

Excerpts from co-authored article

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Following sections of the article are written individually by Lauri Lahti:

6 Work

We suggest that the evolution of working practices in next decades will be based on three driving forces: development of information and communication technology (progress in ICT), the tendency toward increasing independence of location (mobility) and managing work processes through various flexible interfaces or shared distant desktop schemes (virtual work). All these aspects and their development are strongly related to each other and their success depends on a balanced investment in all of them. Furthermore, we see work and leisure as two activities completing each other. Even if the borderline between work and leisure is blurring we feel that work typically has stricter requirements for directly measurable productivity. Despite the differences, evolving practices and technology used in work are inevitably reflected in how modern free-time is spent. Thus we state that the driving forces identified for future work are also applicable for future leisure.

The first generation that has lived whole its life surrounded by networks and the Internet will arrive in the labor market after 2010. This generation has skills and preferences differing from all earlier worker generations. It has been estimated that the early and constant experiences of Web communication belonging to people born in 1980's or later makes it very natural for them to adopt distant working practices. Besides enabling working flexibly in various places, the adoption of distant work can be also seen as an argument favoring a sustainable environmental way of living by reducing unnecessary traffic. We consider that the reform of the educational system will be based on the same driving forces as earlier stated for work and thus new studying techniques will follow work practices. In many Western countries, an aging population requires making new kind of prioritization in services for society to maintain welfare with diminishing worker generations.

6.1 New forms of work

The European Commission's green paper on a Partnership for a New Organization of Work has initiated development efforts at the European level. The basic aim of this paper was to find consensus on ways of reaching "better organization of work at the workplace, based on high skill, high trust and high quality" (European Commission, 1997). Based on public consultation the Commission issued a communication (European Commission, 1998) that lists some main issues in the domain: ensuring proper training, developing working time packages, diversification of working relations and new forms of work, ensuring optimal conditions for the use of new technologies, promoting worker's involvement for motivation and adaptability, and supporting equal opportunities. These reports have pointed out the need to speed up the modernization process. In this development, partnerships between firms, social partners and all other stakeholders have a high value.

Anttila and Ylöstalo (2005) have referred to "proactive workplaces" in which "personnel have increased possibilities to exert influence, and at the same time increased responsibility. [...] In the proactive way of working (in an ideal case), the management controls the goals and how they are reached. The worker controls the working methods and the results of his/her work, by which the goals of the organization are reached" (Anttila & Ylöstalo, 2005: 9-10).

Technology and media content (text, images, sensor data, audio and video) are merging in a way that offers new perspectives for working. In the future, work and leisure will be increasingly mixed in people's everyday life. One of the reasons supporting this trend is the ability for distant working. Due to advanced communication technologies, people can be practically everywhere and stay in contact with other people and their information sources. Information is increasingly stored in data clouds that allow easy access from all global locations. However, in professions requiring high security, distant work will still not reach the same popularity. Advanced encryption technologies make it possible to protect data traffic but simultaneously advanced computational power and parallel computing resources cause a threat to durability of encryption.

An important general trend is that small computing devices are becoming more and more used in various working tasks to control processes and to manage data. Due to the relatively cheap price of new devices and a continuous supply of a bit outdated ones, it becomes feasible to place computing devices almost everywhere. They serve basically either as intelligent terminals (having their own data repository, sensors, processors and user interface) or as dumb terminals (relying on data and computational results retrieved from a cluster). They effectively use networks to share information in real-time and can be accessed with smart phones. Despite challenges of limited bandwidth and coverage of base stations, wireless connectivity will increase progressively enabling communication in varied locations and even while in transit.

6.2 Combining competences

Based on the available empirical research a number of features have been identified affecting new networked working environments (Business Decisions Limited, 2002: 18):

- The way work is organized within operational activities (semi-autonomous teams, multi-skilling as opposed to single tasks, job rotation)
- The way work is coordinated across the organization (non-hierarchical decision making, open information policy about performance, frequent team/management interaction for decision-making, performance measurement with financial and non-financial measures)
- Supporting human resource management policies (regular off-the job training for all employees, in job-specific and generic skills, reward systems depending on performance).

Business Decisions Limited (2002: 21) has drafted a categorization of users according to their propensity to use new forms of work organization: non-users, transition users and system users. For new forms of work organization it is typical to have characteristics of a virtual organization. By combining several definitions, Dumitrescu et al. (2008) list some of the main characteristics of a virtual organization. It is a geographically distributed entity having a flexible structure based on knowledge. The intensive use of technology is enabled by a set of activities concentrated around competences. Teams that work together are grouped based on their competences. There is high specialization of members and free and real-time communication with minimal control and multiple coordination points.

Besides instant messaging and file sharing, new collaborative working practices include web conferencing that uses shared desktops and visualizations in an efficient manner. For example, presentations can be given in a way that allows all participants to fluently communicate and observe available material according to their individual needs. Advances in projector and display technology allow using bigger and more detailed live images in web conferencing.

Distant work may also be available in transportation systems. The infrastructure to support new communication technology will be introduced step by step into buses, trains, taxis, etc. First, these services will be offered as a premium service with extra cost. Later they will become a norm and in crowded urban areas they will also be offered to motivate people to use collective transportation.

Working practices in transportation systems rely largely on wireless technology but also on aspects of ergonomics and comfort which must be taken increasingly into account in the design of vehicles.

6.3 Varying levels of adoption

It is important to note that virtuality of an organization is basically a matter of degree and can take various forms. Both inside and between organizations virtuality can emerge also as virtual collaboration and virtual teamwork. In a survey of the top 500 manufacturing, financial, retail and technology companies in the UK, it appeared that 25% used virtual teams “to a large extent”, and further 58% used them “to some extent” (Edwards & Wilson, 2004: 88). Virtual teams can be defined as “groups of geographically, organizationally and/or time dispersed workers brought together by information technologies to accomplish one or more organization tasks” (Powell et al., 2004).

Due to constant technological development virtual organizations and teams can adopt new technological tools and practices as they emerge. In the early 1990s, virtual collaboration relied largely on for example email and teleconferencing over the phone line. The term eWork has been promoted especially by the European Commission (European Commission, 2003) to indicate progress from previous stages of virtual collaboration, typically referred to as telework or telecommuting. eWork typically comprises any type of telemediated remote work and can for example have the following forms: individualized or shared-office based work, collaborative work or work which is performed in the context of principal-agent type relationships, and work interaction that is inter-organizational or intra-organizational. A survey of 19 persons involved in distant work clearly expressed that distant work helps the workers to have strength in the work life, is a part of quality of work and enables to save time (Työ- ja elinkeinoministeriön julkaisuja 25/2009).

6.4 Effects on lifestyle

Distant work brings challenge for the work rhythms of working communities. Basically, various individual rhythms can be supported but this can cause difficulties for synchronizing activities in an efficient way. Thus, for corporations it can be common to have a certain time window defined for everyday so that everyone is expected to be reached at that time, either in person, online or virtually. Time previously spent for travelling to work can be used as leisure. Many work affairs can be handled conveniently from any location but, as a downside, active workers can have difficulties in finding their own time reserved just for leisure. Messages concerning work can arrive at anytime interrupting free time activities. Corporations and work unions will probably start defining conditions and recommendations about how enough individual leisure time can be guaranteed. Also, for the active working time, new methods need to be developed to control the number of interruptions. People will note that for efficient working it is necessary to have time to focus on projects without being interrupted or fearing interruption.

In many professions work is also getting features that make the work activities approach leisure activities. Working places can easily become customized for individual esthetic preferences with new display and projector technology. Also, with sound environments (for example, nature sounds and music) the working atmosphere can be improved a lot especially for rather monotonous work tasks. In computer applications, it is possible to develop new kinds of user interfaces that make working with data more like playing a computer game. For example, classification and sorting tasks can be presented to the worker with figures, animations and sounds that make them more appealing. The development of educational technology will probably provide new general methods that can be applied equally to studying, working, leisure or recreation for the elderly. Gaming in its various forms will enable a new kind of immersion with multimedia content mapped to an individual's

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characteristics and interests.

Corporations are becoming increasingly aware of the importance of having devoted workers who have strong emotional ties to their work and to the data they handle and produce. Thus, personal emotional needs can be supported increasingly with customized work flows and processes. Also, for many professions it becomes important to define motivating storylines for long-lasting projects. These storylines can effectively combine factual information with emotionally loaded experiences. In this approach, advanced multimedia technology can play an important role.

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