

Information Challenges, Challenging Information in Digital Workplaces: Report from the European Network for Workplace Information Symposium 2015

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European Network for Workplace Information Symposium and Network: Focus and Scope

The digital workplace emerged from information silos and channels that once were available only on desktop computers in the workplace. Today, much of that information and data are internetworked and accessible simultaneously by multiple mobile devices supporting networked communities anyplace, anywhere, anytime. This challenges both the creation and consumption of information used for work; it also affects how, when and where people work, as well as their productivity, collegiality and innovativeness. However, despite the advances in technology, today's solely digital or hybrid digital-physical workplaces remain challenged by how to create, discover, share, and enhance information, and how to design and manage the systems that support these functions which are so critical to effective work. While most developments are driven by information technology (IT) departments, the essential understanding increasingly lies with how people (employees and customers) interact with information objects and each other, in activities that are facilitated, augmented and enhanced by technologies. The issues are many, from the development of new devices that are stretching the ways that organizations work, to the efficacy dynamics (stress, collaboration, productivity, age, etc.), and to the new skills and expertise required to work in such changing and changeable environments.

These issues were in focus at a meeting organized by the European Network for Workplace Information (ENWI) held September 29-30, 2015 in Gothenburg, Sweden. The aim was to bring together researchers and practitioners in order to:

- 1) understand the current state of research in this area, and work towards a research agenda;

- 2) identify potential opportunities to work together on joint projects; and
- 3) develop and nurture relationships and connections amongst the ideas and the people.

The Symposium was organized by Prof. P. Borlund (Denmark), Prof. T. Mandl (Germany), Dr. E. Thivart (France), Prof. E. Toms (UK), Prof. G. Widén (Finland), and Prof. K. Byström (Norway & Sweden). It was the fourth network meeting, and the symposium participants consisted of network members and their invitees. ENWI was established in 2011 to discuss the issues surrounding information in the workplace, as a result of a workshop 'Information Activities in Work Environments' in Borås, Sweden. At present the network facilitates collaboration between some 20 members and 20 invitees from ten European countries, and is led by Prof. K. Byström with funding from FORTE, the Swedish Research Council for Health, Working Life and Welfare under the Ministry for Health and Social Affairs (www.forte.se/eng) since 2012 (Project 2012-1481: European Network for Workplace Information (ENWI): Sustainable Workplaces).

The network members share an interest and have research experience regarding information in workplaces. This is viewed in various ways; some see information as a resource in and for work activities, others as means of communication or as social structures, and yet others as a source of frustration. Consequently, it is viewed from various perspectives, including that of systems, individuals/teams, and organizations. As required for a multidisciplinary approach, the members represent several disciplines, such as information studies, organizational/management studies, and computer science. The network involves researchers in different phases in their careers as well as research-focused industry representatives. The main purpose of the network is to support contacts and cooperation among researchers from different institutions and together with industry representatives within the area of workplace information.

The ENWI network lays emphasis on researching information-related activities in workplaces. It aims to study how to increase individuals' meaningful, creative and rewarding work experiences and support efficient and innovative work practices. Information – and media – overload remains an intractable problem (Dean & Webb, 2011) that negatively influences not only productivity and efficiency (e.g., Hemp, 2009) by hampering decision making, but also the wellbeing of individuals working in organizations (e.g., Bawden & Robinson, 2009). Today's workplace has become more complicated in comparison to the relatively closed system of the past – the formal organizational system – which is now actuated by formal and informal information and communication technologies, increasing both in number and in advancement. Social media and new technologies are omnipresent both at workplace and at home, enabling creation, manipulation, sharing and

dissemination of information that they have annotated, linked and processed in different ways. This places new demands on both work practices and information users. Information practices and decision making are vital aspects of our professional contexts, often intertwined into everyday life situations. We believe that the problem is not simply about the technology or information, but about the capacity of individuals and groups to interpret, translate and act upon information in a timely manner.

The ENWI network is driven by a critical need for research that complements the mainstream technological perspective on these issues (c.f., MacDonald, Bath & Booth, 2011; Ayyagari, Grover & Purvis, 2011; Simperl et al., 2010). In our network researchers from different disciplines work together to understand the influence of information and media on decision making and wellbeing in organizations from an informational perspective, taking social, technological, and psychological viewpoints into account. We draw upon research that focuses both on the quality of the information (e.g., Ruthven et al., 2008), individual motivations and information handling skills (e.g., Heinström, 2010) as well as the changes in social (information) practices (e.g., Shove, Pantzar & Watson, 2012). We are interested in ways to determine needs for information as well as ways to seek, value, compose, share, and use information at work etc.; all activities where social, individual and technical aspects interact. The research at the core of the network investigates how connections between work-related activities, available information (re)sources, individual engagement and collegial interactions evolve over time. The network members are further committed to address how to translate this understanding into systems, decision-making processes and work practices that will contribute to more rewarding work environments.

Approximately 40 participants attended the 2015 symposium (the list of participants is found at the end of this summary). On the opening day, the symposium was organized as a workshop on researching digital workplaces, with emphasis on methodological issues associated with participants' research interests as explicated in their extended abstracts. Many of these abstracts are published in this issue of the *Journal of Library and Information Science*. The workshop task was to scrutinize the opportunities and challenges to study (digital) workplaces.

The second day was an interactive meeting day between researchers and practitioners devoted to developing central research topics and issues as a guideline to future research. Keynote for the day was given by Dr. Andrea Resmini (see his extended abstract: "I work 'here' - Cross-channel, blended spaces, and the challenges of digimodernism" in this issue). There was also a panel focusing on "Digital Workplaces of Today and Tomorrow" led by Prof. Gunilla Widén with

panelists Prof. Marianne Lykke, Prof. David Allen together with industry representatives Mr. Per Ek and Mr. Henrik Strindberg. Roundtable discussions followed. Summaries of the symposium discussions are provided below, whereas individual inputs are reported separately.

Day 1: Methodological Challenges and Keys to Solutions

To facilitate discussion, small groups were formed on the basis of research interests and (a combination of) themes identified in the pre-submitted extended abstracts for the meeting. The seven small group research themes were: *Information access/sharing, Information skills, Organizational requirements/regulations, Social media, Social aspects of new ways of working, Participatory technology design/implementation, and Workplace learning.*

The group discussions focused on opportunities and challenges in studying research questions within their theme with specific reference to (digital) workplaces. The groups also identified several methodological issues relating to the altered preconditions to study topics within workplace information in digital milieus. Three topic areas, managing change, information access skills, and workplace learning, emerged during these discussions and are summarized below.

Managing change towards/within digital workplaces with related informational consequences (e.g., in relation to new competencies, stress and generational differences) was identified as a significant research area. Whereas digital workplaces are often assumed to bring freedom of place and time for working, they are also likely to place different requirements and impose a special kind of stress on the workers as a result of fragmentation of working groups, dissimilar situations and different platforms as well as intercultural differences among collaborating workers. Work, family and leisure are enmeshed, if not as roles and activities per se, at least by sharing time and locations. Are workplaces aware of the new or altered issues; and, if so, how are they dealing with them? Are information culture/policy issues addressed? How are individual workers supported in re-negotiating and reaching an agreement of appropriate information-related norms, guidelines and regulations? How do the cultures/policies between groups, departments or digital milieus integrate with each other, especially when developing in different pace throughout the organization and its partners? One alternative to study these issues is through comparative, best practice studies.

One specific area of new workplace competencies relates to information skills that are directly related to information access. Whereas analogous ways to handle information at work may be effective in analogous milieus, digital workplaces require entirely new or altered set of skills to work with information. The clash between the “old” and “new” is potentially harmful in workplaces

where both the digital- and the analog-oriented workforce may lose access to information flows at their shared workplace. Sophisticated information systems may remove the need for traditional hands-on information skills, i.e. *de-skill* people, thus blurring the original thinking for accessing information. Information skills here refer to the ability to search for information, to analyze information, to value and determine the trustworthiness of information, as well as recognizing the purpose and the other users of the information and knowing who the experts are. This may be regarded as an aspect or element of information literacy that is broader than just the ability to use information technology per se. The access to digital information – and to other people inside and outside the workplace – may reduce the role of (physical) workplaces as the main context to obtain information through social networks. Simultaneously the role of social and professional networks outside the work organization becomes an important issue due to the changing nature of networks, from being a way of receiving information to becoming an arena where work actively takes place. Is this changing the emphasis of information work? Is the new generation of workers pattern builders rather than deep learners, and do they have new views on what is 'real' and what is 'virtual'? Are they emphasizing the finding of answers instead of creating ones, and placing more importance on breadth rather than depth? Change drivers are not necessarily solely young people but the organizations looking to cut costs and improve efficiency.

Methods that were recognized as fruitful to study information skills and access includes:

- Interviews
- Focus groups
- Non-participant observation
- Diary - paper and digital
- Action research
- Information audit

There are many informational issues around workplace learning as an informal, collective activity of developing work and workers in digital workplaces. How do information practices change in digital workplaces where observing and learning from others need to happen in a non-physical setting without propinquity? What is the use of, and resistance to, the tools for sharing information and learning in digital milieus? What do information landscapes look like in digital workplaces and how do they facilitate for the transition from learning environments to working environments?

How can we find traces of learning and/or capture collaborative learning in digital workplaces? The best data gathering methods for such questions may be highly time-consuming for people whose work and learning are at stake. Can we find less time-consuming, but still appropriate, data-gathering methods to capture the noise, complexity and the ill-defined activities constructing everyday workplace learning? How can we best capture the informational aspects of practices across all used systems, tools and other interactions to understand the variations of workplace learning? An auspicious alternative is to develop digital ethnographic methods, such as utilizing screen dumps and recordings; asking people to film themselves at computers; using apps to record and share systems. Possible challenges may be that some systems are proprietary. Digital methods may be complemented with other methods (e.g., interviews, or having people write diaries/blogs).

Day 2: Research Meets Practice

As mentioned previously, Day 2 began with a keynote by Andrea Resmini and a panel on digital workplaces of today and tomorrow. The afternoon of Day 2 was devoted to roundtable discussions on the potential of, challenges for, and solutions to digital workplaces. Topics that emerged during the discussions include: information integrity and security, information overload, organizational acceptance and use of new technology, and workplace motivation.

Some of the essential questions regarding organizations transitioning into digital workplaces concern *integrity and security* of information, especially the *legal aspects*, where perspectives of both the society and the individual are needed. Technology design and implementation have not traditionally been interested in the legal aspects (e.g., intellectual property, copyright, etc.) nor transparency issues. The lack of transparency may influence information stress as employees do not feel confident that (their) information is appropriately protected. There are also questions concerning privacy when organizations push on synchronization of calendars, e-mail, etc. Rather than being issues to be handled by IT departments, a proper management level needs to get involved to ensure transparency.

In digital workplaces a risk for *information overload* is likely to increase. What are the policies concerning use of other people's time, and who decides what is important? Holding information may also involve risk when employees may feel ignored/uninformed. How to filter relevant, meaningful content (from e-mail, collaboration tools, etc.) remains a significant problem at both personal and organizational levels. Moreover, it is difficult to transfer tacit knowledge virtually; how will individual preferences and influence of reward systems play in in creation of collectively shared knowledge bases?

Different types of organizations tend to *accept and use new technology* at different rates and in different ways. Whereas large organizations with long traditions on how to handle information may be slower to adopt social media, flat companies or freelance work with no previously established information routines may be swifter adopters of social media. What happens when “instant chatters” are forced into established e-mail services? What about archiving/documentation in ever changing platforms? Digital workplaces build on a remote collaboration among individuals where people establish ties independent of proximity, and this has an impact on the formal organization. Establishing trust can be problematic in digital milieus. There are differences in social media use also in regard to private vs. workplace purposes. How to compartmentalize life and work is an issue that divides people; some like to keep these separate whereas others blend their different associations. Unintended consequences of digital workplace may include diminished privacy and anonymity in work environments, e.g., video-conferencing from home may illuminate home environment to colleagues. Yet another source for differences is in educational and work settings. Workplaces may impose constraints regarding technology that may not exist in higher education (e.g., there may be ethical, practical and infrastructure issues in workplaces that constrain technology use). “Aged” information routines may frustrate a workforce that has got used to advanced technological solutions. The opposite may also be the case; what new graduates have in theory is lacking in skills to use the existing system in a workplace.

Digital workplaces may impact work experience in a way that lessens *motivation*, as a result of increased stress, forced compliance or avoidance, and reduced face-to-face interaction. Digital work may influence the perception and completion of work tasks. How do aspects that are found to reduce motivation demonstrate themselves in digital workplaces? For example, how does the emergence of more procedures in the workplace, including administrative work; or the difficulty to access or locate information needed to complete tasks, affect motivation in digital workplaces? Technology may also make the digital workplace complex with different layers of technology with need to bridge the legacy systems.

Conclusions: Challenges and Solutions

Common themes or key issues to research digital workplaces are several and many of them are interrelated. Overarching challenges and key issues identified by symposium participants are as follows:

- The meaning of the concept, digital workplace, is not clear, and researchers’ and practitioners’ viewpoints may be quite diverse

- Getting organizations interested in taking part in research
- Access to study participants within the organization
- The time aspect is now more crucial than only some years ago:
 - How to adjust research projects to fit today's hectic work life and the tight schedules of business organizations?
 - How to manage the time-consuming analysis of heavily qualitative data, e.g., non-participant observation
- Slow research process vs. rapid change in technological/digital tools:
 - How do we keep our research relevant? How can we phrase our research questions so that they stand the test of time and changing tools? What is different in a digital environment that is not just an issue of format?
 - The studied companies expect concrete results in a relatively short time. How to design research projects to deliver, e.g., concrete measures that are relevant for the companies or business organizations? Impact is important.
- Today's workplace is a complex context. Which theories fit this complex environment and how to adjust theoretical approaches to a (quickly) changing environment? Interdisciplinary research important.

Potential solutions discussed by participants include:

- It is important to involve the studied workplaces' points of view when exploring relevant research problems.
- Work with potential gatekeepers to gain access through:
 - getting organizations to understand that our research is focused on providing practically orientated research with academic/theoretical underpinning
 - getting involved in practitioner-only exhibitions/trade shows to emphasize the practical application of the research
- Employ a combination of methods. For example, use "big data"/statistical data to understand some of the research questions we ask and find ways to combine data from "sensors on thousands of people", or "harvesting web discussions" with data from more qualitatively oriented methods.

- Interdisciplinary research teams are necessary to capture and understand the multiple dimensions of digital workplaces.

While entirely digital workplaces are rare or perhaps even non-existing to-date, most workplaces are hybrids placing different degree of emphasis on the physical and the digital. There is a need to create a fruitful blending of the two milieus. Some key ideas for productive blends are: physical virtual systems for better training simulations for work that is not possible to digitalize entirely (e.g., firefighting, nursing); establishing policies to facilitate remote/proximity (team) work; and creating awareness of the impact of new technology and its consequences for working from a holistic workplace perspective.

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List of Participants

The participants consisted of regular network members and invitees.

Day 1 – Focus on research; Day 2 – Focus on collaboration between practice and research

Anders Adlemo, Jönköping University, Sweden (Day 2)

David Allen, Leeds University Business School, UK (Day 1 & 2)

Katriina Byström, Oslo and Akershus University College of Applied Sciences, Norway & University of Borås, Sweden (Day 1 & 2)

Kerstin Einarsson, Västra Götalandsregionen, Sweden (Day 2)

Per Ek, CloudMe, Sweden (Day 2)

Emma Forsgren, University of Borås, Sweden (Day 1 & 2)

Jannica Heinström, Åbo Akademi University, Finland (Day 1 & 2)

Ben Heuwing, University of Hildesheim, Germany (Day 1 & 2)

Isto Huvila, Uppsala University, Sweden (Day 1 & 2)

Thomas Jacobsson, Norstedts Juridik, Sweden (Day 2)

Fredric Landqvist, Findwise, Sweden (Day 2)

Maria Lindh, University of Borås, Sweden (Day 1 & 2)
Annemaree Lloyd, University of Boras, Sweden (Day 1 & 2)
Marianne Lykke, Aalborg University, Denmark (Day 1 & 2)
Elena Maceviciute, University of Borås, Sweden & Vilnius University, Lithuanian (Day 1 & 2)
Thomas Mandl, University of Hildesheim, Germany (Day 1 & 2)
Osama Mansour, University of Borås, Sweden (Day 1 & 2)
Renata Matkeviciene, Vilnius University, Lithuanian (Day 2)
Anita Nordsteien, Oslo and Akershus University College of Applied Sciences, Norway (Day 1 & 2)
Kristian Norling, Norling Co, Sweden (Day 2)
Karen Nowé Hedvall, University of Borås, Sweden (Day 1 & 2)
Urban Nulden, Chalmers University of Technology & University of Gothenburg, Sweden (Day 2)
Andrea Resmini, Jönköping International Business School, Sweden (Day 2)
Ian Ruthven, University of Strathclyde, UK (Day 1 & 2)
Nicholas Silburn, Reading, UK (Day 1 & 2)
Diane H. Sonnenwald, University College Dublin, Ireland (Day 2)
Jela Steinerová, Comenius University, Slovakia (Day 1 & 2)
Henrik Strindberg, Xcerion, Sweden (Day 1 & 2)
Tanja Svarre, Aalborg University, Denmark (Day 1 & 2)
Eric Thivant, University Jean-Moulin Lyon 3, France (Day 1 & 2)
Carlos Garcia Timon, SKF, Sweden (Day 2)
Helena Vallo Hult, University West, Sweden & the NU Hospital Group, Sweden (Day 1 & 2)
Katrin Werner, University of Hildesheim, Germany (Day 1 & 2)
Andrew Whitworth, University of Manchester, UK (Day 1 & 2)
Gunilla Widén, Åbo Akademi University, Finland (Day 1 & 2)
Thomas Winman, University West, Sweden (Day 2)
Christa Womser-Hacker, University of Hildesheim, Germany (Day 1 & 2)

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