University) and Virpi Ruohomäki (Aalto University) (Photo by Joe Ouey).

11. COMMUNICATING GLOBALLY, BUT IN REAL-TIME AND FACE-TO-FACE: TELEPRESENCE AND HALO ROOMS

We are all aware of the difficulties of collaborating and communicating in a global context. We would prefer face-to-face communication since it has a positive effect on trust, speed of decision making and understanding and awareness of different cultures, backgrounds and personalities. However, when working globally, face-to-face contact becomes more difficult due to distance, and time difference. In order to meet each other face-to-face we either need to use telephone or videoconference tools or travel. For certain types of work it is very important to have face-to-face contact and that implies that you need to travel to different locations, which has an impact on travel cost, cost of not being present during that time, cost for the environment and also cost for quality of life (traveling has a negative impact on work-life balance and takes energy). The telepresence and Halo rooms can overcome the difficulties of global working by supporting real-time and face-to-face meetings across the world.

MEETING WITH PEOPLE LOCATED AROUND THE WORLD, WITHOUT TRAVELING, BUT IN REAL-TIME AND EYE-TO-EYE

Recently at Stanford we had the opportunity to visit two companies who developed a technology that overcomes the difficulties of global working by presenting a conference room and technology that present a life-size, real-time and face-to-face conferencing opportunity with excellent audio and video quality and no delay. We visited in one day Hewlett Packard Company in Palo Alto who developed the Halo room (see: <http://www.hp.com>). Secondly, we visited Cisco Systems Inc. in San Jose who developed the Telepresence room (see: <http://www.cisco.com>). Both solutions are high-end video conferencing solutions.

The rooms give the sense of people being in the same room together. The networks applied are highly secure, but can only connect to other high-end video conferencing rooms in other locations. Next to conferencing eye-to-eye facilities, the rooms support sharing documents and or powerpoint presentations on a separate screen.

The rooms are designed in such a way that they are identical throughout the organization in colors, furniture and layout in order to create a shared presence. The rooms are used in many global companies and are perceived as excellent to replace face-to-face communication. From interviews at a global firm we heard that people using the technology had the feeling as if their global partners on the other side of the world were in the same room.

Benefits of this technology are:

1. Options for different sizes of screens (groups or even for one or two persons).
2. Full eye-to-eye presence and being able to have global working with 4 different locations all over the world.
3. Secure solution (within the company).
4. Invisible technology and easy to use (pressing only one button).
5. Ability to show artifacts/ prototypes/products/sketches in real-time to other sites across the globe.
6. Less traveling, which is better for the environment and CO2 footprint and decreases travel cost.
7. Saving valuable meeting time for setting up video/teleconferencing meeting technology.
8. Can be used for all kinds of global team meetings, corporate meetings across the world, job interviews when an expert application is hired, for example, in an Asian location, and all other kinds of communication globally.

Some disadvantages are that currently you can view a limited set of locations at once on the available screens and these locations need to have a similar room as well. The high-end video conferencing rooms are especially designed rooms with expensive equipment and similar furniture and layout and they are expensive to build (especially since you need more than one to connect over the globe). This is an investment for the company, but can decrease travel costs and coordination costs of global teams. The technology is very useful for global teams, however, unfortunately it does not cross time differences and people in global teams still need to share the time difference pain.

WOULD THIS KIND OF TECHNOLOGY BE USEFUL AND VALUABLE IN YOUR COMPANY AS WELL?

12. VIRTUAL WORLDS I: GLOBAL COLLABORATION AND LEARNING ENVIRONMENTS

More and more firms are working in a distributed manner in which traditional collaboration over distance with help of flying or driving to meetings become challenged due to higher travel costs and geographical distance. Also a large part of the workforce is working mobile (in different locations) or partly at home, which makes it more difficult to meet face-to-face for collaboration. Telephone conferencing is a solution, however, becomes difficult once a product needs to be built, or full engagement of members is needed. High-end video conferencing can help but is expensive and usually employees need to visit a separate place. Another solution is the use of virtual worlds especially designed for enterprise collaboration.

VIRTUAL WORLD TECHNOLOGY: AN EXAMPLE

Last week a special course for companies was organized at Stanford University by Renate Fruchter in cooperation with MediaX (www.mediax.stanford.edu), in which two firms showed a virtual world that could be applied by firms for several purposes. In this blog, I will discuss the virtual world called OLIVE: On-Line Interactive Virtual Environment of the company Forterra (www.forterrainc.com). Next week's blog will discuss the second company Qwaq (now called Teleplace)¹.

OLIVE

Olive is an environment in which employees can cooperate as in real life. You can see each other's avatar (a virtual world person who can be designed to look just like you and with clear facial expressions), you can talk and interact with your colleagues in the virtual environment, without the need to visit another space or traveling. In the 3D space, you can share Word and PowerPoint documents as well as showing videos and pictures. Forterra's OLIVE platform offers corporations highly flexible training and collaboration applications. Within the virtual envi-

¹ The virtual world applications and technology are changing rapidly and platforms and features are changing often.

ronment employees, managers, trainers, and affiliated partners can gather together to have realistic discussions, exercises, rehearsals, and training sessions anytime and anyplace on a global basis.



Figure 1. A meeting in OLIVE.

The virtual world offered by Forterra is a secure solution that is designed as a private virtual world environment for a specific company. Currently it is used by companies to have collaborative meetings, trainings, large events like presentations or conferences, product launches, and product design.



Figure 2. Images from Olive corporate virtual world.

Next to corporate virtual worlds, the company offers virtual worlds for educational purposes (like education and training), health care solutions (like training virtual worlds for medical students) and defense (army solutions).

In the test we run together with the company, the avatars (virtual world people) were very lifelike and could show a number of facial expressions as well as certain types of emotions and behaviors (like nodding, waving, cheering, thumbs up and down). Next to talking to each other over headphones, it was useful to have these kinds of nonverbal signs as well. Being in such a virtual world is a very new experience and it takes some time to get used to it. However, it did give a better sense of presence since the avatars were very like people in the real world and you could respond to each other not only by talking but also by using non-verbal signs. The

strategy of Forterra is to develop a virtual world, which is very similar to our own world; this makes it easier for people to work with these virtual environments.

ADVANTAGES:

- No travel costs or change of physical space for entering the virtual world.
- Lifelike avatars (persons) and a virtual environment very similar to our own physical world.
- Opportunities for global teams to meet in the virtual world in which they can see each other's avatar and interact with each other, as well as share documents, PowerPoint's or pictures/videos and chat options.
- Secure environment supported by the Forterra company, and the virtual world can be tailor made depending on the companies requirement and wishes.
- Option to capture and record (and play) meetings

DISADVANTAGES:

Some disadvantages we found during the tests were the following:

- The virtual world technology is still a very young technology and currently only supports a few ways of collaboration, however, in future, many more different options for collaboration and interaction will be possible.
- Furthermore, there has been little research performed on the impact of virtual worlds on productivity, teamwork and on people interacting in these virtual worlds. This research is important in order to understand and learn to work with virtual worlds.

13. VIRTUAL WORLDS II: GLOBAL COLLABORATION AND LEARNING ENVIRONMENTS

Virtual worlds are a hot topic currently and many people have taken some time to look into for example Second Life, which is a nice playground in which everybody can participate and experiment. However, next to these open virtual worlds, there are several virtual worlds that are especially designed for more professional work like global collaboration. In the earlier blog of last week, I discussed the virtual world called Olive of Forterra. In this blog, I will discuss another corporate virtual world called Qwaq of the company Teleplace².

CORPORATE VIRTUAL WORLDS: AN EXAMPLE

The virtual environment is flexible and can be either made like a mirror world or very different. The avatars can be made real-life and even can have your own personal face. The virtual world can be tailor-made to the company's specific requests and is rather flexible. Every person in the environment can easily adjust aspects, documents and features in the virtual environment.

² At the time of the blog, Teleplace was still called Qwaq. Please, note that many changes have occurred over time in the available platforms as well as in the features developed in these virtual worlds.



Figure 1. An image of Qwaq.

The Qwaq forum (Figure 1, 2 & 3) can be applied as a virtual office, a meeting room for global team meetings, company presentations, corporate training and facilitated meetings. Qwaq offers opportunities to share documents, PowerPoint's, VOIP, video conferencing as well as interaction with the avatars (talking) and avatars can chat privately with each other or with the whole group.



Figure 2. A business presentation in Qwaq.

The same advantages and disadvantages of the last week's blog are valid for the Qwaq environment. Both virtual worlds were tested during the MediaX course at Stanford University and were rather easy to use and applied similar keyboard buttons. Even novices could easily get started with both Olive and Qwaq and this was an important issue.



Figure 3. Image from Qwaq virtual world

Next to Qwaq and Olive there are some other virtual worlds which are applied within corporations in a secure environment and who are not used for fun, but mainly to test how corporations could make use of virtual worlds in their work. In later blogs we discuss other issues of virtual worlds.

Virtual worlds could become a solution in the near future for working distributed, mobile and globally. However, more research needs to be done in order to understand the implications of these environments for productivity enhancement, performance enhancement and its impact on teams and employees. Furthermore, it is unclear what value business could get from using virtual worlds. Several large companies are experimenting with the technology to find a suitable purpose and value. The technology is still under development, but could bring new opportunities for global cooperation in the future.

**WOULD YOU AND YOUR COMPANY BE INTERESTED TO EXPERIMENT
OR WORK WITH SOME OF THESE VIRTUAL WORLDS?**

14. WORKPLACES AT SUN MICROSYSTEMS

Today's knowledge workers have widely varying needs and expectations that stem from different job types and work tasks, geographically distributed teams and customers, personal and family situations, and a range of work styles. But where do they work?

At Sun Microsystems, employees work in a flexible way from almost any location: a Sun campus, regional office, flexible office, home office, coffee shop, hotel, airport — generally, anywhere there is an Internet connection (Figure 1).

WHAT IS THE SUN OPEN WORK ABOUT?

The Sun Open Work program combines innovative technologies, tools, and organizational support processes that enable Sun employees to work effectively anywhere, anytime, using any device. That means employees can work how, when, and where they feel most productive, creative, innovative, and inspired - the whole world is their office.

This program is ingrained into the corporate culture and policies and embraces all employees. It integrates technologies, work spaces, and work practices to support freedom and mobility in Sun's workforce.

HOW DID IT START AND SPREAD?

An innovator behind the Open Work program was an architect *Erik Richert* who launched a pilot project in UK. He was vice president of Sun Microsystems Open Work Solutions Group. He has been developing, and managing pioneering work environments for Sun Microsystems. I had a great pleasure to discuss with him

about his early visions and how it spread through the company.

The spreading of Open Work was based on the needs of knowledge workers, mobile workforce and geographically distributed teams of the global company.

Nowadays, through this twelve-year-old program, more than 19,000 employees around the world work from home or in a flexible office up to two days a week. This represents close to 56 percent of Sun's employee population.

WHAT DOES AN OPEN WORK ENVIRONMENT LOOK LIKE?

Open Work is described as an integrated network of people, places and technologies that are systemically linked to meet the requirements of the task at hand. Physically, it could look like a home-office or drop-in facility on the residential side of a commute, or a main campus.



Figure 1. Flexible office workplace.

SANTA CLARA CAMPUS IN SILICON VALLEY

15. INTEGRATED WORK ENVIRONMENT

We were invited to have an excursion to Sun's main campus in Santa Clara in Silicon Valley. Our guide was *Edel Keville*, principal consultant and previous HR director at Sun. The beautiful campus area provides a variety of spaces for individuals and groups as well as for customer networking (Figure 2).

For individual work, we saw open plan offices and small individual rooms. A flexible work area included many drop-in desks with all needed facilities, like computer, storages, white boards, papers and pencils – ready to start working. Workplace policies were written on the wall. They are equal everywhere, so that mobile employees know what to expect. For teamwork, we saw both open and closed team spaces with different sizes as well as big auditoriums for meetings and training sessions. For social interaction and ad-hoc meetings, Open Work Cafes provide comfortable team spaces with computers.



Figure 2. HR director Edel Keville in the Open Work Café (Photo by Virpi Ruohomäki).

Sun personnel have ID-card to open both doors and computers. With ID card they have direct and secure access to Internet and their own documents. They do not have to carry their laptops. For growing mobile workforce, Sun has a global reservation system for workspaces with layout charts. They call it as Reservable Hotelling. You can see available spaces and make a reservation, e.g., for a meeting room or private work room at any office around the world. That sounds very practical.

Combining new work practices with new ways of using existing space can change the work environment significantly. In Sun, the work environment looks like a network of places.

What are leading companies doing to address new work force realities? They have an integrated work environment including workspace, technology and organization.

Are your employees in their offices right now? - Probably not. As you read this, many of your employees are working at home, at a customer's facility, in a company facility other than their assigned office, or while travelling. Today's knowledge workers are working in a distributed and mobile manner. Companies that have studied their office usage find that at any one time as few as 30% of their offices are occupied.

To address new work force realities, Sun Microsystems employs an integrated approach to designing workplaces, technologies and organizational practices. The company has integrated suite of program, policies and resources supporting employee flexibility and mobility. Integrated work system design crosses different organizational functions and is a part of organizational culture. Effective partnering between corporate real estate, ICT and human resources is a must.

In Sun Microsystems, integrated work environment and enabling new ways of working includes the following elements:

- Workspace enablers
- Technology enablers
- Organization enablers

The Sun's Open Work program has flexible work spaces and drop-in centers so that employees can connect from home and on the road. Their network of places includes a flexible campus, satellite drop-in centers, flex field offices, and employee home offices.

ORGANIZATION ENABLERS FOR THE PERSONNEL

Crucial elements are the policies, procedures, skills and training needed to support employees and managers. Sun gives managers the tools, technologies, and know-how to effectively lead remote workforce. The company has launched remote management program for all their managers.

Goal setting and performance management that are directly related to good leadership become more obvious when you don't see people on a daily basis. Managing by objects and results versus monitoring becomes important. This requires clear and consistent communications. Human resources policies emphasize that working anytime and anywhere have three important requirements for the personnel: delivery, accessibility and participation.

However, distributed and mobile work is not possible for all work and all employees. Employees' preferences of working environments must be considered when planning work arrangements, i.e. traditional way with an assigned place, work at home or in a flexible way. Their abilities and willingness as well as organizational support are relevant for successful work arrangements.

Managers and employees require significant support as they have to adjust to new ways of working. Managers need support to help their teams work effectively across distance and time, especially social connections require attention.

WHAT ARE THE BENEFITS?

Potential benefits can be seen on the personnel and company level as well as on communities. The Sun's Open Work Program has boosted employee satisfaction, reduced turnover and saved on real estate costs.

A recent study conducted by Sun showed that more than 75% of employees think the program provides the flexibility and support they need to accomplish work objectives. Employees believe that the program provides them with the tools and technologies to support their work environment and to help them feel more productive. They also report on more efficient and effective use of time, reduced stress from commutes, as well as a better work/life balance.

This type of work environment reduces the importance of the traditional assigned office and instead provides flexible workspaces that are widely distributed, conveniently located, and shared by many, as well as the option to work from home. The company has reported radical savings and reduction of office space. In addition, the company achieved lower energy costs and positive environment impacts.

16. MAXIMIZE TEAM EFFECTIVENESS TO 24/7

When your team is crossing a wide geographical area, time zones differ and you have less time available to collaborate synchronously. If you are in Finland or U.S. working with someone in Asia and want to ask them an urgent question, you may have to either wake them up or wait until tomorrow for an answer.

Unless, you take advantage of the time differences by assigning tasks in such a manner that work can “follow the sun” across the globe. Call center and maintenance teams etc. coordinate routine tasks 24/7 (24 hours a day, 7 days a week) with clearly specified procedures, but how is it done with more complex tasks?

These well organized global design teams are periodically reaching a 24-hour working time by cycling work from members in east to members in west. They work effectively around the clock so that each sub-team is working during their local normal business hours and assigning or handing off tasks at the end of their day to teams that are beginning their normal work day.

In our case studies, the global teams describe how they have benefited from the time differences. In most cases, teams have been able to raise their global workforce to its maximum potential only for short periods of busy times. More often, positioning team members across different time zones create coordination difficulties and work delays. However, we can still learn a lot from their good practices.

MAKING COLLABORATION EFFECTIVE 24/7:

1. **Clarify processes** - Define clear work processes and specifications early in the project. Outline realistic goals, high-level milestones and specify the tasks that allow you to meet those objectives. However, if you are working in a dynamic context, you might not want to define the complete end-to-end project plan on the first phase. But, you still need agreed time frames for specific tasks and task ownerships of their completion.
2. **Complete tasks on time** - Discipline is critical. Once you have agreed a time frame for a specific task and task ownership of its completion, then you are expected to get it done on time set. If the team that is beginning their work

day is expecting a set of inputs based on a certain set of tasks and those tasks are not completed, then that team effectively loses an entire day waiting for the other team to sleep, wake up, complete their tasks, and hand them over 24 hours behind schedule.

3. **Maintain version control** - Avoid unnecessary overlapping work by establishing a convention for tracking document versions. Also, agree how and where your team members can always find the latest version. Find an obvious and easy place for people to store the latest version of shared documents, whether it's on a team SharePoint directory, shared messaging folders - but any place other than each member's inbox.
4. **Keep e-mails easy to read and file** - Your team members' inboxes may contain tens of e-mails in the morning. To get them quickly updated, make your message clear already in the subject and in the first line of text. Create a subject line that will make it easy for people to file and find later if needed. When you reply, don't change the subject line, especially with a message that carries a long e-mail trail.
5. **Create common understanding** - The level of detail needed for shared activities, i.e., specifications, change requests, defect descriptions, etc., should be well-understood. Unclear or ambiguous clarifications may cause misinterpretations and wasted efforts.
6. **Prepare for problems** - Agree a communication protocol used when an issue arises which requires attention by the team in the other hemisphere while they are asleep. For example, the issue can be logged and e-mailed by the initiating team to the support team, who can act on it when they come online. The supporting team can work to resolve the problem while the initiating team is sleeping the next night. In the best case, when the initiating team comes back online, they have an answer waiting for them.
7. **Review meetings** - Follow the process and task compliance in weekly meetings. Document meeting minutes, which are sent to each participant immediately following the meeting, detailing who was present and who has agreed to which action items, with deadlines to be completed before the next meeting. Update the project plan based on status reports and any changes of tasks. Review high-level milestones to ensure that the project is on track.
8. **Plan around “peak times”** - These are times when everyone, in every time zone, considers it to be part of their workday. Schedule the meetings at those times that are acceptable for all participants. This is a difficult task, if your team is distributed into three geographical areas. Use meeting planner etc. when looking for synchronized meeting times across different time zones: <http://www.timeanddate.com/worldclock/meeting.html>

17. REMOTE MANAGEMENT

Remote managers feel frustrated because they feel they have less credibility without awareness of the local context. Furthermore, the physical distance as such is not the problem, but the perception of distance is. In remote management, it is easy to be “absent and unavailable” online, however, more important is to be absent (physically) but available for remote work.

At the European Group for Organization Studies Conference in Amsterdam this year 2008, there was an interesting presentation about problems of remote management by Emmanuelle Leon from Ecole supérieure de Management ESCP-EAP Paris, France.

Remote management takes place when the manager is physically distant from subordinates and unable to follow their work directly (Figure 1). The typical management style of remote management situations is management by objectives. This management style leads managers to react only if their subordinates do not reach their goals. According to Leon, managers will focus their remote interactions on subordinates that are “below expectations”, mostly through phone conversations. There is no time for chitchat: only formal interactions remain, sometimes erasing all personal aspects of the managerial role, such as professional development, succession planning, etc.

In her research, Emmanuelle Leon found three issues for remote management:

1. Managers often are not aware of their subordinates’ work contexts and this causes frustration and undermines their credibility. Remote managers feel frustrated by their lack of awareness of local contexts, as it diminishes their ability to detect problems.
2. Even though mobile communication technologies reduce physical distance – by enabling the manager to communicate with his subordinates and control their work – they can also increase distance perception by reducing the quality of interactions. The communication impoverishes and becomes mainly task-oriented and lacks non-verbal cues, furthermore, other issues are the difficulty to interact when not sharing the same mother tongue.



Figure 1. Remote work.

3. In remote management, both managers and subordinates may choose to be “present” at work and “unavailable” to the other party, which is more difficult when sharing the same location. Emmanuelle argues that the main challenge of remote management does not lie within physical distance but within distance’s perception. In a remote management context, it is easy to be absent and unavailable; the key issue is not to be physically present, but to reflect on how to be “absent” and “available”

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18. OPTIMIZING VIRTUAL REALITY

More and more businesses and educators are using virtual reality simulations, like Second Life, to develop a virtual presence. Virtual reality is highly interactive, computer-based multimedia environment in which the user becomes a participant in a computer-generated world. A key feature of virtual reality is real-time interactivity where the computer is able to detect user inputs and instantaneously modify the virtual world in accordance with user interactions. Currently, the most well-known virtual world is Second Life, developed by Linden Lab, Headquartered in San Francisco, and launched June 23, 2003. Learn more: <http://www.youtube.com/watch?v=b72CvvMuD6Q>

People are represented in the virtual world by an avatar – an alter ego of the user. The basic avatar is human in appearance, male or female, and has a wide range of physical attributes. Jeremy Bailenson's research team in Stanford University's Virtual Human Interaction Lab is studying the social interaction of avatars in virtual reality. They are testing how the avatar could look like you and animate your behavior in real time, and how that increases your feeling of collaborating with others in virtual world. For example, one of the problems in Second Life now is that it doesn't feel like you are in the virtual world because the avatars are not capturing the users' real appearance, gestures and behavior. They have also studied how avatar's looks and appearance affect in social interaction in virtual world.

"Your physical appearance changes how people treat you, and when you perceive yourself in a certain way, you act differently," says Bailenson. It unfair, but usually attractive people are seen possessing a long list of desirable traits, including honesty, generosity and kindness. Perhaps as a result, people judged attractive are more self-confident than others and so tend to be extroverted.

In August, 2008 Jeremy Bailenson gave a talk in Media X at Stanford about Optimizing Virtuality (Figure 1).



Figure 1. Jeremy Bailenson gave a talk on virtual reality in Media X at Stanford in August 2008.

HOW TO OPTIMIZE VIRTUAL COLLABORATION ENVIRONMENT TO GIVE YOU SUCH POWER YOU WOULDN'T HAVE IN PHYSICAL SPACE?

In virtual world you can be more influential and persuasive. For example, in the real world, making eye contact increases your persuasiveness, but you can gaze at only one person at a time. In virtual world you can make your avatar seem to gaze at many people simultaneously. Hence, these people pay more attention than they would in a face-to-face conversation, and be twice as likely to agree with you.

You can influence by building similarity in virtual world. Since, people like similar people, they are more willing to cooperate and help people similar to them. Mimicking is one way to build similarity and persuade people in virtual reality. Merely copying someone's head movements after a four-second delay makes them much more likely to agree with you, Bailenson found.

While pursuing answers to question about optimizing virtual collaboration, Bailenson has become aware that virtual reality can also be used for disturbing ends, for example, manipulation, of which people should become aware. Learn more about Bailenson's fascinating but scary study results from VHIL web site: <http://vhil.stanford.edu/>.

19. GOOD PRACTICES OF A SUCCESSFUL VIRTUAL ORGANIZATION

Good practices for a virtual organization are accountability, establishment of big rules of protocols and etiquette, community of respect and trust, proactive people management and using tools to have a visible presence in the whole company. These are some of the good practices found by researchers studying a high performance and fully distributed organization.

In a seminar of the New Ways of Working -network (<http://newwow.net/public/>), we listened to a presentation on good practices of a successful virtual organization. The company in question was a fully virtual organization with no specific location where people could come to, however, in their later years they acquired a Head Quarters office in the US. They have all their employees working from around 30 countries and more than 70% of these employees work from home. The company has been mentioned by Fortune Magazine as one of the most successful virtual organizations.

The researchers found a number of good practices that made this company very successful. These good practices were part of the company culture. Below some of the most important ones are mentioned.

GOOD PRACTICES OF A SUCCESSFUL VIRTUAL ORGANIZATION

1. **Decision-making and accountability** - High degree of accountability and very connected managers and coworkers. Management of accountability performed through task assignment to named individuals and visible status updates.
2. **Meetings regular, structured and documented** - The meetings had very clear protocols and were fully documented.
3. **Establishment of big rules** - They defined several 'big rules' on team protocols and etiquette.
4. **Rewards** - Rewards were meaningful (not only in money) but also in other small things, like e.g., books, gift cards etc.

5. **Tool use for interaction** - Use of IM (chat) throughout the whole company to indicate a presence for both work as well as social connections. Use of Wikis for collaboration and data sharing.
6. **Community of respect and trust** - Valued the individual and tried to optimize a person's strengths and motivations.
7. **Proactive management** - People management very important: nurturing team relationships, keeping teams on track as well as coaching and mentoring people.
8. **Hiring procedure** - Very selective hiring procedure to find people who would really fit in this organization and its community. The company originally came from an open source community and through experience in this open source community a preview of skills, reputation and work style could already be seen. Furthermore, since the organization was fully virtual, people could work wherever they wanted to, and did not have to move. This made it possible to attract people from all over the world.
9. **Fun** - Very important aspect in the company was that they had several events with a low budget in order to increase relationship building, e.g., a virtual Christmas party.

20. VIRTUAL TEAM RELATIONSHIPS

“Relationships among members are the bonds that enable virtual teams to do their work across boundaries.” (Lipnack & Stamps, 1997)

In the Virtual Learning Café last Monday, we talked about communication in virtual teams, the use of technologies, and how people share information in meetings. In order to maximize work effectiveness, a great deal of attention must be paid to quality of communication. The key to enhance quality of communication is in relational communication, building familiarity and reliance between team members. This is much more than a “feel good” issue, because quality relationships support the trust building that remains a cornerstone of effective team performance and knowledge construction.

Virtual teams lack regular, face-to-face social contact to accelerate team relationship building. Cultural differences add boundaries, which may hinder effective collaboration in global virtual teams. Therefore, global collaborators should reflect and develop social competence in dealing with other people. Those people who have a higher level of social intelligence tend to better understand other people’s feelings, thoughts, and behaviors and manage the relationship even from distance.

LEARN TO EXPRESS FEELINGS THROUGH TECHNOLOGY MEDIATED COMMUNICATION

Today’s ICT provides some remedy for the lack of close physical proximity in virtual teams. For example, chat and instant message users constantly re-create new electronic “paralanguage” to express affective and socioemotional information, which includes intentional misspelling (sssoooooo Fun!), strategic capitalization (SHOUTING), and emoticons ;-). In work context, people might still be a little bit reserved for using these kinds of expressions. Nevertheless, emotions have a great impact to people’s action.

In addition to text-based communication, virtual teams need opportunities for synchronous communication. Most people prefer regular voice-based or video enabled communication, which makes understanding of teammates and their moods and needs easier. Virtual meetings allow to hear tones of voice, inflections and to get a sense of feelings or possible inhibitions. However, no technology itself is enough to create good relationships between geographically distant team members. Developing social intelligence in your virtual team requires conscious effort.

:: TIP OF THE WEEK ::

BOOK 10 MINUTES FROM THE BEGINNING OF YOUR NEXT TEAM MEETING FOR A “CLIMATE CHECK”. ALLOW EVERYBODY TO TELL (1) WHETHER OR NOT THEY FEEL ABLE TO WORK EFFECTIVELY THAT DAY AND (2) WHAT NEEDS AND EXPECTATIONS THEY HAVE FOR YOUR MEETING THAT DAY.

After trying that once, you might want to continue this practice in the future. Although at first the idea may feel strange, the designated time for this type of communication is actually helpful to those who might not volunteer it otherwise to share their feelings. This information gathered formally or informally, can help to attend to the needs of your team members and help to ensure that the tone of your team climate remains positive.

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21. KNOWLEDGE SHARING IN VMSTAN ORGANIZATIONS

Before starting the new work year, I spent some time reflecting our vmStan project, our achievements and development needs. Especially, I thought about our challenge of knowledge sharing within and between the project organizations. How could we more efficiently share and spread the information on good practices in virtual knowledge work management and well-being in vmStan project? How could we help knowledge workers develop their own working practices in your organizations? In this blog, I will explore some of the barriers and offer some pointers to overcome them.

HOW TO ENHANCE KNOWLEDGE SHARING?

Need for sharing - Need for new information on enablers and hindrances of effective virtual knowledge work is crucial in global organizations. The goal of vmStan is to share the latest knowledge in our blogs and seminars. Our challenge is to provide the knowledge in such a form that it can be linked to strategy or performance in the organizations. Therefore, your feedback and comments in vmStan Tool and Questions & Answers (Q&A) meetings are essential for us in developing our work.

Learning from each other - vmStan participants share the common interest in learning new ways of working effectively in global organizations. People may not realize how useful particular knowledge is to others. People in different organizations at other times and places might face similar situations and need your knowledge. Additionally, knowledge derived for one need may be helpful in totally different contexts; or it may be a trigger for innovation - many innovative developments come from making knowledge connections across different disciplines and organizational boundaries.

Resources for knowledge sharing - Lack of time – this, I suspect, is the major hindrance of refining and sharing knowledge in many organizations. Sharing

knowledge is not anybody's first priority while there is a pressure on productivity and on deadlines in daily work. How to find time to add the lessons learned in vmStan to the intranet or other organizational knowledge database or have a knowledge sharing session with colleagues?

Formal responsibility - Allocating vmStan collaboration to somebody's official responsibilities has been the solution in some organizations. The conventional wisdom is that the things that are followed up and rewarded get done. Knowledge sharing among other responsibilities in work deserves recognition.

Daily activities - If you learn something beneficial for your work, share the knowledge with your team as soon as possible. If not earlier, do it in your next team meeting. Too many meetings are task- and output-focused, as we noticed in our previous Q&A session. Spice up your regular team meeting by allocating time to understand and improve your team collaboration and internal processes. Use the new collaboration techniques learned in our virtual meetings if possible.

Training -Team-building and training sessions are inspiring and effective forums to share latest information and to create new organizational knowledge. People get most motivated to develop new ways of working if you can involve them in designing and deciding the activities.

22. MANAGING MULTIPLE TEAM MEMBERSHIP

Matrix and project-based organizations strive to increase organizational effectiveness and flexibility by allocating people in multiple simultaneous teams. Multitasking can enhance learning and productivity for individuals and teams if employee assignments are in balance. However, if nobody monitors employees' overall schedule or commitment, working in multiple teams may lead to "project overload", psychological stress, declining project completion rates and revenue generation.

Mark Mortensen presented his study on productivity effects of multiple team membership in the Academy of Management meeting 2008 in Anaheim (Mortensen, Woolley & O'Leary, 2007). Mortensen discussed how some firms prosper with staff committed to 2-6 times more teams than their competitors.

MANAGING THE COSTS AND BENEFITS OF MULTIPLE TEAM MEMBERSHIP

Balance employee assignment - Working simultaneously in multiple different teams consumes time and mental energy of employees. When switching from one team's task to another's, people have to 1) regain focus, 2) catch up on the work done during his/her absence, and 3) shift technologically from the tools being used by one team to the tools being used by the another. Task switching carries a high cognitive load, which can increase general stress and mental fatigue. Therefore, multitasking is often associated with declining project completion rates and revenue generation.

Create shared norms across project teams - Every time someone switches between teams they have to assess whether the teams share the same routines or norms for operating. Organizationally shared norms and culture across all teams in the project organization makes adjustment easier.

Provide means of prioritizing when deadlines conflict - How do people decide, which task is really the most important at any given time? It is imperative that each employee has a clear objective and project prioritization. That helps evaluate how critical each conflicting task is with respect to the main objective.

Define different types of roles on a team - Whether a member is core or peripheral or a "consultant" versus a major contributor. Unclear and ambiguous roles in simultaneous projects cause psychological stress. Role clarification helps people prioritize their time and set expectations for their allocations in different teams.

MONITORING TASK COMPLIANCE

Especially in virtual organizations, remote project managers often experience difficulties in achieving task compliance from their distant team members, who are simultaneously attending local projects and influenced by local management. Most distant leaders in our recent study (Nurmi, Bosch, Sivunen, & Fruchter, 2009) on remote management complained about power problems, "the battle" of proximate and distant management sharing the same human resources. They found themselves competing with the local team leaders who had the home ground advantage in emphasizing the importance of their project tasks at the expense of the virtual project duties.

ASSESSING THE DIRECTION OF YOUR TEAM'S WORK

Team Direction Detector in Vital Web Tool (<https://vital.humap.com/tool/>) is designed for regular monitoring of motivation, objectives, and the clarity of roles within a virtual team.

Check the direction of your team's work often in order to avoid unnecessary mistakes and delays. Perceptions of aims held by distributed team members can easily become blurred, and attention may move from the virtual team to local tasks. Regularly assessing the direction of team work enables you to react quickly to changes in the level of motivation. When the objectives, roles and responsibilities of team members are clear, work is steered in the right direction. Motivation energises team members to work productively. Working under unclear instructions increases the risk of erroneous or overlapping work.

SUCCESS OF YOUR TEAM IS POSSIBLE WHEN TEAM MEMBERS HAVE:
(A) CLEAR ROLES AND OBJECTIVES, AND
(B) A HIGH LEVEL OF MOTIVATION.

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23. GENERATION Y AND ITS IMPORTANCE TO THE WORKPLACE

Is Generation Y already taking a lead in knowledge work? This Net Generation, for whom social networking via the Internet is a birthright, tends to have a more free-spirited approach to work. They are used to contribute to knowledge and not just consume it, publish themselves and network independently - without waiting for an authority to instruct them. They have high expectations for rapid career growth, greater demands for work-life balance.

WILL GENY CHANGE OUR WORK ENVIRONMENT: HYPE OR REALITY?

Last week I participated in a 3-day NewWOW (new ways of working: <http://newwow.net/>) symposium in Palo Alto, CA, on the topic of Generation Y and their impact on the workplace. There has been a lot of media attention on the impact of GenY for the working environment, management and also the workplace. GenY has certain characteristics like skills in communication technology and networking, which could be leveraged by companies, on the other hand, they are demanding and challenging to manage. Therefore, the main question in the symposium was if GenY places different needs on the workplace, and if so, what are these different needs.

We know from literature that GenY (also called The Net Generation, Millennials, Echo Boomers and iGeneration) is currently between 18-25 years old, consisting of 26.9% of the world population and they are perceived as a scarce resource in Europe and Northern America.

CHARACTERISTICS OF THE GEN-Y ARE:

- Raised to feel very special.
- Parents are very active in their life.
- Involvement in decision making at home, they expect also to involve in that at work as well.
- Less need for social approval.
- No problems in showing their opinion.
- Collaborative (learned at school to work in teams and network).
- Technology skills.
- Interest in working off-site.
- Very entrepreneurial.
- High interest in sustainability.

From the discussions it became clear that there are no fundamental differences between generations' abilities or overall attitudes towards work and workplace, other than differences that are more or less normal between older and younger generations. However, GenY has certain competencies developed that companies could leverage, like the strengths in collaboration, networking and communication technologies of GenY. Workplaces that could support collaboration and a choice of communication technologies could help acquire and retain sought-after GenY's.

24. IT AND KNOWLEDGE WORKER PRODUCTIVITY

An article in MIT Sloan Management review discusses the relationships between IT use, patterns of information flows, and knowledge-worker productivity. The research reveals that the productivity of knowledge work can be measured. The use of IT by knowledge workers is positive for productivity and stimulates multitasking.

IT PROMOTES PRODUCTIVITY

An article this month in the MIT Sloan Management Review by Sinan Aral, Erik Brynjolfsson and Marshall W. Van Alstyne describes research that quantifies information worker output and shows a significant correlation between IT use (especially e-mail and database use), project completion, and revenue growth.

This research shows that IT use has a positive effect on productivity. IT use increases output at all levels by enabling greater workloads without a corresponding loss of efficiency.

ASYNCHRONOUS IT STIMULATES MULTITASKING

Asynchronous information-seeking, such as e-mail and database use, promotes multitasking while synchronous information seeking, like phone calls show a negative correlation. On average, workers using more asynchronous e-mail and database tools handle substantially more projects simultaneously. In contrast, traditional synchronous communication modes such as phone calls correlate with less multitasking.

MULTITASKING SLOWS TASK COMPLETION

However, multitasking has a down side: it slows completion rates. The researchers found that those workers who were heavy users of technology tools like e-mail generated more revenue but they were not faster at completing projects, because they were working on more projects at the same time. In fact, researchers found an inverted-U shaped relationship existing between multitasking and productivity such that, beyond an optimum, more multitasking is associated with declining project completion rates and revenue generation.

The authors discuss several explanations for the diminishing marginal returns related to multitasking and conclude that a fundamental tradeoff exists between workload and efficiency. When employees juggle too many simultaneous projects, work gets backed up and productivity suffers.

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25. CHANGE MANAGEMENT IN GLOBAL COMPANIES

Constant innovations in ICT and globalization have created an environment of never-ending change. Those companies that fail to change when required may likely find themselves out of business.

Managing change has become a central focus of effective organizations. When you are planning of a long-term operational or structural transformation, consider carefully the effects and characteristics of the change (Table 1).

- **strategic importance** of the change
- **scale** (the change affects all or most of the organization),
- **magnitude** (it involves significant alterations of the status quo),
- **duration** (it lasts for months, if not years), and
- **costs** (the change requires time and human resources, i.e. money).

Jones, Aguirre & Calderone, *Strategy + Business* 4/15/04

Change Works...
Sometimes.

The difference is
people – and how
they are led.



Companies will reap the rewards only when change occurs at the level of the individual employee. Usually, it's hard for individuals to adjust to change. People often view it with suspicion and distrust -- especially during difficult times like the current economic downturn.

On the other hand, the financial problems can create a collective feeling that solutions must be found quickly. People start looking for solutions for problems that they didn't know to exist before and come up with more effective work practices.

CREATE A POSITIVE ENVIRONMENT FOR CHANGE

Build trust: When employees trust and have confidence in the management and the company, they are much more likely to accept change. Without trust they are likely to resist change vigorously.

Communicate openly: Provide details of the change and the rationale behind it. Discussing openly the upcoming changes with employees reduces the fear of unknown.

EXPLAIN (1) WHAT THE CHANGE IS, (2) WHY IT'S NEEDED, (3) WHOM IT WILL AFFECT, (4) WHEN, WHERE AND HOW IT WILL TAKE PLACE.

Offer channels for Q&A: It's critical that the employees are given opportunities to ask questions concerning the change. When employees receive all the facts and get their questions answered, their resistance often fades. Great example of ICT use in discussion between the top management and employees is Cisco's video blog. Cisco's top management including the Chief Executive John Chambers record and post regularly talks in Cisco's internal video blogs, which employees can comment online. Their questions get answered by the top management - or their assistants. Anyhow, employees' opinions gets heard and taken into account.

Involve the Employees: Employees who are involved in the change process, understand better the need for change and are therefore less likely to resist it. Few people resist the change when they have participated in the decision making and helped implement it.

THE PSYCHOLOGY IS SIMPLE: WHO WANTS TO OPPOSE SOMETHING THAT S/HE HAS HELPED TO DEVELOP?

26. IMPORTANCE OF SOCIAL SIGNALS

By analyzing overlooked behavioral cues, researchers are creating a new understanding of organizational effectiveness. Research performed by Prof. Alex Pentland (<http://web.media.mit.edu/~sandy/>) and his group at MIT Media Lab (<http://www.media.mit.edu/>) looks into subtle patterns of interaction. The subtle or honest signals are unconscious social signals, which form a complementary communication network next to language which we use for communication. He found that face-to-face communication with help of these unconscious social signals plays an important part in improved productivity within companies.

UNCONSCIOUS SOCIAL SIGNALS IMPROVE PRODUCTIVITY!

At MIT, Pentland has developed a specifically designed digital sensor in the form as an ID-badge which is called the 'sociometer'. The sociometer monitors and analyzes the patterns of signaling among groups of people. The group found based on a large amount of quantitative data on day-to-day human behavior that many types of human behavior can be reliably predicted from biologically based honest signaling behaviors. With the array of sensors, the badges can detect what Dr. Pentland calls "honest signals, unconscious face-to-face signaling behavior" that suggest, for example, when people are active, energetic followers of what other people are saying, and when they are not (Figure 1). He argues that these underlying signals are often as important in communication as words and logic.

27. IS VIRTUAL WORK A HEALTH RISK?

Collaboration across time zones requires flexibility in work time. Frequently global team members extend their work hours to communicate with co-workers located another side of the world.

LONG WORK HOURS ARE A HEALTH RISK

Lengthening workdays and working nights have long been associated with health risks. Evidently, participating virtual meetings regularly at night confuses your circadian rhythms. Add to that the increased workload and disruptions of family life, and it is fairly obvious why health problems occur. The usual symptoms are stress, disturbed sleep, fatigue, digestive problems and a greater risk of accidents.

Usually, global team members don't have the luxury of sleeping till the afternoon after a night-time work meeting. Instead they continue working their normal business hours. Consequently diurnal sleep time cuts short.

LESS SLEEP MORE COLDS AND FLU

New research at Carnegie Mellon University (<http://www.cmu.edu/research/index.shtml>) found that people who get less than seven hours of sleep per night may be more susceptible to the common cold. The researchers purposely infected 150 healthy volunteers with a common cold virus called rhinovirus and watched to see who got sick. They found that the people who had slept less than seven hours a night in the weeks before being exposed to the virus were about three times more likely to develop a full-fledged cold than those who had slept more.

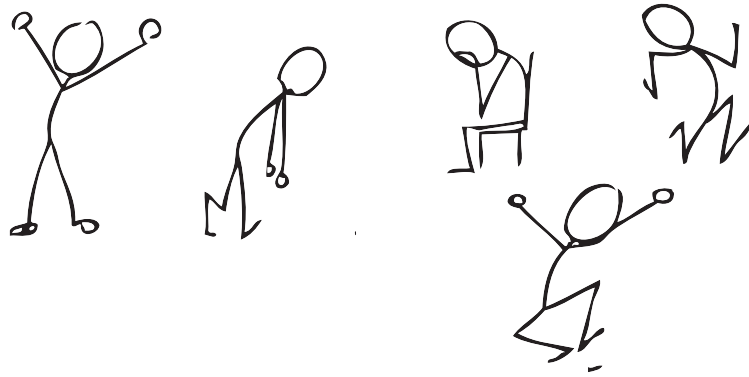


Figure 1. Signals.

Pentland found that the often unconscious communication channel revolved around social relations, and provide a quite effective window into people's intentions, goals and values. Pentland mentions in his book that the patterns of signaling between people in a group (social networks) strongly influence the behavior of both the individuals and the group as a whole. See the interview below on Pentland's research.

Being able to read and use social signaling can become very successful in pitching an idea, getting a job or closing a deal, or becoming more productive. However, face-to-face communication plays an important part in this theory.

Therefore, the main question is: how can globally distributed and mobile teams leverage the knowledge of social signals with help of current technology? Current technology is not up to the challenge yet, but possibly with this knowledge, tools can be developed to improve social signaling across distance.

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Furthermore, James McClain, Ph.D., cancer prevention fellow at the National Cancer Institute (<http://www.cancer.gov/>), found in his large sample (N=5,968) study that those who average less than seven hours of sleep per night are almost twice as likely to get cancer than those who regularly get more sleep.

As global collaboration is continuously increasing in organizations, employers must start paying attention to virtual workers' work time. Without a choice, virtual team members keep working extended work hours before better ways to coordinate across time zones. The central challenges of organizational management and HR professionals in global organizations today are ongoing monitoring of virtual workers' health and well-being. And we all global workers share the responsibility of developing healthier practices to coordinate across distance.

April 16, 2009, Stanford, Niina Nurmi

28. INVENTING THE INTERNET

Dr. Vincent Cerf, Google's Chief Information Evangelist gave an industry research lecture March 30, 2009 in Stanford University (Figure 1). Widely known as the "Father of the Internet," Vint is the co-designer with Robert Kahn of TCP/IP protocols and basic architecture of the Internet.



Figure 1. Dr. Vincent Cerf, Google's Chief Information Evangelist told how he and his study mates created Internet.

THE FIRST THREE-NETWORK TEST OF THE INTERNET IN 1977

Three decades ago, Vint Cerf was working as an engineer in SRI International, the research center most famous for inventing hypertext and the computer mouse. On November 22, 1977, Vint and other SRI engineers tested TCP-based information transmission between three separate networks-Arpanet, packet radio, and satellite (Figure 2). They were cheering joyfully when the data successfully flew through a tuned-up van between SRI in Bay Area and the computer lab in University of Southern California via Norway and Britain from where it bounced back to Southern California. The success of that experiment was a critical milestone in the development of the modern Internet and wireless networking.

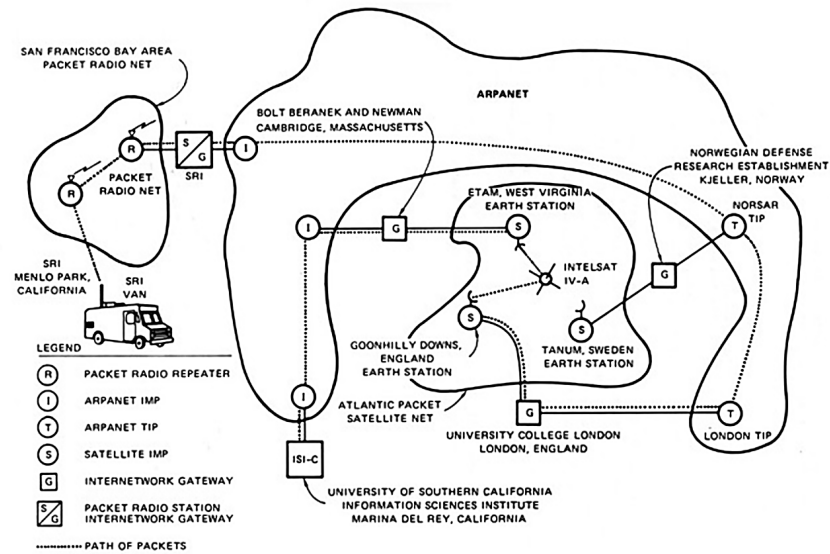


Figure 2. Three network test of Internet: Arpanet, packet radio, and satellite.

Internet has had an enormous impact on people's lives around the world. "It has changed business, politics, entertainment, culture, health care, the environment and just about every other topic you can think of," Vint said.

We rely on the Internet for everything from personal communications to global financial transactions. Never in history have so many people had so much information, so many tools at their disposal, so many ways of making good ideas come to life.

IS INFORMATION SAFE IN THE BIT SPACE ?

Many of us have stored tons of valuable information, photos, videos, etc. as digital objects in the Internet and in different files of our personal computer. These files become less and less accessible owing to the age of the software that created it. As an example, it is already a challenge to access text documents created with Work-Perfect. Some of us might have written a master's thesis with that software years ago... Imagine trying to access that same thesis file in 100 years, or in one thousand years. The precious information, text and pictures you have saved in that file, is ac-

tually only series of 0 and 1. To read the information you need software that interprets the bits for you. In the worst case scenario, you will lose all your files created with old software, if companies stop supporting the software.

"It's not only file formats that change, though. Changes in computer programs, operating systems and even the hardware that we use to build computers will accentuate the challenge of keeping digital information meaningful. This raises a host of intellectual property questions that will almost certainly need to be considered," Vincent emphasized.

DOES INTERNET HAVE ENOUGH ADDRESS SPACE ?

Address space capacity poses a challenge to the future of the web (Figure 3). IP address exhaustion has been a concern since the 1980s when the internet started to experience dramatic growth. "In 1977, when we designed how much address space to include to the internet protocol, 32 bits of address space sounded crazy. People were asking, why we would need that much address space for a single experiment – Well that experiment never ended and now we are running out of space", Vint said. We will need to move to a new internet protocol version, called IPv6. With its 128 bits of address space (about 340 trillion trillion trillion addresses), there will be plenty of address space for the foreseeable future.

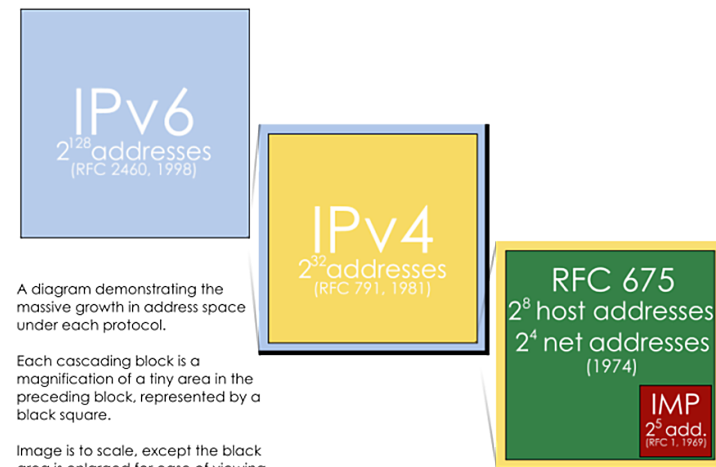


Figure 3. Growth in Internet address space.

29. DIFFERENT TYPES OF VIRTUAL WORLDS


There are a number of different types of virtual worlds available at the moment and all have their pros and cons and are applicable for different user groups. Eilif Trondsen from SRI Business Consulting Intelligence (<http://www.strategicbusinessinsights.com/>) held a presentation at a tertulio of the NewWOW network (<http://newwow.net>) about virtual worlds for especially enterprise collaboration.

VIRTUAL WORLDS FOR ENTERPRISE COLLABORATION ARE STILL IN EARLY MARKET PHASE

Virtual Worlds are receiving more and more attention as a potential tool for enterprise collaboration. Currently many different types of virtual worlds are developed and for different user groups. The virtual worlds that can be applied for enterprise collaboration are still in the early market stage, while other virtual worlds mainly build for kids and teens are already adopted more. The enterprise collaboration virtual worlds are still in the early market adaptation phase because user friendliness of the systems is low, complexity is high and costs of building a virtual world are high.

Eilif presented different types of platforms as well as examples of virtual worlds and their challenges and benefits (Table 1).

Table 1. Different types of virtual worlds (adjusted from Eilif Trondsen 2008).

Platform of virtual world	Characteristics	Players	Examples
Proprietary platform (download)	High degree of immersion (engagement) More controlled environment	Relatively few players. Less game oriented More adult user base	Second life; Qwaq; Olive; Protosphere; Active worlds
Open source	More programmer focus and creating a world can be more complex, but can be adjusted to personal needs		Wonderland; Sirikata; OpenSim; Croquet
Browser based	Mainly end-user focus and creating a world is simple. Relatively low degree of immersion	Numerous players. Game oriented. Dominated by younger generation	Vivaty; Web.alive; WebFlock

In earlier blogs, we already discussed some examples of proprietary virtual worlds, which are downloadable, have a higher user interface experience, but are rather controlled environments.

Currently applications with greatest appeal for virtual worlds are meetings, learning and training sessions, collaborative work and operational applications like visualizations, simulations and process optimizations (based on a survey held by SRIC-BI).

Next to potential benefits of using virtual worlds in enterprise collaboration like serendipity encounters, low costs for communication and collaboration, rich and flexible interaction environment for remote and mobile people and more effective communication capabilities, there still are several challenges as well. These challenges are a steep learning curve for working with the virtual world, no interoperability between worlds that is you cannot switch your world/avatar/stuff to another virtual world, certain functions are weak, e.g., search functions, as well as the relevance of usage of virtual worlds for enterprise collaboration is not always clear for companies.

30. DOES DISTANCE STILL MATTER?

Last week Prof. Gary Olson and Prof. Judith Olson from Irvine University, California, USA presented a seminar at computer science at Stanford on the topic of: "What still matters about distance". In 2000, these authors wrote a paper in the Human-Computer Interaction Journal in which they reviewed literature on distance. The authors believe that many aspects they mentioned then are still valid in 2009 as well. The authors presented four core findings from 2000 still valid for 2009, for working remotely successfully:

1. Need for common ground.
2. Nature of the work (coupling of work).
3. Collaboration readiness.
4. Technology readiness.

EVEN THOUGH COLLABORATION TECHNOLOGY HAS BEEN DEVELOPED SINCE 2000, GEOGRAPHICAL DISTANCE STILL MATTERS FOR COLLABORATION!

Need for common ground - This implies the knowledge that a team has in common and that they are aware of that they have it in common, e.g., similar definitions and understandings. However, with current awareness support, e.g., social networks, IM, audio and video technology, mobile technology and knowledge management, organizations try to create more common ground and awareness.

The coupling of the work (nature of work) - Work that is tightly coupled (high interdependency) would benefit from collocation. Tightly coupled work is defined as strongly depending on talents of collections of workers and is non-routine and even ambiguous.

Collaboration readiness - The Olsen's talk about incentives for sharing and collaborating as well as specific rules of the road (communication covenant) in which

the team collectively decides how they want to share information and knowledge and how they want to collaborate (how to behave). Furthermore, the importance of trust in remote work gains understanding.

Technology readiness - Since 2000, technology for collaboration has improved tremendously, however, different organizations are still at different development stages in using technology of all sorts. Technology readiness covers not only the organization infrastructure that is provided by the firm, but also an individual's technological readiness. Not only learning the technology is important, but also learning how this technology can support your work and collaboration.

Next to the core findings, which are still valid today, the authors discuss three characteristics of distance important for working remotely: trust, culture and different time zones. Even though these aspects receive more attention and awareness, still a lot of work needs to be done on remote work, i.e., how to maintain and build trust in remote work, how to deal with cultural differences and more exploration needs to be performed in asynchronous awareness tools.

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31. MESH COLLABORATION

Last week in Cisco we had a Telepresence meeting with Nick Earle, Senior Vice President of Cisco, UK. He had interesting thoughts about network as platform for emerging services business models. Specifically, he talked about the change in how people work focused on Web 2.0. He labeled this new way of working as Mesh Collaboration. By 'Mesh' he meant everyone and everything is now connected. It's all about worker's ability to draw together the right people and content at the right time from this mesh. If you understand how to use Web 2.0 tools then you can understand how to handle almost any problem.

For Generation Y, this all comes natural. They already utilize social networking with school work to solve problems. For example, when they are doing homework, they search content and people with Web 2.0 tools. They instant message with friends about homework assignments and use Facebook to find people with knowledge about what they are working on at school. With this collaboration competence Generation Y knows that all the information they need can be found online either from the content on a web page or by being able to ask someone with detailed knowledge directly.

WORK SMARTER NOT HARDER

Mesh collaboration promotes spontaneous unpredictable interaction between customers and business developers. Mesh working is built in the four pillars of Web 2.0: Social networking, blogs, wikis and RSS (Really Simple Syndication). Also such communication tools as handheld devices, web browsers, e-mail, instant messaging (IM), video communication via IP phone facilitate mesh collaboration. For example, with IM you run instant conversations that in one form or another helps you to solve problems at work or develop new business ideas. IM also allows you to know about what your various contacts are doing at any given moment in time. It is like standing at the water cooler and having a whole series of quick words with col-

leagues who pass to get things done. IM creates virtual presence and collaboration with people who are entering and leaving as needed and according to availability.

Mesh collaboration is a new and stronger form of collaboration. If you think of collaboration as facilitating innovation, Web 2.0 -type technologies open new opportunities for companies to enhance their operations not only internally but with the outside world as well. By being standardized and people focused, collaborations can be set up and changed and dictated by circumstances in order to connect and support internal and external people. With Web 2.0 tools you have the world – the network of everything – to draw on for your problems, while the others are desperately trying to solve everything with their own resources.

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For a very good explanation of Web 2.0 go to: <http://oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

32. US JOBS WILL CHANGE – WILL YOURS?

In TIME magazine of last month a special report on “The Future of Work: 10 Ways Your Job Will Change” was presented. The reporters predict that US work will be more flexible, more freelance, more collaborative and far less secure work world. Here are 10 ways the US jobs will change; many changes are based on the drops and problems of the economy. Some of these changes might also be seen in other countries.

10 WAYS JOBS WILL CHANGE IN THE NEAR FUTURE

1. **Knowledge work will lead** - Proof points: McKinsey & Co. reported that nearly 85% of new jobs created between 1998 and 2006 involved complex “knowledge work” like problem-solving and concocting corporate strategy. Job opportunities in mathematics and across the sciences are also expected to expand. The U.S. Department of Labor spotlights network systems and data communications as well as computer-software engineering among the occupations projected to grow most explosively by 2016. Over the next seven years, the number of jobs in the information-technology sector is expected to swell 24% — a figure more than twice the overall job-growth rate.
2. **Learning managers to behave ethically** - Business schools will include ethical education in the management programs. Managers will be rated on their ability to act with integrity, maintain sustainability, and oppose corruption and exploitation.
3. **Companies scale back on benefits** - Especially company-supported retirement programs and employer-sponsored health care reduce. The employee will carry more of the cost burden instead of the employer.
4. **The typical career ladder is changing** - Companies are experimenting with unpaid furloughs, lateral promotions, and alternative work schedules that is flexible work. Proof point: Deloitte’s Mass Career Customization (MCC) program, which let’s employees “dial up” or “dial down” their career trajectory.

5. **Boomers aren’t leaving the workforce anytime soon** - Boomers can’t afford to retire because their retirement funds have not grown enough and have to delay retirement with 9 years due to the market drop. And, because the normal retirement cycle has been disrupted, unemployment may surpass 10%.



6. **Importance of woman in business** - Cambridge University and University of Pittsburg suggest that woman manage more cautiously than man do, focus on long term and are consensus builders, conciliators and collaborators. The Chartered Management Institute in UK predicts that woman move rapidly up the chain of command and their emotional-intelligences skills may become even more essential in a more fluid and virtual world. Smart companies are creating a female-friendly working environment, where the focus is “on results, not on time spent in the office chair. On efficiency, not schmoozing. On getting the job done, however that happens best - in a three-day week, at night after the kids go to bed, from Starbucks.”
7. **Focus on environmental programs can create more green jobs** - The U.S. Conference of Mayors reports there are already more than 750,000 green jobs in the US. They expect that green employment could account for up to 10% of future job growth over the next 30 years. The White House directed more than \$60 billion to clean-energy projects as a part of its stimulus package.

33. MULTIPLE ROLES OF DISTRIBUTED TEAM LEADERS

Geographically distributed teams whose members work apart for a joint goal and collaborate mainly via information and communication technologies have become increasingly common during the last decade. However, research lacks a coherent picture on the leaders' work and roles in real distributed teams. Thus, researchers in the European Congress on Work and Organizational Psychology asked:

WHAT KIND OF ROLES DO LEADERS HAVE IN DISTRIBUTED TEAMS?

Our study (Koivisto, Ruohomäki & Vartiainen, 2009) illuminates distributed team leadership by examining the functional roles that leaders perceive themselves to have.



The study data was collected by interviewing distributed team leaders (n=37) from eleven companies. They represented high tech industry, customer service sector and forest industry. They came from the Northern Europe (n=27), Middle Europe (n=4) and North America (n=6), and were geographically and culturally dispersed. The interviewed leaders described their daily work and collaboration in distributed teams. Two researchers analyzed, coded and categorized those interviews.

8. **In 2019, Gen X will be in charge and they'll need a different skill set** - "Paying your dues, moving up slowly and getting the corner office — that's going away. In 10 years, it will be gone," says Bruce Tulgan, head of the consulting firm Rainmaker Thinking. "Instead, success will be defined not by rank or seniority but by getting what matters to you personally." Another aspect is that collaborative decision-making might involve team members scattered around the world and skills for working globally become more important.
9. **Manufacturing will change** - Manufacturing jobs in the US decreased heavily while output has grown to nearly 800 billion dollars. Manufacturing jobs in the US will be limited to "highly skilled workers creating high-value products in high-stakes industries."
10. **Change of workplace, goodbye cubicle** - "The need to actually show up at an office that consists of an anonymous hallway and a farm of cubicles or closed doors is just going to fade away. It's too expensive, and it's too slow." It will be replaced by virtual workplaces. Bosses will trace your work output electronically. "The boss will know when you log in, what you type, what you access. Not just the boss but also your team. . . . you'll instantly know when a teammate is struggling, because that will slow you down as well."

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The Future of Work: 10 Ways Your Job Will Change, TIME, May 14, 2009.

DISTRIBUTED TEAM LEADERS PERFORM SEVERAL ROLES SIMULTANEOUSLY

We found the following roles of distributed team leaders classified into three categories (Koivisto, Ruohomäki & Vartiainen, 2009):

1. **Managerial roles** - Such as 'strategist', 'organizer', 'provider', and 'decision maker'.
2. **Informational roles** - Such as 'informant', 'information collector', 'communication facilitator', 'liaison', and 'informal communicator'.
3. **Interpersonal roles** - Like 'coach', 'relationship builder', 'troubleshooter', and 'empowerer'.

The results showed that the leaders performed several, even contradictory, roles simultaneously: Integration and differentiation, change and stability, task and interpersonal aspects, individuality and communality, informal as well as formal communication were present in distributed team leaders' tasks.

LEAD THE TEAM INSTEAD OF INDIVIDUALS

This study suggests that characteristics of distributed teamwork affect the roles that leaders perform. It seems that especially roles that support teamwork become important in distributed environment. Traditionally leaders' functional roles have mainly concentrated on leaders' relationship with their individual subordinates. This study highlights leaders' need to lead a group as a whole instead of just leading individuals. This presumably stems from the nature of distributed work: team members rarely meet face-to-face, they have different native languages, cultural and often occupational backgrounds. Consequently, the identification with the group easily remains poor. In sum, the distributed team leader needs to facilitate collaboration.

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34. DUALITY OF CONNECTIVITY AND CREATIVITY

Managing in a highly connected world requires managing the tangled web of both technical and social connectivity around us, including connective devices and media, social networks and work expectations. Technology-enabled 'knowledge' work represents massive opportunities for organizations and employees, but also presents the biggest challenges and changes in terms of how work gets done. A paper by Darl Kolb and Paul Collins (2009) investigates how those living highly connected lives find the reflective and regenerative space to fuel their creativity and revive their passion. The authors suggest that there is a growing need to recognize the value of 'disconnection' for regenerative personal reflection if creativity and innovation are to flourish.

BOTH TEAM CONNECTION AS WELL AS DISCONNECTION ARE NEEDED FOR CREATIVITY

In July 2009, several interesting presentations were held at the EGOS (European Group of Organization Studies: <http://www.egosnet.org>) conference in Barcelona, Spain in the theme of New Ways of Working. One particular presentation of Darl Kolb (New Zealand, University of Auckland) and Paul Collins (USA, University of Washington), discussed how to manage creativity and innovation through team connectivity and individual choice for being connected.

The authors state that knowledge is created and maintained within a duality of connects and disconnects.

- (1) On the one hand, we need to be connected to be creative (generative connection). We learn in context with others. Creativity normally involves an *interaction*—usually through conversation or reading—with others' thoughts and perspectives. So, acts of creativity require us to 'connect' with others, be it in face-to-face conversations, on the phone, text messages or in virtual, mediated environments.

35. WHAT IS THE MEANING OF OFFICE FOR A MOBILE TEAM?

WELCOME BACK TO OFFICE AFTER SUMMER HOLIDAYS! HAVE YOU BEEN THINKING WHAT IS MEANING OF OFFICE FOR YOU AND FOR YOUR TEAM?

Mobility and distributed work are increasing. Using multiple places for working is common (Figure 1). For example, the Fourth European Working Conditions Survey shows that only 51% of EU employees work only in company premises. However, little is known how mobile knowledge workers use and evaluate different workplaces. Therefore, I explored workplaces of a distributed and mobile team. My study focused on a geographically distributed and mobile team of a global high-tech industrial company.

The team members had multiple working places: they worked in the main office, at home, in customer sites and while travelling in airports and hotels. Home office was applied for individual tasks requiring concentration, and they found themselves quite productive there. Team members travelled a lot, but they perceived travelling stressful, tiring and the least productive time.

THE MAIN OFFICE OF THE COMPANY WAS PERCEIVED THE MOST IMPORTANT WORKPLACE FOR THE MOBILE TEAM

The results showed that the main reasons to travel to work in the main office were:

1. to meet the customer
2. to work and interact with colleagues
3. to identify and feel belonging with the team.

- (2) However, on the other hand, creativity also requires periods of solitude and reflection (regenerative disconnection). Our ability to absorb and adopt new information and knowledge is enhanced by reflective learning, which generally requires some form of *independence*, even isolation from others.

FIND THE BALANCE

Finding the right balance between connectivity and being disconnected is beneficial for creativity and innovation. Making this duality explicit helps teams manage their creativity and collaboration better. Kolb and Collins gave several practical suggestions such as:

- (1) Team leaders should discuss with their team members about the expectations for contact: how much, how often the team needs to communicate.
- (2) Teams should agree about the level of choice individuals have in the team context (right to be 'off-line'), as well as the preferred media for different team tasks or processes.

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The company provides different types of workplaces in the large open plan office. The mobile knowledge workers used workplaces in a flexible manner and had non-assigned desks. They navigated in the office to find an appropriate workplace, like a meeting room or quiet place, according to their tasks at hand. As a team, they considered themselves most productive in meeting rooms and in team areas of the main office.

The main enablers in the office workplace were:

- Close proximity to team members.
- Excellent infrastructure and equipment.
- Appropriate technology.

However, the mobile knowledge workers were not quite satisfied with the open plan office solution for individual tasks. Restless environment and uncontrolled noise disturbed concentrated individual tasks and may seriously reduce productivity and satisfaction.

The main hindrances in the office were:

- Lack of common area for the entire team.
- Limited number of meeting rooms and quiet rooms.
- Problems in finding colleagues and identification.
- Noise and interruptions in the open plan office.

This study showed that the office workplace plays a very important role for team performance and satisfaction.

Therefore, the office workplace must support both individual and collaborative work tasks as well as identification with the team. However, the same workplace ('open plan office') may not support all these tasks.

We wish you and your team to have a pleasant working season in your office environment!



Figure 1. Brainstorming by NewWoW members in the garden in Silicon Valley (Photo by Virpi Ruohomäki).

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36. CONFLICT MANAGEMENT IN DISTRIBUTED MULTI-PARTY PROJECTS

Despite the experience and mounting knowledge about distributed collaboration, organizations still struggle to successfully deploy global multi-party projects. Statistics suggest that only 29% information systems development projects are completed on time and within budget and meet their requirements.

Reasons for failures are numerous including difficulties in determining requirements, estimating, coordinating and controlling project teams. Other factors that contribute to the challenges are the project complexity in scale and scope. Distributed projects often span across cultural and organizational boundaries involving a diverse set of members and stakeholders.

Managing such a multi-party project is extremely difficult. When a project involves different stakeholders, drawn from different backgrounds, it may be especially prone to conflicts.

Kirisch et al. (2009) presented their study in the Academy of Management conference in Chicago this summer concerning the antecedents of conflicts in multi-party projects. Their analysis reveals that the following triggers of conflicts:

- Diversity between stakeholders.
- Mistaken assumptions about technical capabilities.
- Uncertainty of who is a stakeholder.
- Lack of communication between key stakeholders trigger conflicts.

Conflicts can be avoided and managed by creating such team conditions under which the diversity of actors has more positive impacts on project outcomes multi-party project teams. Ideal conditions for multi-partner project work include:

- Understanding the differences in underlying work practices, thinking styles and meaning systems among participants.
- Clarifying roles and responsibilities between different stakeholders and project members to prevent misunderstandings.

- Frequent inter-stakeholder or inter-subgroup communication can increase cohesion and reduce conflict. Without adequate communication, conflict will slowly brew as each stakeholder or subgroup pursues its own agenda and the gap between them widens. After a long period of lack of communication, a formal meeting may very well be the catalyst to trigger conflict and make underlying differences to become apparent.
- Solving conflicts thoroughly when they happen can prevent future conflicts. One unsolved conflict may easily trigger distrust and reinforce other conflicts. This happens when the first conflict enlarges the differences between the two subgroups.
- Building trust across organizational and national borders. The separation of time and space in multi-party collaboration raise the challenges and importance of trust. One way to engender trust is to close the information gap between subgroups and to act trustworthy.

In vmStan's next eLearning café September 22 at 9:00-10:00 we will discuss more about, what does trust mean in distributed collaboration. Each of us has his or her own views, and the organizational context is very important. However, perhaps we can agree at least that a collaborator is trustworthy if they behave as follows:

- Act in our and the team's best interests.
- Be truthful.
- Keep their promises or tell us when they can't keep them.
- Respect the citation and /or protection of information we send them.
- Share mutually-valuable information with us.

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37. PERCEIVED VERSUS ACTUAL DISTRIBUTED WORK

Even though we might think that we work in a collocated workplace we actually work more and more in a distributed manner in our current global world in which we constantly connect to people around the world. Furthermore, according to studied if we are more than 30 meters apart from our co-workers, we already are working in a distributed manner.

MORE THAN 30 METERS APART IMPLIES ALREADY DISTRIBUTED WORK

This perceived collocation versus actual distributed work was one of the findings of case studies performed in global high tech companies (Fruchter, Bosch-Sijtsema & Ruohomäki, 2010). The global teams we studied perceived themselves as collocated (working in one single location) even though their work with their team, suppliers and customers was to a large extent performed in a distributed manner. Working daily in geographically distributed and global teams was challenging because their work processes were not adjusted to distributed work, but more focused on collocated work.

Our study included the following measures:

1. "Distributiveness" factor measured the demand to distribute and shift attention in multi-teaming. Distributiveness provided quantitative data regarding the number of teams each individual is involved in. In some of the cases people worked in more than 10 teams weekly, which made it more difficult to shift attention between these different teams.
2. "Virtuality" indicator provided quantitative information regarding the number of geographically distributed teams each individual engaged in. Several members worked in many geographically distributed teams weekly. Some teams worked geographically distributed (distance), while other teams also crossed time zones and cultures. Geographical, temporal and cultural distance are known to have an impact on collaboration in the form of slower

time to finalize complex tasks, unawareness of local contexts and increased complexity of team communication and collaboration.

MULTIPLE PROJECT WORK INCREASES WORKLOAD AND INFORMATION OVERLOAD

This data highlights a tacit indicator of increased workload, information overload, and high demand on distributing attention across multiple projects that is rooted in a hidden tension between perceived sense of collocation, since a large number of participants was in the same location, and actual geographic distribution of project stakeholders and team members.

BEING UNAWARE OF THE DISTRIBUTION DECREASES WORK PRODUCTIVITY

The fact that members perceive their work as collocated but more often work in a distributed manner impacts the productivity and performance of the knowledge workers. This was found by measuring workload (reflection time, concentrate on a single task, perform multiple tasks) and the distributiveness and virtuality indicators as well as observations of the particular teams and their work.

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38. BUILDING AND MAINTAINING TRUST ACROSS DISTANCE

Establishing trust among members of a virtual team is a prerequisite for being able to work as a team. Different tactics to build and maintain trust will work for different types of teams, but there are some general concepts that will work for any virtual team.

SUCCESSFUL VIRTUAL TEAMS PAY SPECIAL ATTENTION TO BUILDING TRUST AT EACH STAGE OF THEIR DEVELOPMENT

Challenge - Without a lot of face time, trust is at once both harder to attain and easier to lose in virtual than collocated teams. People will have a hard time trusting each other unless they have met.

Solution - Organize a kick-off and annual face-to-face meetings with your team to develop team spirit, trust and shared understanding. One or two days need to be allocated for the meeting. Use that time to:

- Clarify common vision and goals.
- Clarify roles and responsibilities.
- Discuss about the expectations and norms of operation in your team.
- Support people in getting to know each other. Time needs to be set aside for informal interaction.

COMMUNICATION BUILDS TRUST

Challenge - Shared understanding of the team goals and roles fade after the face-to-face meeting when the local conditions and objectives start to convert the team members' task priorities.

Solution - Use web/video conferencing, e-mail and phone communication to maintain and recreate mutual knowledge about the team vision, goals and roles between the face-to-face meetings. No matter the medium, the frequency of communication is critical in creating shared understanding. Through communicating with people we get a better sense of them and their local conditions, and we understand their priorities.

BALANCE BETWEEN TIGHT AND LOOSE CONTROL

Challenge - Direct control of team members' work is impeded due to distance. Lack of trust creates micro-management, which is stressful for team members.

Solution - Follow-up task compliance and progress of work regularly in virtual team meetings and the basic project follow-up mechanisms of your organization. Prefer using web/video conferencing rather than audio conferencing to equalize each team member's visibility in these meetings. Regular team meetings help:

- Keeping the goals and progress of work clear to everybody.
- Information sharing between the team members.
- Promoting close collaboration among team members.

APPRECIATE DIVERSITY

Challenge - Different regional or national cultures and different disciplinary perspectives raise barriers to developing trust between distant co-workers. Different communication styles and mindsets may cause misunderstandings and conflicts.

Solution - Learn about different backgrounds of your team members. Before communicating information think about how it might be received and take time to ensure that you have been clearly understood - put yourself in the other person's position. Think about your method of communication: e-mails can easily be mis-

39. MOTIVATING ACROSS DISTANCE

understood; they are not suitable for sensitive and difficult messages.

PAY EQUAL ATTENTION TO LOCAL AND DISTANT TEAM MEMBERS

Challenge - Fairness is the most critical item that distant team members worry about. Virtual team members get easily neglected or forgotten, because they are “out of sight and out of mind.”

Solution - Remember that any indications that a leader is treating local employees differently than distant employees will be interpreted as unfair. The ways to promote fairness include:

- Transparency of decision-making procedures, i.e., by letting team members to express their opinion on matters that concern them and by creating mechanisms to correct poor decisions.
- Respectful communication style is a crucial for perceived fairness.

Managers of distributed organizations face the challenge of how to establish and maintain team members’ motivation in the absence of direct control. For example, working conditions, feedback and praise are more difficult to control when team members are not all together in the same place. On the other hand, a higher level of job autonomy provides remote workers with more opportunities to self-management and to cope with stressful situations. Recent study of Arnold Bakker (2008) has shown that autonomy and job control lead to more work enjoyment, intrinsic motivation and a better work concentration.

AUTONOMY AND SOCIAL SUPPORT INCREASE WORK ENGAGEMENT AND MOTIVATION

Social support is another widely recognized job resource, which increases employees’ motivation, work engagement and extra-role behavior, e.g., helping others with tasks not included in one’s own job description (Figure 1). In distributed work settings, however, social contacts between co-workers and management are hindered or even precluded. One strategy to overcome social isolation is to become more active and take more initiative in contacting distant co-workers or to select a colleague in the distant site as an “information agent” who is responsible to stay in frequent contact with you.



Figure 1. Social support is important everywhere.

KEY POINTS TO FOLLOW WHEN LEADING ACROSS DISTANCE:

Keep the Goals Clear - Most motivating goals are those that are specific, achievable and realistic. Individuals are more motivated when they have a sense of responsibility for the delivery of a task. Invest time and effort in clarifying the goals of your team and individual team members. Clear understanding of each team member's roles and responsibilities results with better coordination of activities and less redundancy in task fulfillment.

Allow autonomy - People get motivated of goals which they perceive worthwhile to achieve. We have the need to determine, control, and organize our own behavior and goals so that they are in harmony with our own interests and values. Intrinsic motivation and job satisfaction increase as autonomy increases. Allow your team members flexibility with work arrangements and how they accomplish the tasks. Virtual collaboration tools, which enable working anywhere at any time, increase

employees' feeling of autonomy and freedom. In remote work, employees stay motivated when they have the tools and autonomy to do their very best.

Give constructive feedback - Feedback should be given in order to let the team members know how they are progressing. But note that, feedback, which is perceived as controlling can undermine motivation. Feedback serves as a basis for positive affective reactions, e.g., pride and sense of self efficacy, as well as negative reactions, e.g., disappointment, shame. Focus attention on task-relevant aspects when giving constructive feedback. Constructive feedback not only helps employees to do their work more effectively, but also improves communication between leaders and employees.

Increase team coherence - People have a basic need to relate to others and experience a coherent involvement with a work community. Feeling as an important member of a group is motivating. When people feel appreciated and that their expertise is acknowledged, they are more motivated to contribute to the team goals. Increase the feeling of relatedness and your virtual presence by keeping you status up to date in virtual collaboration tools. This will tell other team members when you are potentially available for communication.

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40. WICKED PROBLEMS

Does the workplace itself have any impact on collaboration and performance? During a dinner presentation of the MediaX09 workshop held by Renate Fruchter at Stanford University, Joe Ouye and Eric Richert of the new ways of working network held an interesting and thought-provoking talk. The two experienced architects presented some of their experiences on consulting and helping companies in workplace issues.

WORKPLACE INTEGRATED WITH ORGANIZATION POLICY, IT, HR, AND FINANCIAL MANAGEMENT HAS IMPACT ON PERFORMANCE AND COLLABORATION

Joe discussed the notion of a wicked problem as a problem that is hardly definable, hardly solvable, perceived from many different perspectives and its solutions are not generalizable.

Based on Joe and Eric's experience in workplace issues, they presented a number of examples, on which they based their conclusion that workplace issues are wicked problems.

Their main lessons learned throughout the years were the following:

- Workplace solutions are very dependent on a complex of many aspects and no general approach is possible to design workplaces.
- Many different stakeholders have different expectations, requirements, and solutions to workplaces, e.g., facility, IT, HR, and financial departments.
- The workplace in itself has no impact on collaboration and performance! However, the workplace integrated with organization policy, IT, HR, and financial management can have an impact on performance and collaboration.

The advice of Joe and Eric based on their experience was to:

- Offer the ability to choose!
- Offer people ability to control their own workspace.
- We only offer opportunities not solutions.
- Workplace issues only satisfactory solved in cooperation with HR, IT, and facilities.

41. STRATEGIES FOR REMOTE WORK

How to maximize the success of remote workers and provide benefits for the company? This was the main question answered in a recent article in Sloan Management Review discussed how management can set up to let remote workers strive in their work (Mulki, Bardhi, Lassk & Nanavaty-Dahl, 2009). The article sums up a number of main problems and discusses strategies for managers to deal with these problems.

HOW CAN MANAGEMENT COPE WITH CHALLENGES OF REMOTE WORK?

Critical challenges of remote work (Table 1):

1. **Finding the right work-life balance** - To manage and integrating the boundary between work and home has been a compelling and pressing issue for both employees as well as for companies. In the study performed, remote employees had difficulty in disengaging from home and a majority stated that they work more hours remote than in a traditional setting.
2. **Overcoming work-place isolation** - Remote members often feel more isolated; have lower job satisfaction and organizational commitment and increased turnover.
3. **Compensating for the lack of face-to-face communication** - Remote employees mainly communicate electronically and this contributes to work-place isolation and makes it more difficult to develop trust and personal relationships.
4. **Compensating for the lack of visibility** - Remote employees feel that the lack of visibility limits their contributions to the company's success as well as their career advancement opportunities.

Coping mechanisms for remote work challenges are shown in Table 1.

Table 1. *Coping mechanisms for remote work (Adopted from Mulki, Bardhi, Lassk & Nanavaty-Dahl, 2009).*

Challenges	Management coping strategies
Finding right work-life balance	<ol style="list-style-type: none"> 1. Set tone on work norms: discuss 'good practices'. 2. Manager should prioritize employee tasks and give frequent feedback. 3. Manager should recognize unique nature of remote work (frequent, varied communication. Multitasking, intensive management.
Overcoming work-place isolation	<ol style="list-style-type: none"> 1. Manager should check in with remote members informally and frequently. 2. Manager should promote social interaction among team members. 3. Encourage employee pairing and mentoring. 4. Facilitate entry for new employees, e.g., a welcome package with team contacts.
Compensating for lack of face-to-face communication	<ol style="list-style-type: none"> 1. Arrange face-to-face meetings. 2. Use technology informally, e.g., start meetings with an informal discussion before the formal meeting starts.
Compensating for lack of visibility	<ol style="list-style-type: none"> 1. Manager should promote individual and team achievements. 2. Signal management accessibility. Managers should provide information on their availability and set up guidelines for informal and formal communication between manager and employees. 3. Develop best practices for how to work remote and how to cope. Managers should promote individual and team achievement with the challenges.

REFERENCES

Mulki, J., Bardhi, F. Lassk, F., & Nanavaty-Dahl, J. (2009). Set Up Remote Workers to Thrive. *Sloan Management Review*, Fall 2009, 62-69.

42. MANAGING STRESSFUL UNCERTAINTY AND AMBIGUITY IN DISTRIBUTED TEAMS

Employees are exposed to numerous potential sources of stress at the worksite. In geographically distributed teams, the potential stressors include role ambiguity and uncertainty of progress of collaboration. Lack of clarity about one's role and expected behavior increases the probability that a person will experience job stress. Furthermore, significant risks are associated with the work process as well as with the various degrees of uncertainty and ambiguity among distributed team members.

DISTANCE AND RELIANCE ON COMMUNICATION TECHNOLOGIES ADD UNCERTAINTY

Across distance, team members cannot structure or categorize work events due to lack of sufficient cues and thus cannot predict outcomes adequately. Work tasks become more stressful as the uncertainty of important outcomes increases. Distance and reliance on communication technologies add uncertainty in distributed teams and complicate efforts to resolve the uncertainty. Electronic dependence in communication sometimes leads to misunderstandings and conflicts in distributed teams. Often, information is either missing or unclear, or both. When messages regarding the performance expectations are ambiguous, employees don't know to how to direct their efforts.

In a case study of 10 distributed teams, I saw that the main strategies to manage the uncertainty and ambiguity were extensive e-mailing, traveling to face-to-face meetings, and extending workdays to collaborate simultaneously across different time zones (Nurmi, 2010).

Occasional face-to-face meetings helped create mutual understanding, increase knowledge about team matters, and share personal knowledge. Getting to know each other personally reduced ambiguity in communication and promoted trust-building in the studied distributed teams. Visits to distant sites also increased awareness of the local conditions and helped to form accurate perceptions about

later situations from a distance. Meeting in the real world strengthened the bonds among team members and made it easier to understand each other and work together in the future. Face-to-face meetings were said to strengthen the team spirit, speed up teamwork and make future virtual communication easier. Ambiguity in communication decreased as face-to-face meetings promoted honesty, openness and mutual understanding about the team goals and member's role expectations. Knowing the responsible team members, their abilities, and their expertise increased trust that project tasks and problems would be taken care of.

Frequent virtual communication, i.e., audio/video conferences, e-mail, and phone calls, were used to maintain mutual knowledge about the team vision, goals and roles between the face-to-face meetings. No matter the medium, the frequency of communication was critical in creating mutual understanding and reducing role and task ambiguity in the studied teams. Many global team members and leaders told me that soon after returning home from a face-to-face meeting, the team would start to lose the shared notion of their jointly-created visions, goals and roles, while the local objectives would take over team members' task priorities and objectives. Regular goal and role clarification along with task follow-up was essential to managing the uncertainty of work progress. Frequency of communication was critically important in maintaining mutual knowledge and trust. The more contact the distant team members had with each other (assuming that they were basically trustworthy), the easier it was to trust one another. To develop trust and reduce uncertainty, distributed team members demonstrated commitment by responding quickly to messages and delivering tasks on time, as well as communicating proactively about work-related issues.

In sum, frequent, i.e., daily/weekly, depending on the situation virtual communication was important for knowledge sharing and maintaining mutual understanding of goals and progress of work in the distributed work. Along with face-to-face meetings, virtual communication helped the studied distributed team members to cope with stressful uncertainty and ambiguity in teamwork across distance.

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43. HIGH MEDIA MULTITASKING

Media multi-taskers are bad at multitasking! Clifford Nass (professor at Stanford University) presented his latest findings on media multitasking at MediaX. Media multitasking is the exposure to 'unrelated' media content use. Unrelated media use is, e.g., simultaneously chat, skype, type, and twitter (Figure 1)



Figure 1. Heavy multi-taskers use many media at a time.

MEDIA MULTITASKING: 2003 ONLY 26%, 2009 ALREADY 80%.

From psychology we know that humans have difficulty attending multiple stimuli as well as they can only allow one decision-making process at the time. Prof. Nass makes a difference between at-the-moment multitasking, which impedes performance and distracts, versus *chronic* multitasking (which is hardly studied). Nass performed three experiments based on cognitive functioning in which he measured how people can filter information, how they can manage and maintain the information they receive, e.g., like a file cabinet, and how people can switch easily between tasks.

HEAVY MEDIA MULTI-TASKERS FOUND TO BE BAD AT MULTITASKING!

He found in his experiments that heavy media multi-taskers are:

1. Worse on filtering information than low media multi-taskers, the more distraction they have, the worse their performance.
2. They are not good in managing the information and have poor filing cabinet maintenance, e.g., difficult to find information back quickly.
3. Much slower in task switching than low media multi-taskers, because they cannot help thinking about the other task.
4. However, in many general tests on intelligence, personality, and creativity they score similar compared to low media multi-taskers.

These results show that no information product or service will be the primary focus of users. Nass mentions that new generations are trained from very young to media multitasking. He proposes to look into new developments of Design, Advertisement and Teaching in order to support, help and keep the attention of heavy media multi-taskers in the future.

44. LESSONS LEARNED FROM GAMING TO WORK

On 3 December, 2009, prof. Byron Reeves (Stanford University) held a talk at a MediaX seminar in which he discussed his research on virtual worlds and gaming from which certain lessons could be learned and applied to real work and companies.

GAMING ACTIVITIES CLOSELY RELATED TO WORK ACTIVITIES

Although many virtual games like “World of Warcraft” are played in very different environments, Reeves found that the way people play these games is very closely related to our normal world, and many actions we perceive as day-to-day work are also happening in games and on a high level (Figure 1). Within these virtual games there are a number of aspects implemented that could be beneficial for companies and real-life work as well. Reeves states a list of ingredients that could be applied in companies:

1. **Self-representation** - Being able to be fully engaged and immersed in a world, and being able to see different perspectives.
2. **Narratives** - Games usually play around narratives and this might be useful for specific teamwork as well, e.g., repetitive and easy work could become more motivating if placed within a narrative.
3. **Feedback** - In games players receive constant feedback on their task and work. In these games re-enforcements really work. The immediate and constant feedback is a useful instrument in companies as well.
4. **Roles and levels** - In these games everybody knows the specific roles and levels within the game. The role and level clearly specify what your experience and skills are in the game. This transparency might be useful for companies as well.
5. **Transparency** - In the games everybody receives all the information and therefore everybody knows what is going on.

6. **Economies** - In games whole economies are developed and people get incentives with ‘game’ money for which they can buy useful aspects helpful for their game
7. **Teams** - The teams are very important in these virtual games. People learn that you can only win the game when you cooperate in a team. Cooperation skills in this respect are well developed. Teams form quickly and dissolve quickly when tasks are done.
8. **Communication** - Communication in these games is possible through many different channels, inconfigurable, and everyone can communicate with everyone.
9. **Rules** - The games have clear rules and players who do not follow the rules are usually taken out of the game over time.
10. **Time pressure** - All games have time pressure and players have to operate complex tasks and collaboration in a pressed time. This is similar to daily life.

Reeves states that when employee productivity and engagement become more critical, the user experience (excitement and focus) provided by game technology offers a tantalizing solution for business.



Figure 1. Gaming virtual world versus professional virtual world.

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45. PERCEIVED FAIRNESS MAKES VIRTUAL TEAMS WORK

My colleagues and I studied the effects of fairness perceptions in virtual teams (VTs). What makes these studies interesting is that they were the first ones that examined fairness effects in the virtual context. This is rather curious since it is well established that fairness perceptions affect many attitudes, e.g., identification and commitment, behaviors, e.g., helping team-mates beyond the expected role, and even physiology, e.g., stress and death in cardiovascular diseases, at work.

FAIRNESS IS AS IMPORTANT IN VIRTUAL TEAMS AS IN TRADITIONAL WORK SETTINGS

What fairness? In organizational psychology, justice or fairness is not about “objectively right and wrong” actions. It is the perception that counts. We studied especially the perceived fairness of decision-making procedures and interpersonal treatment during them. This kind of fairness can be captured into seven rules that people use when they judge others’ actions:

1. All those involved and affected by a certain decision should be heard.
2. The decisions should be based on accurate information.
3. The procedures should be such that poor decisions can be corrected afterwards.
4. Everyone involved in decision-making should suppress all personal biases.
5. Decisions should be based on consistent principles over persons and over time.
6. The decision-maker(s) should treat everyone with respect and dignity.
7. All decisions should be given honest and informative explanations.

It was not self-evident that fairness perceptions would be as influential in virtual teams as earlier research has found them to be in other contexts. In virtual teams the cues of fair behavior might be harder to find and at least more ambiguous because they are often electronically mediated. Even though one would accept the idea that in the long run people adapt to the electronic communication, it might still be that justice is perceived differently in virtual teams than in traditional face-to-face teams. Nevertheless, we found that perceived fairness really mattered in virtual teams to the same extent and in the same way as in traditional teams.

More specifically, our studies suggested strongly that justice perceptions and especially perceived fairness of decision-making is an important source of shared team identity in virtual teams. This is noteworthy, since shared identity has been shown to be one key success factor of virtual teams. Moreover, the uncertainty produced by high virtuality conditions made team members highly sensitive to perceived fairness. Identification with the virtual team, in turn, was found to be a strong motivational force, through which the effects of perceived fairness were transformed to serving behaviors of the team members.

In sum, our studies showed that perceived fairness is a major success factor in virtual teams (Figure 1). In practice, this means that the seven fairness rules presented above should be used as the guidelines of leadership and other actions between team members.



Figure 1. Fairness matters.

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February 24, 2010, Stanford, Petra Bosch

46. CAN VIRTUAL WORLDS HELP REMOTE EMPLOYEE ISOLATION? IBM'S STORY

In a Frontline documentary for PBS (Public Broadcasting Service), IBM offices in Westchester, New York were visited. The producer Rachel Dretzin commented on the fact that the offices of IBM were almost deserted and learned that this was because so many IBM employees telecommute or work from different locations (either home or hotels). One of the last initiatives of IBM is to move the internal meetings of the company more and more to the virtual world.

In the PBS documentary, IBM employees mention that they perceive the virtual world meetings as more “human and intimate than video conferencing or telephone calls. They describe that in the virtual world it is possible to also have social interaction, like grab a cup of coffee, joke together or walk away with one person to discuss something. The technology of virtual worlds makes people feel more connected and solves to some extent the isolation problem otherwise faced by global workers.

SAVINGS OVER 1 MILLION DOLLARS IN MEETING COSTS BY USING VIRTUAL WORLDS

In the documentary, it is estimated that IBM saved over a million dollars last year in avoided meeting costs by using virtual worlds instead. Furthermore, as important as the cost savings from avoided business travel is “the idea that virtual worlds might capture the human connection lost in a culture of videoconferencing and phone calls.”

In the documentary, Francoise LeGoues of IBM states that they have webcasts, phone conferences etc. and they all work fine when it is either one on one or small groups for a relatively short time. However, once you start having calls with over 20 people, you have problems trying to sit through a web conference for three hours. Usually after 45 minutes people start doing other things, like e-mail or checking messages or do other work. The immersive environment of the 3D worlds is much more engaging, much more human and makes it easier for people to stay engaged

and focused according to Francoise LeGoues. Even though the offices at IBM New York are empty, this does not mean that all its employees are in Virtual Worlds and not everyone embraces this technology compared to face-to-face contact (Figure 1). However, it is clear that traveling takes a toll on people and their well-being.



Figure 1. Workplaces are empty, but virtual meeting rooms full.

REFERENCES

IBM interview: http://www.pbs.org/wgbh/pages/frontline/digitalnation/interviews/lego-ues.html?utm_campaign=videoplayer&utm_medium=fullplayer&utm_source=relatedlink

Watch the whole series of digital nation: <http://www.pbs.org/wgbh/pages/frontline/digitalnation/>

47. MOTIVATING PAY SYSTEMS IN VIRTUAL TEAMS ARE BASED ON FAIRNESS

Many companies accept the conventional wisdom that team-based pay is the best way to encourage cooperation. Accordingly, for pay systems in virtual teams (VTs), Lawler (2003) recommended pay-for-performance systems that focus more on collective than on individual performance in order to motivate and support cooperative behaviors (Figure 1). However, this suggestion is speculative and not based on empirical research.

Research in other than virtual contexts has demonstrated that instead of only concentrating on pay system's technical issues, that is measured and following pay outcomes, the focus should be more on fair processes of pay system implementation. If employees perceive that they are treated fairly in the pay determination process, they are more likely to accept the pay outcomes and are motivated to act according to pay system's goals.

PAY SYSTEMS IN VIRTUAL TEAMS HAVE NOT BEEN STUDIED

In lack of studies of pay in context of virtual teams, I have formulated some questions drawing on seven rules of fair decision-making principles presented also in the previous blog (February 10, 2010).

The principles are:

1. All those involved and affected by a certain decision should be heard.
2. The decisions should be based on accurate information.
3. The procedures should be such that poor decisions can be corrected afterwards.
4. Everyone involved in decision-making should suppress all personal biases.
5. Decisions should be based on consistent principles over persons and over time.

48. BUSINESS VALUE OF SOCIAL MEDIA

One of the major behaviors on the Internet is the social web and social networking. Already the Internet use per week is higher than television use per week. Recently in a MediaX talk, Lyle Fong, CEO of Lithium Technologies discussed how companies could beneficially use social media sites to reach their customers.

BUSINESS VALUE OF SOCIAL MEDIA IS AN IMPORTANT COMPETITIVE ADVANTAGE

Customers are the greatest assets of companies and therefore finding the business value of social media becomes more important as a competitive advantage. According to Natalie Petouhoff, Sr. Analyst of Forrester Research, customer service professionals must find innovative ways to engage with 'social customers' via emerging social media technologies." Now some companies are trying to harvest customer social media by creating customer networks. According to Lyle Fong, studies show that customers feel a high trust towards social networks and customers perceive a high trust towards anonymous people – or other customers - who they don't know, but who have mentioned something in twitter or on blogs. Lyle Fong mentioned several examples of how these social customer networks could be used for, e.g., some companies use the networks to answer customer questions. When another customer answers specific questions or recommends a service or product, people are more inclined to trust the advice of a peer than of the company's marketing department.

Companies are trying to identify their most influential customers on social networks with help of behavioral profiling and social network analysis techniques. These influential customers can give immediate benefits to companies in terms of member-driven support, promotion and innovations but also help in attracting customers to serve as influencers in future marketing campaigns. By listening to customers more carefully and responding to their needs, the community can also drive customer loyalty as well as help expand market share through word of mouth.

6. The decision-maker(s) should treat everyone with respect and dignity.
7. All decisions should be given honest and informative explanations.

In terms of pay systems the following questions can be raised:

How to ensure that in making decisions on pay determination everyone has the opportunity to be heard, the supervisor is able to collect equally accurate information from all locations and everyone's performance because virtual team members are geographically distributed and communicate mainly through ICT? In addition, because virtual teams often operate in turbulent conditions, how is consistency in pay determination possible? One more question seems relevant to me. Can respect, dignity and informative explanations on pay decisions be adequately communicated through electronic media?



Figure 1. Fair pay systems matter also in virtual teams.

When team members are geographically distributed and may find it unfair to have a significant portion of pay tied to the performance of team members they don't meet face-to-face, the role of fair processes may even be more significant than in traditional teams. Especially, if virtual team members have previous unfairness experiences the role of fair processes in pay determination becomes extremely important.

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The discussion at MediaX was mainly based on the fact that companies can use the high trust people place in social network site responses. A more philosophical question remains, however, on how much trust customers should place on social network site responses.

April 7, 2010, Stanford, Petra Bosch

49. CREATING VISIBILITY IN VIRTUAL WORK

Many people are working in virtual teams, in which team members not always are able to meet face to face. Others are working from home, or on different locations and are mobile and only occasionally come to the office to meet their team members and colleagues face-to-face. One of the biggest challenges with working in such a context is the lack of visibility. However, several tools are currently developed that look into solving this lack of visibility for virtual and mobile workers.

The lack of visibility for virtual and mobile workers is an important issue often studied in virtual team research. Visibility focuses on being able to see remote employees and being able to see facial expressions and non-verbal communication. Secondly, research found that the lack of visibility also implies that people are less aware of work, opinions and insights of the remote worker. Virtual teams in which part of the team is collocated in one location and several other team members are remote need to constantly interact in order to create awareness of work, workload and being part of the team.

ROBOTS TO IMPROVE VISIBILITY FOR REMOTE WORK

Next to the developments on video conferencing tools and applications for mobile phones, other technologies are currently developed that could support remote workers. One company in the bay area called Anybot (<http://anybots.com/>), which is a start-up company making robots for remote workers. They develop mobile robots that can represent a remote worker working, for example, at home, while the robot is at the office. Colleagues can talk to the robot and see and hear the remote workers on a screen. The robot can enjoy coffee conversations and hallway discussions and social gatherings even when you are not there.

50. GLOCALIZATION

Others study at Stanford how to deal with non-verbal communication and developed a prototype of a computer that can mimic gestures and embodiment. For example, the computer screen moves with certain gestures, e.g., laughing to emphasize these gestures.

It will be interesting to follow these developments and see if they really solve visibility and awareness problems of remote work.

Global companies know that management across the globe is difficult not only because of distance but also because of diverse cultures. A global corporate culture is valuable but there is no such thing as a uniform global culture according to David Livermore – the author of “leading with cultural intelligence”. Dr. Livermore argues that modern multinational organizations need to become glocal. Glocal means global localization. According to the Economist the word glocal has been used to direct firms away from a one-size-fits-all version of globalization to one, which takes seriously the need to comprehend and adapt to local differences.

CROSS-CULTURAL LEADERSHIP PERCEIVED AS THE BIGGEST MANAGEMENT CHALLENGE OF THIS CENTURY

According to Dr. Livermore, the focus for global companies to globalize, not only applies to marketing but to recruiting and managing teams of workers in different parts of the world (Figure 1). Many global companies offer basic cultural lessons, but often these attempts are rather generic and not always fit the specific tasks at hand. To overcome this, companies must create structures to identify and deal with specific cultural problems the company faces. When recruiting for jobs that involve working abroad or with people from other cultures, companies should try to identify candidates who have high cultural intelligence quotient (CQ).

51. HOW TO ENHANCE WORK MOTIVATION IN VIRTUAL TEAMS?

One of the main challenges of virtual teams is the maintenance of high work motivation. The motivational challenges are grounded in the reduced level of face-to-face contacts. Persons might feel that their personal contributions do not really matter for the group. In addition, it is difficult to trust that other members of the team are also contributing to the team task. One idea presented by Hertel, Konradt and Orlikowski (2004) is to increase experienced interdependence within virtual teams by management practices related to goal, task and outcome interdependence.

Goal interdependence means that teams have clearly defined goals and member's goals are linked to these team goals. As part of goal-setting processes, managers' delegative goal setting style has been demonstrated to enhance motivation and performance.

One way to increase task interdependence is to design working processes of the team so that team members must, for example, coordinate their activities frequently. The team members should be able to notice the consequences of their personal efforts for the rest of the team. This task interdependence increases the work motivation of team members and thus leads to higher effectiveness of the whole team.

Outcome interdependence is given when rewards or pay systems are based also on team performance. In general, team-based pay is shown to enhance motivation and performance. Some studies have also shown that pay can be irrelevant and thus not motivating at all.

WHEN IS TEAM-BASED PAY AN EFFECTIVE MANAGEMENT PRACTICE?



Figure 1. Example of glocalization.

According to Dr. Livermore, cultural intelligence is the “capability to function effectively across national, ethnic and organizational cultures. Dr. Livermore believes firms need to make a priority of developing cultural intelligence.

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The motivation effects of team-based pay are also studied in the Reflection Theory of Pay (Thierry, 1991). The theory states that when pay is perceived as irrelevant or meaningless by the person, it has no effects on performance. On the other hand, the more meaningful the pay system is for an individual the greater is its impact on motivation and performance. There is no reason to assume that meaningfulness would not be motivating also in virtual teams.



Figure 1. Goal interdependence creates team spirit.

How to ensure, that team-based pay is an effective, motivating management practice and not just waste of money? Preliminary empirical evidence suggests that the meaning of team-based pay and its impact on motivation and performance can be enhanced by ensuring that all team members know the pay system well and by manager's active goal setting and feedback style. It is also essential to define and communicate clearly the link between employee's work and his/her group's goal achievement. Hence, the principles of meaningful team-based pay are in line with Hertel et al.'s (2004) idea on goal interdependence (Figure 1). In addition, group-based pay is perceived as important and motivating when it conveys a positive message, that is extra money and the existence of the pay system are perceived to signal recognition and respect. Finally, group-based pay system can be meaningful

and motivating when it enhances belonging with the group. As one interviewee said it: *"The system also unites the group and helps us somehow to work for it together. And maybe, maybe it creates some sort of feeling that look we did it and we achieved something, something of that kind."*

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52. MANAGEMENT GUIDELINES FOR DISTRIBUTED TEAMS

Management of geographically distributed workers and teams is an important issue for global companies. Distributed workers often perform knowledge work, have complex tasks, high work and information loads. Furthermore, distributed workers often work in multiple projects and teams and therefore team members and leaders often have multiple roles and responsibilities that might sometimes be conflicting. Based on a three-year study by Petra Bosch in high tech global companies, below in Table 1 a list of guidelines for leadership and management in distributed work and teams is provided.

Table 1. Management guidelines for remote work.

MANAGEMENT GUIDELINES	
Awareness facilitation of managers	<ol style="list-style-type: none"> 1. Local conditions of remote sites (workplace, IT infrastructure, resources) 2. Work processes and practices 3. Cultural and language difference including time zones 4. Individual team member aspects (skills, experience, background) 5. Communication styles and work approaches 6. Workload of team members, responsibilities of team members 7. Manager should keep the team informed on developments
Develop a communication environment (provide structure)	<ol style="list-style-type: none"> 1. Provide an environment in which people can express their opinions and can receive feedback 2. Decide in the team, how and in what way to communicate. What tools will the team use? 3. Create a shared understanding of roles, responsibilities, tasks, and expectations. 4. Overcome multiple responsibilities and roles that might have conflicting priorities.

MANAGEMENT GUIDELINES

Stimulate team motivation and satisfaction	<ol style="list-style-type: none"> 5. Team identity: let remote team members feel part of the team 6. Create team visibility 7. Represent the team to outsiders e.g., headquarters, other teams
Facilitating relationship building, commitment and cohesion	<ol style="list-style-type: none"> 1. Develop a cohesive team 2. Support trust building and informal interactions 3. Connect to local leaders and build relationships between local leaders and team members 4. Coordinate with multiple local manager to overcome conflicting responsibilities and tasks 5. Team member selection important 6. Provide direction as a manager
Make recognitions of work visible	<ol style="list-style-type: none"> 1. Provide team level recognition 2. Make distributed team accomplishments visible

53. SHARED IDENTITY - THE MOTIVATIONAL FORCE IN VIRTUAL TEAMS

Many authors have stressed that the formation of a shared team identity is crucial for virtual teams (VTs) because it provides a sense of belonging for the team members despite the relative lack of face-to-face interaction. In fact, shared identity means the perception of oneness with or belonging to a group.

What then makes shared identity a motivational force? This aspect of the construct stems from the notion that when a person belongs to some group, the group membership becomes part of her self-esteem and self-definition. This happens rather automatically if the group is a salient entity in the person's mind. When the other group members go through the same process a shared group identity is established. Consequently, the members attach positive attributes to the group and start to promote group goals. In the opposite case, if individuality of a group member is for some reason highlighted the group membership loses its self-definitional power and the person starts to act individualistically – not for the group. We all have many group memberships and group identities but when a person decides to invest her time to one group it becomes important and salient to her at least temporarily.

SHARED VIRTUAL TEAM IDENTITY MOTIVATES TEAM MEMBERS TO BETTER PERFORMANCE

Now the obvious question is: How to enhance this feeling of “us” in virtual teams? The research results suggest that team leaders should strengthen shared identity by, for example, giving positive feedback, clarifying goals and communicating proactively through electronic media. Lately, it has been found that one fundamental building block of shared virtual team identity is procedural justice that is the perceived fairness of team's decision making procedures and principles. Note that procedural justice was the topic of my vmStan blog in February 2010.

In general, it is crucial to keep up the sense on “teamness” for the *whole* virtual team because teams usually consist of sub-teams which may easily start building

their own and separate identities in the cost of the whole team. Therefore, underlining and communicating team's common goals as well as organizing work tasks to be interdependent between remote sites have been shown to tackle the threat of team's division into competing sub-units (Figure 1).



Figure 1. Shared identity motivates.

Shared virtual team identity has clear benefits. It decreases conflicts, motivates the team members to work beyond their job descriptions, i.e., extra-role helping of team-mates, and improves team performance. In sum, building and sustaining shared identity in VTs is one clear success factor of distributed teamwork.

54. LIVING IN THE BEEHIVE – IMPACT OF DISTANCE TO HEADQUARTERS

More and more global companies are working with global distributed teams (GDTs) and research has studied issues like distance, communication technology, collaboration and in-team aspects of distributed work. Few studies, however, discuss the working context of these global distributed teams in relation to advantages and challenges in working at headquarters or on remote locations. In a qualitative single case study on a GDT we found advantages of working remote from headquarters of a global firm in the fact that the remote team is more productive (gets things done) and is less distracted in their work compared to many distractions at the beehive of headquarters (Figure 1). Challenges, however, are the need to have a representative of remote teams at headquarters in order to get executive attention and access to resources.



Figure 1. Living in the beehive.

LIVING IN THE BEEHIVE (WORKING AT HEADQUARTERS)

- The team members of the GDT at HQ perceived distractions from their work due to the organizational culture of many ad hoc and formal meetings, the ambience and speed of HQ.
- Dress code and formalities are different at HQ than at remote sites
- The team at HQ provided visibility of the larger team's activities and recognition of the team's accomplishments.

- The team manager at HQ fulfilled a liaison role at HQ for the whole remote team.
- The liaison can help in maintaining and developing a social network and customer contact at HQ.

LIVING FAR FROM THE BEEHIVE (WORKING FAR AWAY FROM HEADQUARTERS)

- The remote teams felt more productive when far away from headquarters; they have few distractions, few ad hoc or formal meetings and can concentrate more on their task.
- The remote team felt that they needed to be visible at HQ and they needed to justify their existence of working in a remote location far from HQ.
- The remote team needed a liaison at HQ to keep a close contact with their internal customers located at HQ; to gain access to resources and the liaison needed to show that the whole global team was performing and could promote the whole team's work at HQ.

Awareness of different perceptions and organizational working cultures at HQ and remote sites is important for global distributed teams and their managers in order to find appropriate ways to deal with the pros and cons of different organizational working cultures in single global firm.

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55. FINALIZING VMSTAN

This is the final blog for the vmStan project and herewith I want to thank you all for your support, insights and discussions.

VmStan was a close cooperation between Aalto University School of Science and Technology in Finland and Stanford University in California, with the main research focus on “the demands, hindrances and enablers of well-being and management in virtual and mobile knowledge work”. The blogs written in these three years contributed to this research goal from both new research performed at Aalto University as well as from Stanford. We had great contributions from Niina Nurmi, Petra Bosch, Virpi Ruohomäki, Anu Hakonen and Marko Hakonen.

The blogs offered an opportunity to follow trends and research in global distributed and mobile work, interactive technology development, and trends in management and work environments. The following topics were discussed:

1. Virtual team aspects (38%) discussed the well-being and effectiveness of virtual teams and mobile workers as well as topics like communication, intercultural collaboration, motivation, distance, fairness, pay systems and identity.
2. Technology for distributed work (19%) discussed the different types of technologies virtual teams and mobile workers could use for communication and collaboration.
3. Management issues for distributed teams (19%) focused on how to improve virtual team effectiveness and knowledge work productivity
4. Workplace issues (11%) discussed the importance of work environments for virtual teams and mobile workers in terms of different examples of work places, the meaning of the office for mobile work, and integrated work environments
5. Productivity and knowledge work (7% blogs) focused on understanding contextual elements that positively and negatively influence the productivity of knowledge work

All these topics are important in order to support virtual and mobile work in global companies, and the different aspects discussed contribute to effective virtual teams.

Thank you for the great cooperation of the last 3 years.

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