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THE DIGITAL WORKPLACE

Redefining Productivity in the Information Age

A business perspective on the future of information and knowledge-based work practices and technologies in organizations

An Infocentric Research Business Whitepaper

About this Whitepaper

The Internet has reshaped industries, changed the way business is done and affected all areas of our lives. If the Internet were an industry sector, its weight on GDP would be larger than any of the industries of mining, utilities, agriculture, communication or education[1].

The same cannot be said for internal systems and practices in dealing with information, like for example intranets and the many other information management tools that exist in enterprises today. Their impact on organizations is in no way comparable to that of the Internet and the impact it has had on all aspects of human life and activity.

It therefore seems fair to say, that while mankind, as such, has definitely moved into the information age, organizations have done so only in very limited ways. This impacts productivity and performance in major ways and to a significant extent – even if not always visible to our eyes which typically still evaluate information-based work using the bygone standards of industrial age business orthodoxies.

With this in mind, the aims of this whitepaper are twofold:

1. Create awareness of just how big a problem organizations have today with information (and to highlight that no area of business is left unaffected by this phenomenon)
2. Outline a solution, which – unlike today's approaches – has the potential to fundamentally change the way work, and especially the most relevant kind of work - information work - gets done in organizations

The target audience of this whitepaper reflects the true enterprise-wide nature of the future Digital Workplace. It includes CEOs, intranet managers, communication professionals as well as IT specialists and line of business managers in organizations of all sizes and sectors.

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[1]McKinsey Global Institute: "Internet matters: The Net's sweeping impact on growth, jobs, and prosperity", 05/2011

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Executive summary

Imagine that each and every employee in your organization would spend 1 to 2 full working hours per day surfing the web and social media sites (such as Facebook, YouTube and Twitter) purely for private pleasure. Would that be acceptable for you? And even more important: would it leave your bottom line results unaffected?
The answer to both questions of course is clear "No". But the bad news is that your employees spend just that amount of time for something even worse. And they do so with full allowance by management and in accordance to accepted work practices in your organization. What they do, what you do as well, is looking for information they need to do their job and ineffectively working with that information.

In a meta-analysis of 9 studies on information search-related time wasting, we found an average of 1.1 hours per day per employee being lost in unproductive locating of information, with some of the most authoritative sources even indicating up to 2 hours[2].

This is a tremendous waste of time and productivity – 1.1 hours a day is more than 12% of total work time, summing up to more than 30 work days or 1.5 work months a year per person[3]. Still, awareness for this extraordinary situation is low or even non-existent in organizations today. It is hard to imagine that business leaders would accept this situation if the magnitude of the problem would be known to them. Also, few have an awareness or understanding of the existence of better ways for organizing and getting work done in the digital age.

This Whitepaper is not about search and searching, though. The problem outlined is far from being one of findability alone. Instead, it is one of industrial age work practices that have never been adapted to the requirements and possibilities of the information age. Therefore also the tools and systems we have put in place to support information-based work were built reflecting these practices. This has brutal consequences for employee productivity.

It is now time to turn the ship around and start working in order to make best use of the potential and promise of the information age. The instrument management has for doing so is the Digital Workplace. It can best be thought of as being the equivalent of a craftsman's toolbox for information-based work. It brings together a multitude of currently typically isolated systems and is based on the processes, tasks and projects of its users. The Digital Workplace is also context aware enabling it to act on behalf of the user and not just react to user input in an unknowing fashion devoid of all the rich logical relations that each employee role and work situation brings with it.
Ideally, it actively supports an employee in each and every task performed throughout the workday in the best possible manner, independent of work type and task. This requires a fresh look at both information systems and also the organizational aspects of work (e.g. culture, leadership, processes, …).

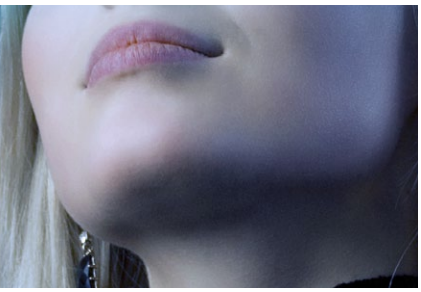
The benefits of a Digital Workplace for an organization are indeed impressive. They are best illustrated on basis of a Balanced Scorecard approach which highlights the real cause-and-effect chains the Digital Workplace has on the business. Hence it can, for instance, be shown, how customer service can be improved by establishing integrated communities and internal social networking and the positive influences this has on the total product offer of the company and its revenue opportunities.

[2]Studies by IDC, AIIM, MeriTalk, Canon, Artesian Solutions, Butler Group, YouGov, Recommind and Google
[3]Based on 42.5 work hours per week and 230 work days a year

“The most important contribution management needs to make in the 21st Century is [...] to increase the productivity of knowledge work and the knowledge worker.”

PETER F. DRUCKER, 1999

The giant blind spot: productivity in information work



In 1829, a locomotive was built which was to set the standard in steam locomotive power for the next 150 years. It featured many design innovations and was the most advanced steam engine of its day. It was called "Rocket". Its top speed was 30 mph.

With modern trains boasting speed records of more than 10 times that of the Rocket, its name hardly seems appropriate to us any longer.

As an artifact from the early stages of the industrial age, the Rocket gives us a chance to reflect on our own current situation within our own age - the information age or digital age. Did people think that the Rocket was a great achievement with not much more to follow after it? Of course, they did! Do we think that our current way of working in the information age with all its technology is a great achievement? Of course, we do! Would people have been able to look at the Rocket with our eyes and see it is an immature technology full of problems and with most of its potential still unexploited? In most cases not, even though we today can easily see it from that perspective.

Despite this realization, we are still trapped in the same "blind spot" when it comes to our current work practices. Given the current state of affairs – which can aptly be described as dramatic as we will outline in the next chapter – it has to be concluded that so far, organizations and their leaders largely fail to see that:

- A large proportion of all work today is information work[4] (i.e. work that requires information to be executed and in which information and the cognitive processing of information often greatly determines the outcome of the work and its quality).
- Information is not being understood as an organizational resource and therefore not managed as such. In comparison to other resources (like for instance money, machines, goods or processes) it is largely left to fate and to the false notion that information is managed automatically through technology.
- Overwhelming problems in information work exist and have immense effects on employee productivity, efficiency, effectiveness, profitability and even engagement.
- Outperformance in information work practices are key enablers for businesses to gain competitive advantages in a globalized economy with ever more uniform products and services.

As a result, today's information management practices are nothing but the Rocket's equivalent of the information age: a huge step forward in comparison to the time before information technology, but still nowhere near to maturity or high performance. And while trains have gotten much faster, they are still bound to tracks. With information work this metaphorical limitation does not exist. A mature Digital Workplace has the potential to revolutionize the way work gets done in organizations and the very structures of enterprises themselves.

[4]The Work Foundation: "Knowledge Workers and Knowledge Work", 03/2009

"Information Mastery" is the Industry Automation of the 21st Century

The 20th century has seen massive increases in industrial productivity – some sources estimate a 50x productivity growth in manual labor[5]. With work ever more shifting from repetitive, pre-defined tasks to knowledge based, flexible, adaptive tasks – both measured by quantity of work as well as in relation to their significance to company performance and success – increases in information related work productivity would seem to be as much in the focus of modern organizations, as industry (and standard process) automation used to be in past decades.

But in most organizations information work productivity is not even on the agenda. Current information related work practices are considered good despite all obvious issues. Information work tools are mostly immature and exist in isolation, both from each other, existing work processes, employee skills and their individual work practices.

In fact, most such tools are still built around past, industrial age business principles. This orientation on past principles leads to the highly contradictory situation in which senior executives are quick to condemn that employees use modern digital services – e.g. social networking sites such as Facebook – on the grounds of potential time wasting whilst little or no attention is being paid to the far more drastic productivity wastes inherent in current work practices.

To put it into very clear words:

> employees waste significantly less time and company money by not working due to private activities than by working in accordance with established but highly unproductive work practices.

[5]Peter F. Drucker: "Management Challenges for the 21st Century", 1999, Butterworth-Heinemann, Oxford

Information work as the new key success factor

Legendary business visionary Peter F. Drucker said already 43 years ago, that knowledge work[6] is the most important aspect of work in the modern, advanced economy[7]. The tremendous effects of this change can only be fully understood if we reflect on all of the profound impacts – big and small – this has on all aspects of an organization, its business and people. While by no means complete, the table below contrasts some of these aspects which characterize organizations and work in the industrial and information age:

Industrial Age (Focus on manual work)		Digital Age (Focus on information work)
Hierarchy	→	Global Networks, informal structures, multi-dimensional matrices, executing influence in complex ecosystems, self management
Mass production	→	Custom production, service orientation, differentiation
Transactions, transaction quality	→	Decisions, decision quality
Predictability, standardization, well-established recurrent activities (routine), repetitive tasks	→	Flexibility, constantly new challenges[8], managing constant change, ad-hoc activities
Stability, keeping the status-quo	→	Accelerating levels of dynamics
Defined processes, task segmentation, specialization, low or hidden complexity, low level of uncertainty	→	Tasks/jobs not clearly definable, access to changing resources needed, cross-border work, transparency, sharing, need for generic tasks (e.g. problem solving, decision making, verbal and written communication, team performance, …), creativity, engagement, holistic approaches
Known problems, low escalation and decision frequency	→	High level of improvisation, experimentation, learning through failure, constant escalation and decision making needs, requirement of high-level of understanding
Results visible and quantitative	→	Results invisible but relevant and qualitative
Long-term validity of knowledge	→	Constant learning, harnessing one's network, pattern recognition
Defined work hours and location	→	Blurring borders and need to balancing private and work life, work anywhere, always on

Source: Infocentric Research, 2011

Table 1: Information age work is distinctly different form industral age work

[6]Even though the terms „knowledge work" and „information work" by their definition are not identical, they are used interchangeably with each other in this document for practical reasons.

[7]Peter F. Drucker: "The age of discontinuity: Guidelines to our changing society.", 1968, Transaction Publishers, London

[8]E.g. tasks which are done in an individual context for the first time

With all the information tools organizations have in place today, it may seem as if we were already catering to the requirements of information work. But this, for several reasons, is not the case. First, the tools we have in place today are mostly insufficient, immature (especially from a "Rocket-esque" perspective) and incorrectly used. Secondly, while indispensable as an enabling factor, technology actually plays a downstream role when it comes to enhancing productivity. Instead, work and management practices are the drivers which influence productivity. And these have largely been "protected" from change in that area. Just consider the following major aspects of work:

– Empowerment: Information work requires a distinctly different approach to management and a set of leadership principles other than that of industrial work. Information work is so different in nature that the "business orthodoxies" shaped by Scientific Management[9] are fully detrimental to it.

  Information work requires "new freedoms" in order to produce great results. Among those freedoms are the diminished relevance of hierarchies, fixed work times and work locations. Also, assessing performance by strictly quantitative goals becomes ever harder leading to different approaches for measurement and controlling.

– Paper handling: Mankind's information work practices have been shaped over millennia by paper as the one medium available for information management. It therefore comes as no surprise that almost all of our electronic information management practices are still based on paper handling logic. And with it of course come all the problems inherent in physical paper handling.

  The consequences cannot be overestimated: not only do we leave all potential for better information handling unexploited, but with information volumes that have grown to levels unimaginable only a few years ago, it simply is not possible any longer to work productively and in good quality by making use of practices with the severe limitations of paper-based work. Negative effects include time and productivity waste in creating, filing, not finding and recreating information time and again.

[9]Also known as Taylorism in reference to its originator, Frederick Winslow Taylor (see: "The Principles of Scientific Management", 1911). It is a management theory based on analyzing and synthesizing workflow in order to improve economic efficiency, especially labor productivity. Based on the idea that there is "one best way" to do any given task, it required high levels of management control over employee work practices. While it has long been obsolete as a distinct theory, its themes still live on in managerial practices to the present day.
See also: http://en.wikipedia.org/wiki/Scientific_management

Time for a new strategy for "how to do work"

Once we have come to realize that the approaches of the early information age are no longer sufficient for modern economic challenges, the question has to be asked what to replace it with? Are there strategies, concepts and technologies that might enable a business, regardless of size and industry to take a leap into a new paradigm with so far unheard of gains in information work productivity?

We strongly believe there finally is: the "Digital Workplace".

While the term "Digital Workplace" has been coined as far back as at least in 1993[10], it still lacks a proper definition[11].

Despite this, the term is used more and more frequently to describe the evolution of corporate intranets and other information management instruments into the equivalent of a craftsman's toolbox for information-centric work. The Digital Workplace can be thought of as the master key an employee has to unlock all the resources his organization has to offer him to do his work. To that respect, it acts as a "fundamental access point", just as web search engines like Google are the foremost point of access to the rich resources of the Internet.

In order to play the role of the master key, the Digital Workplace is made up of a number of building blocks that support every aspect of work. This will be discussed in detail in the next but one chapter. Briefly, these components encompass support for processes, personal performance, team performance and organizational performance in addition to information and relationship-specific capabilities as well as cross-system basic functions.

[10]Charles E. Grantham, Larry D. Nichols: "The Digital Workplace: Designing Groupware Platforms", 1993, Van Nost. Reinhold, U.S.
[11]Even Wikipedia didn't have a separate entry for this term until 08/2011 (and redirected to "Telecommuting")
See: http://en.wikipedia.org/wiki/Digital_workplace

“If knowledge can create problems,
it is not through ignorance that
we can solve them.”

ISAAC ASIMOV

A key resource literally unmanaged

No organization can run its business without information. Not even for a single day. In that respect, information is like the air we breathe: we can't do without it, still we don't think much about it. It's a resource we take for granted and therefore don't actively manage.

And just like oxygen has many functions in all different parts of our bodies, so does information within an organization. It exists and flows everywhere through an organization as a key enabler to making the business "live" and function. It is interwoven with standard, pre-defined processes as well as with ad-hoc tasks, decision making, customer service, product innovation and problem fixing.

> As research shows, information and its flow through an organization are the single most important enablers for successful business strategy execution, even surpassing organizational structure, decision rights and employee motivation in relevance[12].

It is easy to see why information plays such an important role: being an integral part of each and every task that gets executed in an organization, the output of these tasks is directly dependent on information. Likewise, if information is missing or of low quality, the problem isn't limited to the information itself:

From Information problems ...	... to People/Work problems ...	... to Performance problems!
■ hard to find	■ more interruptions	■ lower quality
■ not trustworthy	■ more distractions	■ more time needed
■ not up to date	■ less motivation	■ higher (hidden) costs
■ huge volumes	■ more stress symptoms	■ lost synergies
■ not accurate	■ worse communication	■ wrong decisions
■ not latest version	■ worse collaboration	■ less transparency
■ hard to understand	■ less exchange	■ less innovation
	■ less sharing	■ worse customer service

Source: Infocentric Research, 2011

Figure 1: Information problems don't exist in isolation but directly affect those who use the information and their respective work results

[12]Harvard Business Review: "The Secrets to Successful Strategy Execution", 2008, Booz & Company

Employees are both expensive and bad search engines

Information based work is driven and determined by having the right information to perform the task at hand. For this, the information has to be there when needed. Looking for the right information to do something therefore constitutes one of the most relevant of all tasks. In fact, "searching" in all its forms is the most ubiquitous activity that information workers perform in their jobs[13].

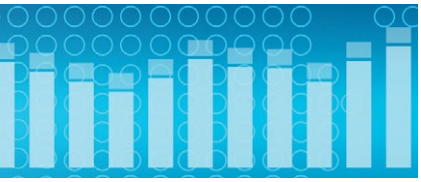
Being very generic, we often don't recognize "searching" as such. And it is not only "using a search engine" (or any other kind of navigation mechanism for that matter) but includes emailing or asking around for information, assigning someone else to gather information, checking whether the version you have is the current one, trying to locate that email, browsing the web, etc.

Productivity is affected in two main ways by issues related to the omnipresent task of "looking for information":

- time loss in searching and finding information (and related effects such as employee frustration by long and unsuccessful searches)
- quality loss by not having the right information, where, when and in the appropriate format and detail needed (e.g. incomplete, inaccurate, untimely, too complex, … information) for the respective task (and e.g. thus making a bad decision)

[13]Forrester Research: "A Day in the Life of A US Information Worker", 2009

Overwhelming facts which affect your business performance



There is an impressive amount of research showing the devastating implications these fundamental problems are having on business, both as individual organizations and the economy as a whole. The facts from some of the most relevant studies in this area should make every business leader cringe:

Effect on Economy and Organizations in general

Effect on Employees

Effect on Management

Figure 2: The many impacts of today's information mismanagement

The data about the negative impacts illustrated in Figure 2 is based on numerous studies on information management. More details are listed below:

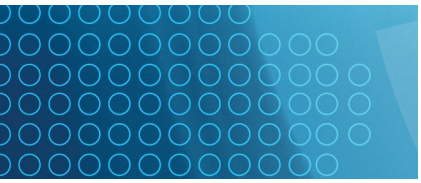
Effect on the economy and organizations in general:

- The U.S. economy alone loses $900b to $1.5t per year due to information overload and information related time waste[14]
- The same effect on the UK economy is estimated to be £67b/year[15]
- A broken information culture (bad information management practices) is believed to suppress organizational performance by an average of 29%[16]
- Immature information management capabilities lead to underperformance in dealing with complexity[17]

Effect on employees:

- Employees search for information for 0.5 to 2 hours per day – that's up to about a ¼ of the full work time. This hidden cost on average total up to $14k per employee and year[18]. About 50% of information workers state that finding important information is difficult and time-consuming[19]
- 1/3 say that less than half of the information they need is searchable and that searching for information is time consuming and frustrating[20]
- 31% of searches for internal information are not successful[21]
- 70% of customers contact agents are facing significant challenges as a result of not being able to find necessary customer information[22]
- U.S. workers spend more than 25% of their time dealing with information overload related interruptions and distractions[23]

[14]Basex: "Information Overload: Now $900 Billion – What is Your Organization's Exposure?", 2008, http://www.basexblog.com/2008/12/19/information-overload-now-900-billion-what-is-your-organizations-exposure/ and IDC: "Cutting the Clutter: Tackling Information Overload At the Source", 2009
[15]Capgemini: "The Information Opportunity Report", 2008, http://www.uk.capgemini.com/news/pr/pr1605/
[16]See footnote 15
[17]Prof. Don Marchand: , „Managing Complexity in Global Organisation", IMD Business School of Lausanne
[18]IDC: Hidden Costs of Information Work: A Progress Report, 05/2009
[19]eKnowledge Center: "How to Measure Findability in Enterprise Search Solutions", 12/2008, http://www.eweek.com/c/a/Search-Engines/How-to-Measure-Findability-in-Enterprise-Search-Solutions/
[20]See footnote 21
[21]Outsell Inc.: "Information Management Best Practices: The Search For Search – Solving Users' "Finding" Problems", 2006, http://www.outsellinc.com/store/products/229-information-management-best-practices-the-search-for-search-solving-users-finding-problems
[22]Omega Management Group Corp. and Coveo: "The Knowledge-Driven Support Organization and its Impact on the Customer Experience", 2011, http://www.coveo.com/en/resources-and-videos/Harsh_Realities_for_Contact_Centers?mkt_tok=3RkMMJWWfF9wsRoluqzBZKXonjHpfsX64%2BQsWKeg38431UFwdcjKPmjr1YEHT8R0dvycMRAVFZl5nQ9XDOWa
[23]See footnote 14



Effect on management:

- Every 2nd manager (49%) suffers from information overload[24]
- Managers are most affected by having to search for information and spend 25% of their time looking for information[25]
- One in two business leaders do not have sufficient information from across their organization to do their jobs[26]
- 54% of decisions are made difficult by incomplete, inconsistent and inadequate information[27]
- Information isn't reaching decision makers on time, therefore 63% make business critical decisions five times or more a week without having the right information[28]
- 86% don't feel prepared to deal with information risk issues[29]
- Over 40% of managers use incorrect information at least weekly[30]

In light of these facts, one cannot say but that information is a literally unmanaged resource today. And with 75% of the workforce[31] and all of today's managers being information workers, the vast and most relevant majority of those who run the business are in desperate lack for this resource (and in equally desperate surplus of irrelevant or junk information). There is not a single area of a business that is not affected by this.

As disillusioning as these numbers might already be, there is even more bad news. For instance that "looking for information" is only one of many problematic areas in information work. Others include:

- time wasted in recreating information (that already exists but cannot be found)
- reformatting information
- additional editing to publish in different channels
- dealing with different versions (version mismanagement and redundancy, e.g. comparing two versions of a document to find out which is the right one)
- ill-defined communication interfaces and processes
- time and quality loss due to wrong or not up to date information
- inefficient information distribution channels
- missing and unnecessary system accesses
- loss of knowledge due to employees leaving the organization

[24]GigaOm Pro: "The Future of Workplaces", 2011
[25]Datamonitor, 2007
[26]IBM Global Business Services: "Business analytics and optimization for the intelligent enterprise", 2009, http://www-935.ibm.com/services/us/gbs/bus/html/gbs-business-analytics-optimization.html
[27]Vanson Bourne, www.vansonbourne.com (report no longer accessible)
[28]See footnote 15
[29]Recommind, 2009, http://www.cmswire.com/cms/enterprise-cms/enterprises-waste-time-searching-for-documents-004604.php
[30]See footnote 28
[31]Ramirez, Y. W., Nembhard, D.A.: "Measuring knowledge worker productivity", 2004, Journal of Intellectual Capital, p. 602-628.

It can be estimated that these activities often turn out to be by far more time consuming than even that of searching for information.

In that light, a figure of 10% of total information worker time being wasted would be a most conservative estimation. Still, it would mean that an average employee is unproductive for more than one month per year.

More realistic figures of 20 to 25% waste would equate to 2 months or a full quarter per year per person lost in unproductive information work[32]. Just imagine where your organization would be if you could turn even half of that wasted time into results oriented, engaged and productive work!

Real World Cases:

While representative, cross-company studies shed much light on the situation of the industry as a whole, individual cases often tell even more compelling stories. Consider these for instance:

- One international energy company with more than 10.000 employees found out that their average information worker spends 45% of his time dealing with information. About 1/3 of that time was found to be non-productive.
  The expense this company has for managing information in the current way every year equates to more than 100.000 working days or 125.000.000 USD in manpower alone.
  A third of which is wasted. On the other hand, the investment the company is making to optimize their business through proper information management isn't even a fraction of that sum.
- In a small pharmaceutical company, analysis found that the largest proportion of information workers (36%) spent more than 6 hours per day (or more than 75% of their workday) in handling information. Great problems both with the quantity and relevance of information were named by more than 60% of all employees as the most relevant problem in their work. 30% of all internal email was identified as "corporate spam" (information not relevant to its recipient). Unproductive time-loss was estimated to be up to 1.250.000 USD per year for each 150 employees the companies has.
- In a large financial institution employees were asked to indicate how much of their talent, ideas and experience is used to do their job. The majority (70%) answered that only 15-20% of this crucial resource is actually being utilized. In other words: in a company of 100.000 employees, the talent, ideas and experience of only 15.000 to 20.000 is being utilized, leaving the remaining 80.000 to 85.000 people completely unused.

[32]Two of the research papers cited suggest a total of 25% time waste for employees and managers respectively. To quote: "Despite its heft, this (…) fairly conservative number (…) reflects the loss of 25% of the knowledge worker's day to the problem.", see footnotes 14 and 17

Why current information management systems don't come to the rescue

Most intranets and many other information management systems deliver only limited value to their organizations and often create as many new problems as they solve existing ones. With all the investment that organizations have made over the last years and decades into these systems, how can things be in such a desolate state?
While we have already seen reasons for this situation in the vastly different nature of information work (which is not well reflected in most systems) and inadequate management frameworks, the way technology is designed and put to use is also part of the problem:

Lack of a logical, enterprise-wide architecture

Like most cities, organizations and their information system landscapes are products of years and years of organic growth and change. But imagine a city in which only the buildings have received some degree of central planning and coordination, but no thought has ever been given to roads, electricity lines and sewerage. The result would obviously not be a very good place to be. Still, that is how information technology has been put to use until today. Systems (representing the buildings in the analogy) are built with typically only minimal neighborhood planning (e.g. what other systems, data and functions do already exist) and little to none overall planning especially in regard to the connections among the systems. The whole infrastructure of roads, electricity, waste, etc. is left out. Their equivalents for information systems are aspects of such high relevance as enterprise information architectures, cross-system functionalities (like for instance enterprise search working across all information repositories), governance structures, alignment with processes, embedding of operational rules, etc.

No clear distinction between tool and business need

It is the application of a technology that determines its value. Hence without a proper business case, business need and goal, technology can deliver only limited value at best. Also, methodology and organizational aspects often determine a significant part of the success of a system. Management support, defined roles, clear governance, performance controlling etc. are all aspects often neglected in regard to information management and systems.

Immature information management tools

It is not primarily a lack of information management systems, it is using them in the wrong way and in isolation of each other. Incorrectly used because they mostly bear no direct relation to the tasks they are to support (no relation between process and information needed for that process, both as input and output). Isolated because systems so far are purchased based on specific functional needs (e.g. an intranet to spread top-down communication) or departmental requirements (e.g. controlling software for finance) instead of a holistic perspective of an organization and the numerous linkages and interrelations it is made up of.
In order for the "looking for information" problem to be solved, these systems have to come "closer together", both from a logical and technical viewpoint. A key element of the logical viewpoint for instance is a common, cross-system information architecture.

Users not educated in information management

It is an accepted reality in all areas of our increasingly complex and specialized world, that good and on-going education is a necessary foundation for both productivity[33] and quality. One area that we don't apply that common sense to, though, is working with information. How many of your employees were educated in or have received professional training in handling information efficiently and effectively? Probably few to none (exce pt for a number of specialists like librarians). So how can we expect them to be productive information workers that know how to best manage their email, file documents or categorize information for reuse and findability?[34]

Not embedded into the way of working

A crucial differentiator of how the Digital Workplace will be different from today's systems is this: the Digital Workplace is integrated into actual work processes and constitutes an active ingredient of how work gets done. Current information systems in contrast are places one has to go to and look for the right tool and information in order to be supported in one's tasks. You can also put it this way: until now information systems were mainly provided and used to solve information issues (like for instance delivering top-down communications or archiving regulated documents). The Digital Workplace is designed to directly support all individual tasks a business is made up of in their entirety. It does so primarily by optimizing business processes and tasks by weaving together the so far mostly disparate process and information flows. As a side effect of this, many processes will finally make the step from existing only on paper to really forming the operational structure of the business. Being embedded into the systems and practices, processes will at last unfold their potential as the backbone of an organization.

[33]Niall Ferguson: "Civilisation", 2011, Penguin UK

[34]The Digital Workplace will partly make this education issue obsolete due to the far-reaching support it gives to users in these tasks. Other aspects will persist, though, for instance the need to create good quality information, making good assessments about the right target groups, etc.

“Dated and primitive information management sets the expectation with staff that the organisation doesn’t need to be efficient or effective.”

JAMES ROBERTSON

The Digital Workplace: from vision to reality

The last decades have seen all kinds of technologies to manage information enter the workplace. While all these systems brought advancements to information management, they all suffer from three fundamental shortcomings that greatly inhibit major productivity gains:

- They exist mostly in isolation from each other
- They are mostly isolated from context (i.e. information is not embedded into processes, roles, tasks, activities and other relevant connections and therefore cannot be put into relation to what matters to a user at a given time and situation)
- They are mostly static and passive (i.e. reacting on user input instead of actively delivering what is needed in a given situation and context)

All three aspects create a plethora of problems, especially when occurring in combination, as usually is the case today.

So, in order for the Digital Workplace to be effective, it cannot stop at merely being a combination of existing tools that are being brought together under the umbrella of a portal. Instead it has to be enhanced by

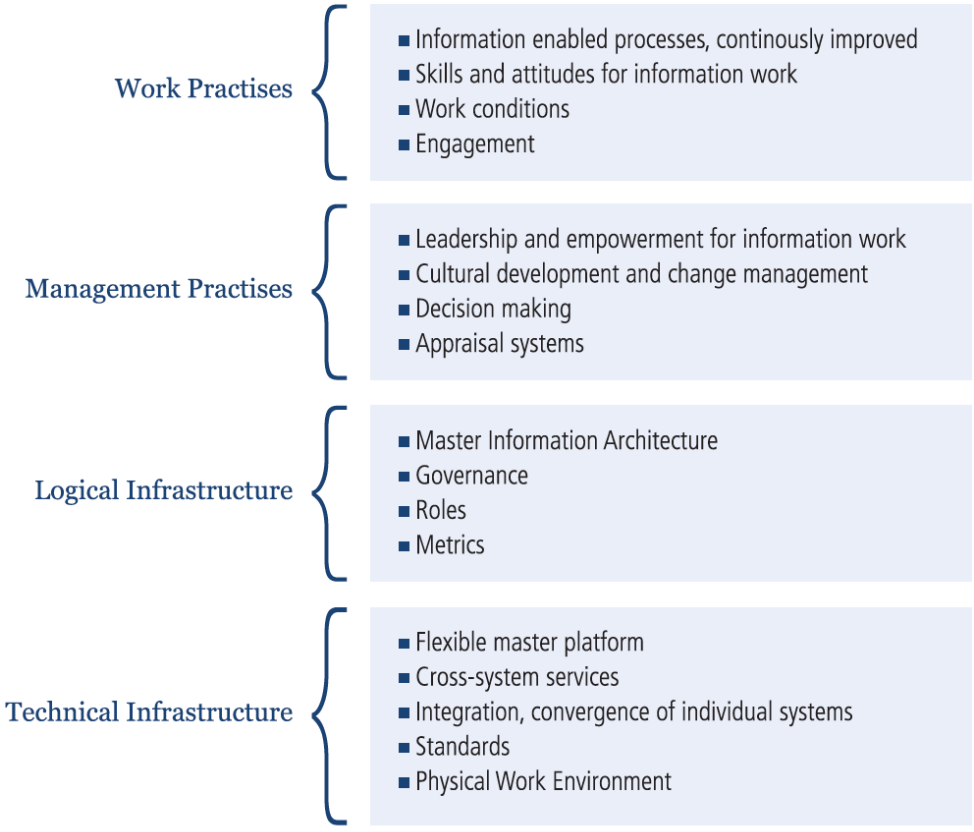
- Pieces of the puzzle thus far missing (e.g. functionality not available to its audiences today)
- Consistent coverage of information flows for processes
- Context
- Dynamic and pro-activeness
- Bringing together the so far separated worlds of structured data (e.g. sales numbers in a database) and unstructured information (e.g. documents, web pages and rich-media such as product pictures or videos)

Only then can information work in all its facets be adequately represented and thus supported by the Digital Workplace.

Organizational dimensions

The Digital Workplace is not primarily an IT-system. While technology ultimately is the indispensable enabler a Digital Workplace is made up of, it can only be effective when completely embedded into all aspects of an organization. This of course is only possible if fully backed by management and accompanied by substantial change management activities. Both work and management practices need to adapt for the better in order for the Digital Workplace to live up to its full promise. Furthermore, a "logical infrastructure" (e.g. defined roles and governance models) has to be in place just as much as the technical one.

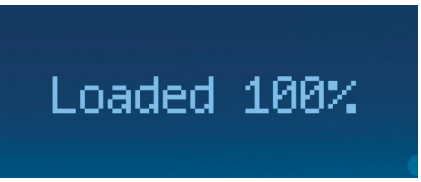
The success of the Digital Workplace will therefore be constituted by a well-orchestrated approach taking into account all four dimensions:



Source: Infocentric Research, 2011

Figure 3: The organizational dimensions of a Digital Workplace

The scope of the Digital Workplace: the whole enterprise on your screen



A Digital Workplace is what a company makes out of it. This means that unlike purpose specific applications, such as e.g. Enterprise Resource Planning (ERP) or Customer Relationship Management (CRM) systems, the purpose and scope of a Digital Workplace have to be defined individually for each organization based on its strategy and existing issues across the whole spectrum of information work. And while this has also been true for systems such as intranets, portals and ECM, the extent to which this has to be done is now much larger.

The following figure illustrates the potential scope of a Digital Workplace from the perspective of what information work is made up of from a holistic viewpoint[35]. We employ commonly used terms in order to give an impression of the disciplines (and ultimately technologies) involved in this[36].

Information Management	Working together	Data Management	Process & Business Support	Cross-Function / Infrastructure
Intranet	Collaboration / Groupware	Business Intelligence	Workflow Management	Enterprise Application Integration
Enterprise Portal (Content Integration)	Social Media / Communities	Data Warehouse	Business Process Management	Search, Information Access, eDiscovery
Enterprise Content Management	Instant / Unified Messaging	Product Data Management	Customer Relationship Management	Personalization
Knowledge Databases	Conferencing / Application-Sharing		Enterprise Resource Planing	Semantics / Text Analytics
Digital Asset Management	E-Mail			Web Analytics
eLearning	Case Management			Single-Sign On
	Project (Portfolio) Management			Master Data Management
				Metadata & Information Architecture

Source: Infocentric Research, 2011

Figure 4: The broad spectrum of disciplines and technologies that information work touches on - most of which exist in isolation from each other today

[35]Touching on a multitude of so far mostly disconnected disciplines and technology areas the figure is neither complete nor compatible with all the various and differing models that are used in the respective disciplines.
For instance, the Digital Workplace has many touch-points with Enterprise Architecture. And while many commonalities between the two exist, their perspective ultimately differs. Ideally though, both initiatives should go hand-in-hand in an organization.

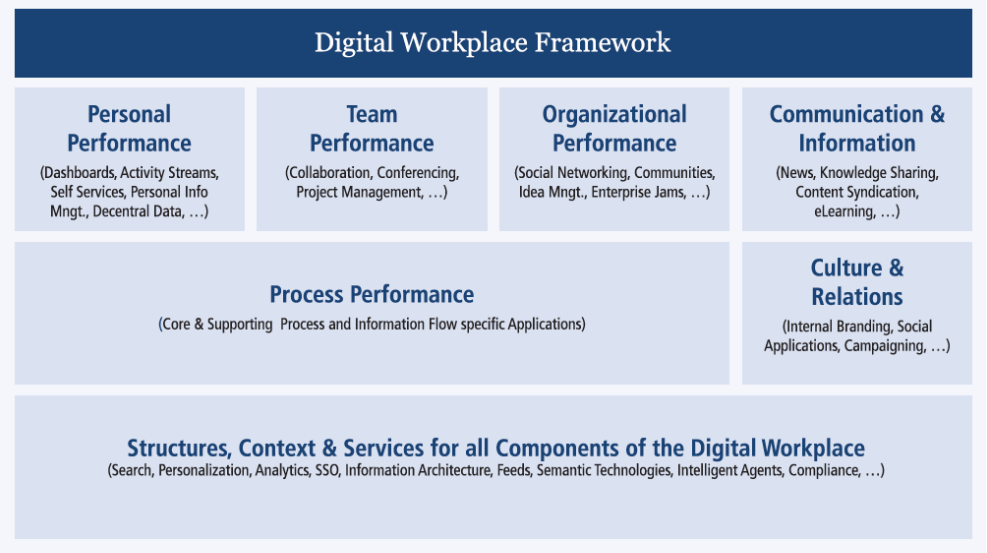
[36]Even though it is not about the systems themselves, we list them here due to the notions and functionality typically associated with them in order for readers to gain a clearer picture of the Digital Workplace's scope.

A framework for the Digital Workplace

In order to make sense of the multitude of disciplines and functionality presented in the previous chapter, the Digital Workplace should be seen as a framework that is made up of different building blocks. These building blocks address:

- Different areas of work performance (e.g. personal performance, team performance and process performance)
- More generic areas indirectly related to performance and tasks (such as provisioning of general information or elements of work related to corporate culture)
- Structures, context and services that build the foundation of the Digital Workplace and that are offered to and used in the other building blocks (e.g. a cross-system search functionality)

Being highly individually tailored to its respective company, each Digital Workplace will be made up of a different mix – both in regard to quantity and focus – of the building blocks and their elements.



Source: Infocentric Research, 2011

Figure 5: The framework puts the numerous elements a Digital Workplace is made up of into groups of related blocks from a business perspective

The building blocks illustrated above of course do not exist in isolation from each other or as distinct modules within the Digital Workplace. They rather serve as logical buckets for creating the strategy and conceptual design of the Digital Workplace. In the system itself, they ideally fully blend into each other according to the respective task and situation at hand[37].

[37]This of course doesn't mean that the Digital Workplace is made up of only one system, it is rather the user's perspective that this call for consistency is aimed at

Work Performance Building Blocks

Personal Performance

Having a central place where all the information and functions relevant to a person come together is a key driver of personal performance. This includes having a single repository for all personal and team or project tasks combined, seeing at a glance what is currently happening in all the projects and activities you are associated with, having overview panels for all metrics relevant to you (from target achievement to expenses reimbursement status) or direct access to information from any sources important to you whether in- or external.

It also provides resources to draw upon in regard to continuous learning, organizing information relevant to you, getting paper-based information in and out of the Digital Workplace and many more utilities that enable a true one-stop-shop experience for everything you need to get your job done.

Associated technologies

- Dashboards
- Activity Streams
- Employee / Manager Self Services
- Personal Information Management
- De-central Data[38]
- eLearning
- Feeds & Alerts (subscriptions)
- Bookmarking (favorites)
- Scanning / output
- Unified messaging
- Offline-functionality / Synchronization

Quick example scenario:

Unlike your email inbox, your Digital Workplace aggregates all information relevant to you, independent of channel, format and source. Planning your workday you might first want to get an overview of all tasks and messages related to your prioritized projects before looking through status updates from relevant colleagues, systems and topics you are interested in. Applying personally pre-defined filters lets you work through emails, voice messages, videoconference recordings, RSS-feeds, system messages, workflow notifications and many more without once leaving your "inbox"[39].

[38]Refers to data today typically managed at a de-central level, like the myriad of excel-sheets and similar data-sources that generally are not available to anyone outside the immediate user group but which often hold data relevant to larger audiences or the organization as a whole and where chaotic version management, double work etc. are usually the norm rather than the exception

[39]More information on this "Universal Inbox" is provided in chapter "Key aspects to consider when creating the Digital Workplace"

Team performance[40]

Having virtual spaces and all the functionality needed in order to fully enable working together independently of restrictions of geography, time, group size and task at hand.

This includes dynamic, flexible spaces for the management of information, tasks, agendas, deadlines, contacts, deliverables, etc. Communication is possible synchronously and asynchronously, by text, audio and video, bi- or multi-lateral, information can be worked on simultaneously, tools can be shared instantly, …

Associated technologies

- Collaboration
- Messaging
- Conferencing
- Application Sharing
- Project Management
- (Adaptive) Case Management
- Communities of Practice

Quick example scenario:

As you look at your activities for the next day, you notice that the tasks scheduled will use up more time than you have available. The Digital Workplace instantly presents you with a proposal of tasks that can be delayed or delegated with the least effects upon all respective projects and stakeholders involved.

A colleague in another time zone promptly reacts to your capacity bottleneck and in an ad-hoc videoconference you explain the task and assign him with all resources required to do the job. All other team members' schedules are automatically updated and the change in task execution appears in their activity streams[41].

[40]Team refers to groups of people working together independently of their number and hierarchical or organizational relation. Examples include project teams, ad-hoc work groups, departments, business units, …

[41]An activity stream is list of recent activities like the news feed (timeline) on your personal Facebook starting page

Organizational performance

The value of the total knowledge and competencies your organization has is much greater than just the sum of its parts. Bringing it closer together and therefore making it available whenever and wherever needed acts as a booster to the performance of any organization.

Whether quickly finding the answer to a question or the solution to an urgent customer problem – the more people can be un-intrusively involved the higher the chance for a quick and quality solution. Knowing about people's real competencies and interests and enabling them to connect and exchange with like-minded peers across borders of any kind is an important step to instant access to the real intellectual potential of an organization.

In addition all kinds of mechanisms supporting joint idea generation, decision making or predicting future developments help put the knowledge capital that resides hidden in your organization into action.

Associated technologies

- Social Networking (Rich Employee Profiles/Directories)
- Communities of Interest
- Idea Management
- Enterprise Jams
- Knowledge Sharing
- Project Portfolio Management
- Decision Making Support
- Prediction Markets

Quick example scenario:

Needing to quickly solve a customer problem, you copy the respective issue description into the "Find an Answer, Find an Expert" function of the Digital Workplace. By matching the respective key terms in the message to competencies, interests and activities of fellow staff and partner companies, the Digital Workplace presents you with a selection of persons that presumably will be able to help you with your task. Selecting the ones that seem best suited and most authorative (e.g. on basis of the roles they play in communities related to the topic), you quickly post the inquiry to these experts. Minutes later you come together with two of them in an ad-hoc conference and solve the problem together.

After answering the customer to his full satisfaction, you feed back the material into "Find Answers" as reference for future similar cases.

Process Performance

Every organization is running on processes. This holds true independently of whether the processes are defined, documented and explicitly managed or not[42]. Each and every organization therefore is doing nothing but processing goods and information. Both goods and information are highly interconnected from a process perspective (i.e. information is needed to process goods or other information). Whether machines or people execute the processes, whether they are defined and structured (e.g. a production process) or ad-hoc and unstructured (e.g. a decision making process) - the process and its activities determine the information that is necessary for them to be executed.

If the systems meant to support the processes with information exist in isolation from each other and in isolation from the process (and other context), productivity is severely affected. The task of allocating the right system to deliver the respective information and finding the information in the system is delegated to the person executing the activity (instead of the process actively supporting its execution itself).

While a number of applications in this area can be used for different purposes (such as case management functionality), most tools are built for specific purposes (like e.g. supporting the information flow in a key account sales process). Here is where the Digital Workplace is most specific to an individual organization. And here – in supporting everything from your core processes to cases your senior management is dealing with – is where a great amount of the overall benefit of the Digital Workplace will often be reaped.

Associated technologies

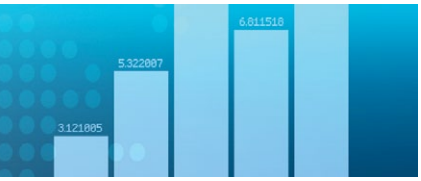
- Process, Case and Information Flow specific Applications

Quick example scenario:

After a first call from a potential customer, the sales representative transfers the contact data into the Digital Workplace. The system then starts an information gathering process. It delivers everything from industry related information to current news about the client, suitable solutions for clients of comparable sizes and contacts that his fellow employees might already have into that organization.

[42]The popular understanding of the term "process" can be misleading in regard to the Digital Workplace. For this paper, "process" refers to all kinds of work activities, including: formal processes, undefined processes, projects, cases, freeform and "tiny work" (tasks that exist in virtually no relevant process context, are completely ad-hoc or too small to be related to a process, project or case).

Generic Building Blocks



Communication & Information

Even with putting as much information as possible into context, e.g. by linking an information flow to a business process, there still is generic information with little or no context. News, for instance, can of course be displayed in context in the Digital Workplace, but there are likely also elements displaying news out-of-context (like on many of today's intranet homepages). Same applies to all kinds of general information from policies to the cafeteria menu to industry information and promotional elements and internal campaigns.

Associated technologies

- News
- Content Provisioning
- Content Syndication
- Digital Asset Management

Quick example scenario:

While arranging for a business trip to an overseas office location, news and useful information related to that office come up on your Digital Workplace. You subscribe to that "channel" for the time until after your trip and thus get all "local" information you need in order to make your stay as productive as possible.

Also, whenever you work on something that has a relation to that location, relevant information is presented as an option.

Culture & Relations

The tools we do our work with are an integral part of our day-to-day experience of the company we work for. Naturally, a professional, well-designed, ergonomic tool will allow for a more positive experience than one which is unpleasant to look at, cumbersome to use and frequently frustrates you as it doesn't support you in your tasks as it should do.

Given the amount of time that the average employee already spends in information systems of all kinds today and the even greater amount he will spend in the future Digital Workplace, a design reflecting the intended culture becomes an area of key importance.[43]

Associated technologies / activities

- Internal Branding
- Social Applications
- Campaigning
- Fun & Social Activities

Quick example scenario:

As you take a moment to reflect on how to even better integrate the corporate values in your daily way of working, it once again strikes you just how much your Digital Workplace is "treating" you exactly in the way that your company wants to treat its clients. It's always helpful, takes out unnecessary complexity, is designed in a friendly way, gives you full transparency and offers you a wide choice of services in any given situation.

By design, the Digital Workplace therefore makes it easy for you to intuitively act in accordance with your organizations values.

[43]What cannot be discussed here but is of high relevance as well is, that of course also the existing culture of an organization has profound effects on the adaption and success of a Digital Workplace. For instance, the Digital Workplace creates (and should create) an unparalleled transparency, open communication and collaboration – quite contrary to the current culture of many companies.

Foundational Building Block (Structures, Context & Services)

This is the "engine" below the components described above. Unlike in current systems (where for instance the intranet has its own distinct search engine) it provides its services to all the components (ideally). This is a key distinction in order to make services available truly cross-system. Without them, a unified user experience and "single-point-of-working" is not possible.

The foundation is far from being only a technical element. It requires a business specification in the same way as the other components in order to be fully supporting them.

Associated technologies / principles

- Search
- Personalization
- Analytics & Reporting
- Single-Sign On
- Information Architecture and Metadata
- Feeds (e.g. RSS)
- Semantic Technologies (e.g. Text Analytics)
- Intelligent Agents
- Compliance
- Archiving
- Design[44]
- Usability
- Accessibility

Quick example scenario:

Whenever possible, the Digital Workplace actively delivers information that is needed in the context of a current activity to the user. Navigating and searching for information is heavily reduced and limited to situations in which the delivered result is not enough or not enough context for an activity can be established. Even under these conditions, the finding is greatly supported by using the full context of the person's role, background, typical behavior, current affairs, etc.

The universal search function (and all other relevant tools for cross-system use) is present in a header-bar that is shown wherever you are independently whether this is in the Digital Workplace itself, another internal systems, external websites or partner extranets.

[44]Being such an important and constantly used instrument, design, usability and accessibility have profound impact on both user satisfaction and efficiency. Also, with ever rising employee expectations – largely shaped by experiences from web usage – the Digital Workplace needs to deliver to these ends as well if it is to be accepted as a modern, supportive work environment. The Digital Workplace should therefore be designed in a way that makes use of the "best of the web" principles combined with enterprise grade productivity principles (which don't have to translate to grey, boring and complicated).

“Knowledge is of two kinds.
We know a subject ourselves, or we know where
we can find information on it.”

SAMUEL JOHNSON

Key aspects to consider when creating the Digital Workplace

The mission of the Digital Workplace is to enable employees - and therefore entire organizations – to reach their goals by providing the best access to the data, information and tools they need to do their jobs in the best possible manner and with high levels of engagement.

This chapter elaborates on more details for a number of key aspects from a functional, technical and cultural perspective. While by no means the only elements of relevance to consider in a Digital Workplace program, these aspects should be seen as mandatory for every project.

Context – the missing link

Current information systems typically center around objects, such as content, documents or functionality. In order for the Digital Workplace to act pro-actively for its user, it has to "know" what he is currently working on. It has to have the context of its user's current tasks and situation.

Processes have already been presented as a key supplier of context. Nevertheless, context can be derived from a whole variety of additional sources, including:

- Roles, position and (current) location of an employee
- Projects an employee is involved in
- Cases an employee is working on
- Meetings an employee has in his schedule
- Tasks an employee is working on
- Communities an employee is member of
- Experiences, competencies, skills
- Content authored
- Documents used, websites visited, information subscribed to, functions often made use of, …
- Defined preferences
- Current location in the Digital Workplace

When combined, these indications enable the Digital Workplace to predict with good accuracy what an employee is about to do as a next work step and act accordingly. Whether this is by proposing travel options after an employee has accepted a meeting request for a remote location, by providing all information available on a subject related to a task one has just created or by delivering input for the next step of a process including a pre-filled template for the task output – the possibilities of context-aware support of task execution are limitless, just as is the room for improvement in this area in today's organizations.

Context should be based on information structures that enable the bringing together of related items (e.g. a user executing a task ABC and a document on ABC). While it is not in the scope of this white-paper to delve into the depths of information architectures and taxonomies, it is important to note that conventional approaches to the structuring of information are not sufficient to raise productivity of information work in a substantial way.

Current information structures typically are ...	For the Digital Workplace they need to be ...
Complex and one-dimensional: large hierarchical structures that are both hard to understand and keep up-to-date	**Small and modular:** describing context from the user's perspective. The perspective can differ both from user to user as well as from use-case to use-case. A multi-dimensional way of structuring caters to both aspects.
Static: monolithic, hard-wired structures can't keep up with the ever increasing speed of change in business	**Virtual and dynamic:** separating the back-end structures from what the user is presented. By doing that, a fully dynamic output adapted to any given situation (and context) is possible. Changes can also be reflected by simply changing the logic of the delivery mechanisms without having to touch the structures of the information itself.

Source: Infocentric Research, 2011

Table 2: Information architectures have to become dynamic and multi-dimensional in order to fit the requirements of the Digital Workplace

In addition to being an enabler to provide users with what they need to execute their current tasks, context is also the right instrument to optimize and automate the management of information lifecycles and access rights. Today, these areas typically are managed in a highly inefficient and ineffective way, relying heavily on manual activities and adherence of employees to written policies.
When information is equipped with sufficient context, many questions regarding the lifecycle of the information object (e.g. whether it will have to be archived once the case it belongs to has been completed and if, for how long) and its rights (e.g. who can read it, who can delete it, …) can be answered and acted upon in an automated way.

More information on this topic will be available in a report on information architecture that Infocentric Research will publish in the near future.

The Universal Inbox

It is not sheer information volumes alone that impact employee productivity and frustration most, but diversity of channels, information types, systems and media[45]. In that environment, today's number one information management tool, the e-mail inbox constitutes but one of many channels that employees constantly (have to) check for messages, news and notifications of all sorts. And with each new system an additional place to check is introduced, further impacting productivity and stress through constant system change.

Rather than further adding to the already high levels of information sprawl, the Digital Workplace needs to do away with that burden by bringing together all messages, news streams, alerts and notifications an employee receives across all systems, channels and devices in a single place.

This place can be thought of as a personal, fully customized "Universal Inbox". It is likely to be one the most important factors for employee acceptance of any Digital Workplace as its benefits are clearly obvious upon first use. All information relevant to a person is aggregated in a single place with rich capabilities for filtering and acting on the respective messages and notifications. It of course is bidirectional so that "publishing" into any channel is also possible directly from the Universal Inbox (e.g. you don't have to switch applications or devices if you want to send an email, a status update and an SMS for instance, but just tell the Digital Workplace what to do with the respective messages).

Until now the role of the universal inbox has been delegated to the email software for lack of alternatives. Many systems for instance send emails to users to notify them about news and changes that occur in that system (e.g. a workflow system sending a notification about a new task a person has been assigned with). Lack of integration, interactivity and control make this concept no longer an option in the Digital Workplace.

Figure 6: The Universal Inbox is the "one-stop shop" for all information relevant to a person independent of source, device and format

[45]e.g. IDC: "Cutting the Clutter: Tackling Information Overload At the Source", 03/2009, establishes that information diversity is rated worse than quantity and that people describing themselves as "overloaded" deal with more information types than on average.

Aggregating all that information in one place frees the user from the tedious task of constantly checking multiple locations, systems and devices for new messages and information. In order to also be able to manage and really make sense of the information volumes coming together in the Universal Inbox, it needs to be characterized by:

- Rich filtering and context aware selection options that enable to focus on what is important at a given time (e.g. by sub-dividing into different streams for items that require personal action and that are for information purposes only, setting individual notification frequencies for topics, persons, groups, tasks etc.).
- Conversation based interactivity that allows for answering, commenting, sharing and rating of any element directly in the inbox. Hence an activity-stream in the style of a Facebook timeline is created and constantly updated, allowing for real-time action and reaction to speed business up substantially and overcoming deficiencies of asynchronous communication and collaboration in the best possible manner.
- Bi-directional integration into systems[46], so that you can e.g. create, edit and use a document that resides in another system directly from your inbox (as opposed to today's e-mail inbox where attachments are just that: attached - and where the user has to manually manage where it resides, control versions, etc.).
- Possibility to take the Universal Inbox with you "wherever" you go (this notion is not restricted to locations, but also including other devices and systems in which it is present;, also full offline functionality has to be taken into consideration). Your Digital Workplace could for instance be present as a side box while you are browsing the web or as an overlay while working in legacy applications.

[46]Estimations are that about 60% of all information still resides in legacy systems, hence the paramount importance to „free" as much of this information from the boundaries of these usually very restricted systems and bring it into the Digital Workplace

The technical integration challenge

As of today, a Digital Workplace as described here cannot be bought anywhere. And even though there are very promising products already on the market that cover certain elements of the Digital Workplace really well, the Digital Workplace should rather be thought of as a custom platform and not a product or ready-to-use piece of software.

Convergence and integration are of paramount importance for the Digital Workplace to be successful. Therefore, a very individual and distinct situation in regard to the existing technology landscape is encountered in every single organization. Service Oriented Architectures (SOA)[47], Enterprise Content Integration (ECI)[48] and Content Management Interoperability Services (CMIS)[49] will play major roles in bringing together what needs to be available in the Digital Workplace in a unified manner.

The ability to make that integration happen will be a key consideration when evaluating and selecting one or more prospective systems with which to create the Digital Workplace for your organization.

While many "big portal" projects of the past have failed at just that integration challenge, it is important to consider that a number of highly relevant things have changed over the course of the last years which finally make this vision a realistic one. Among them are:

- Technology advancements in general as well as in systems integration
- Higher level of homogenization of IT landscapes in organizations
- Higher maturity of respective integration products and higher level of know-how and experience of respective service providers
- Significantly increased possibilities of browser-based front ends
- Better availability and prevalence of standards

As recent research shows, all these factors have already led to significant changes in intranets and employee portals from mere entry-points to more sophisticated and more integrated one-stop shops[50].

The platform philosophy outlined is not to imply that the Digital Workplace is to be a fully centrally controlled medium. Instead it needs to allow as well for de-central development, adaption and management of the parts of the Digital Workplace that are specific to departmental or project requirements.

[47]SOA: "… is a flexible set of design principles used during the phases of systems development and integration in computing. A system based on a SOA will package functionality as a suite of interoperable services that can be used within multiple, separate systems from several business domains." See: http://en.wikipedia.org/wiki/Service-oriented_architecture

[48]ECI: "Software that connects systems that manage data, documents, and unstructured information with a goal to migrate, synchronize, search, access, or publish content across multiple systems." (as defined by Forrester Research in: "Take A Process View Toward Enterprise Content Integration", 10/2010)

[49]CMIS: "… is a [standardized] specification for improving interoperability between Enterprise Content Management systems." See: http://en.wikipedia.org/wiki/Content_Management_Interoperability_Services

Organizational and cultural considerations

The Digital Workplace will have profound impact on all aspects of the way of working in an organization. To name but a few areas affected:

- Transparency will be a key asset of the Digital Workplace, blurring even the borders between internal and external – data and intellectual property protection will be major themes, as will be the democratization of organizations in which "everyone can know everything"
- The reaching of goals will become an even more collaborative effort – agreeing on personal goals will hence need to cater much more to qualitative value created for the organization (take an employee who makes a mayor contribution to an internal community as an example)
- Work can be done even more independent of employee location – the whole concept of the workplace as a physical location will become ever more irrelevant requiring new leadership qualities and attitudes for virtual team management
- Communications will not be a corporate function any longer but part of most employees' jobs as news and information is spread primarily by topics and networks instead of by "homepage real estate" and corporate function
- Whereas many of today's information system are typically primarily used by the workforce, the Digital Workplace will fully affect the way (senior) management works as well

Clearly, an undertaking of such magnitude can only be started and driven by the top management of an organization. It is not an IT project to be owned and executed by IT. It is the CEO, not the CIO who has to be the sponsor of this multi-year initiative requiring substantial commitment and investment across the entire organization.

It also has to be taken into consideration that various disciplines inside organizations (especially larger ones) are likely to already be working in the vague direction of a Digital Workplace. In many companies intranets are already expanding their scope substantially, Enterprise Content Management (ECM) is taking over more and more functionality, Customer Relationship Management (CRM) is developing into XRM (Extended Relationship Management) and contains more and more components of Enterprise Content Management, Enterprise Architecture programs are becoming more widespread etc.

It is only a collective approach that can ensure a satisfactory, economic and future-proof solution. This will obviously also mean that a central function high in the hierarchy will have to assume responsibility for both the project and on-going management of the Digital Workplace. Unlike today's typical intranet management for instance, the Digital Workplace management needs to be a strategic function in the organization.

“For enterprise use, you pay for every minute employees waste slugging through a bad user interface.”

JAKOB NIELSEN, 2011

Business benefits

The benefits of the Digital Workplace come in many flavors. Before the background of the information problems outlined in the chapter "A key resource literally unmanaged " the Digital Workplace can bring massive benefits to an organization through positive impact on time (e.g. speeding up of processes), quality (e.g. better solutions for customer problems) and cost (e.g. reduction of double work). Also, given its scope and influence on every single function of an organization, it seems fair to say that never before has an instrument existed with so much profound impact on all areas of a business and thus organizations as a whole.

But what's the ultimate goal of the Digital Workplace? What is the real, cumulative benefit on the business?

The same questions have already often been asked in the past in regard to almost any kind of information systems, e.g. what is the ROI of our intranet. So far, the answers given have been rather unsatisfactory by and large.

This is a fate that information systems share with many other disciplines of modern organizations and management (as for instance, advertising, vocational training, employer branding, customer loyalty programs, etc.), where - due to the very nature of the respective activity – the impact on cost and turnover are mostly indirect and qualitative[51].

[51]Capgemini Consulting: „Change Management-Studie 2008, Business Transformation – Veränderungen erfolgreich gestalten", 2008

Balanced Scorecards show the real value of information management

Before this background, industrial age methods of calculating economic feasibility that mainly or exclusively look at hard quantified, direct financial effects are no appropriate means for assessing the business benefits of the Digital Workplace. What is needed instead, are instruments that illustrate multi-level cause and effect chains in order to make valid assumptions about the multitude of different effects a Digital Workplace has on an organization in the various areas it affects.

Balanced Scorecards are a widely accepted and appropriate instrument for the controlling of "soft aspects" that we advise using to constantly measure and manage the performance and benefits of a Digital Workplace.

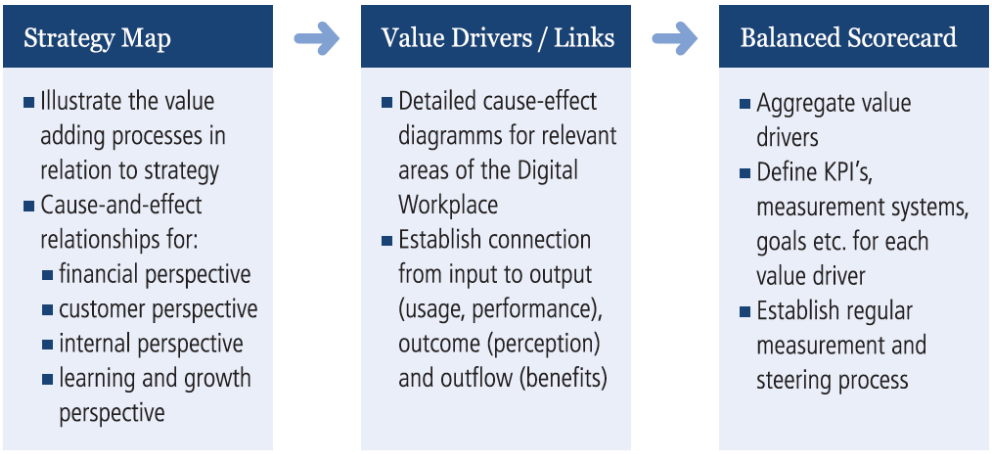


Figure 7: Creating a Balanced Scorecard for the Digital Workplace that captures the relevant effects on the business on a regular basis

On basis of a "Strategy Map" the relation between intangible assets and tangible outcomes can be illustrated.[52] The list in the next chapter contains generic examples of the benefits a Digital Workplace can have for an organization. In an individual project, however, the benefits can be illustrated in an even more impressive manner by demonstrating the real cause-and-effect chains (value drivers and links) of the most relevant areas of the Digital Workplace. Hence it can for instance be shown, how customer service can be improved by establishing communities and internal social networking and what influences this has on the total product offer of the company and its revenue opportunities.

[52]Robert S. Kaplan, David P. Norton: "Strategy Maps: Converting Intangible Assets Into Tangible Outcomes", 2004

Financial, customer-related, internal and knowledge-related gains

In line with the approach outlined above, exemplary benefits in the four main areas analyzed in a Balanced Scorecard are listed below:

Financial perspective (most benefits in this area are quantitative):

Improve cost structure:

- Reduced license fees and infrastructure costs due to system consolidation
- Reduced storage costs due to duplicate reduction
- Reduced printing and distribution costs due to less paper-based processes
- Reduced training costs by substitution of physical training (external trainers, venues, …) with eLearning
- Reduced need for office space due to higher remote / home office working facilities
- Reduced travel costs due to better virtual project and collaboration facilities
- Reduced procurement transaction costs due to automated and centralized purchasing functions

Increase asset utilization:

- Better use of inventory space due to better planning and prediction capabilities
- Better use of customer support resources due to higher level of customer self service
- Access to existing information and functionality for additional target groups

Expand revenue opportunities:

- Additional sales leads by involving more/all employees in the lead generation process
- Expansion of customer touch points through better informed employees (e.g. direct interaction with potential customers by non-front office employees through social media channels)

Customer perspective (most benefits in this area are quantitative):

Enhance customer value:

- Better up- and cross-selling capabilities due to full-picture information about customers and their behaviors

Customer value proposition:

- Better answers to customer questions and faster issue resolution due to better availability of knowledge and experts
- Solutions better customized to client's needs due to better understanding of requirements and higher flexibility
- Faster reaction to market trends and more innovative products and services due to better market insights and faster innovation processes

Internal perspective (most benefits in this area are quantifiable, derived or soft quantitative):

Innovation:

- Faster problem solving
- Identification of expertise and experts
- Better understanding of the future and its challenges
- More flexible, dynamic organization
- Better understanding of relations in complex systems, e.g. sustainability along the value chain
- Improved organizational learning
- Fostering of ideas (generation and selection process)

Risk Management:

- Better control over all information
- Counter risk of misinformation
- Less risk through better decisions
- Better ensuring of compliant behavior
- Enable faster failing
- Less knowledge-drain by people leaving the organization due to higher level of documentation in regular work processes
- Better early warning systems

Knowledge & learning perspective (most benefits in this area are qualitative):

Information Capital:

(information work productivity, effectiveness, efficiency, operational excellence, …)

- Minimizing of time waste in creating, accessing and using information, e.g. due to unifying of information locations, better structures, cross-system searching, etc.
- Availability of a higher quality of information (up-to-date, relevant, complete, …)
- Minimizing of information related administration efforts
- Minimizing of distractions and interruptions in work
- Availability of the right tools (functionality) needed to do work
- Higher usability and faster learning curve through unified systems (e.g. enhanced usability of legacy applications through integration into a web front-end)
- Decreased decision bias
- Omni-directional communication, with no (low) barriers

- Higher transparency
- Automation of routine and administrative tasks
- Speeding up of project execution
- Support of change processes

Human Capital:
(e.g. engagement, trust, work satisfaction, …)

- Create a feeling of belonging (e.g. through communities, connection of like-minded individuals, ...)
- Being able to offer an attractive work environment to talent
- Less employee turnover due to an attractive work environment
- More flexible work options, such as telecommuting or remote work[53]
- Disenable hiding of mistakes and wrong behavior through better transparency
- Faster on-boarding through defined processes, information availability and easy access to people

Organization capital:

- Consistent use of branding
- Reflection of corporate values through the system
- Reaping of collective know-how and "wisdom of the crowds"[54]

The above list demonstrates how far reaching and diverse the benefits of a Digital Workplace can be. Criteria have to be adapted to the individual situation of an organization to maximize informative value.

It should be clear that a Digital Workplace brings massive benefits to an organization by reducing complexity and waste in all aspects of information (related) work and by putting employees, management and the entire organization back into control over information. This acts as a double catalyst - more time plus better intelligence - to catapult organizations forward.

[53]As research shows, this has additional impact on employee productivity: Cisco: "Teleworker Survey", 2009, http://webconferencing.org/cisco-study-finds-telecommuting-significantly-increases-employee-productivity-work-life-flexibility-and-job-satisfaction/

[54]The wisdom of the crowd refers to the process of taking into account the collective opinion of a group of individuals rather than a single expert to answer a question. See: http://en.wikipedia.org/wiki/Wisdom_of_the_crowd

ROI pitfalls

There are a number of common pitfalls when trying to assess the value of information management that should be taken into consideration in order not to jeopardize the success of a Digital Workplace project:

- Time and motion studies can be used to analyze direct productivity enhancements and identify optimization potentials. It has to be noted, however, that such undertakings usually require substantial time and resources to be done correctly, i.e. come to meaningful results with high informative value and validity.
- A popular but problematic approach is to simply translate "time saved" into "money saved". In reality, one will not be able to lay the money one has theoretically saved on the table in most instances (as e.g. would be the case if employees would be laid off due to productivity increases by the Digital Workplace). So, while productivity gains can and will ultimately lead to effects on cash flow (e.g. by requiring less new hires, taking over tasks so far done externally, …), "30min saved per day per person" usually doesn't lead to impacts on the bottom-line results that can be traced back to the Digital Workplace's area of influence where they might have originated.
- Also, it is not really possible to calculate an exact cumulative financial value of the Digital Workplace, as financial implications can be calculated only for distinct parts of the Digital Workplace.

In summary, an analysis on the return for an investment into a Digital Workplace cannot be approached as that for, let's say, a production machine. And while many things can be quantified and calculated that make a very strong case for a Digital Workplace in any given organization, in the end it will still take a leap of faith which senior management needs to make. Given the overwhelming magnitude of today's productivity waste in information work, this should not be too hard a thing to do.

No matter what the exact numbers for your organization are, the investment required will add up to less than the 10 to 25% of time wasted that your company is currently "investing" year per year in bad information handling.

“We have an opportunity for everyone in the world to have access to all the world’s information. This has never before been possible. Why is ubiquitous information so profound? It’s a tremendous equalizer. Information is power.”

ERIC SCHMIDT (FORMER CEO OF GOOGLE)

Conclusion: Getting the new digital competitive edge

Knowledge is power. This common-sense paradigm so far is mainly used against organizations as it translates to personal knowledge being power. This kind of knowledge naturally is beneficial to organization only to a very limited extent. The Digital Workplace – and the attitudes related to it and to transparency-creating information work in general – enables companies to turn knowledge back into organizational power.

And while every organization will eventually get to a version of the Digital Workplace, scope, business value and quality will differ widely, though. We assume that the gap between great, mediocre and bad solutions will be substantially bigger than even that of today's information management tools like intranets and collaboration platforms.

Given the impact that badly managed and supported information work has on an ever growing proportion of the workforce and especially on key persons and competencies in an organization, it absolutely seems justified to say that the Digital Workplace as a key enabler for better information work should be a priority for every company. Getting a head-start in this still young area will even have the potential to deliver significant competitive advantages for quite a number of years.

While current information management systems and practices are often somewhat auxiliary to what an organization does, the Digital Workplace will be a strategic, mission critical tool without which a business will literally come to a standstill.

Approach

Once an organization has understood and accepted the weight of the information work problem existing today it therefore should address this topic with high priority. It should do so by

- Understanding the possibilities in existence today and possible roads leading into the future
- Identifying and analyzing the organizations' main information related issues
- Defining an organization-wide strategy for the Digital Workplace
- Breaking it down into a manageable roadmap
- Starting step by step, establishing (some of) the foundations of the Digital Workplace and putting successful pilot programs in place that showcase the benefits and prepare the organization for the change that goes along with the new way of working

Just like the outcome, also the direction and mileage will differ from organization to organization. Being clear about what your company really needs and will benefit from most as well as is capable of putting into practice will determine the pace of your journey.

What you can do today

Mayor initiatives and paradigm shifts, such as the Digital Workplace, often paralyze organizations into a state of inactivity. They are unable to see the wood for the trees and do not know where to begin the improvement process.

In that situation it is important to get a grasp on the subject and understand – or better still see – what it means for your organization and the unique situation it is in. "Digital Workplace Discovery Workshops" are a great way to get there and kick things off.

Infocentric Research offers introductory workshops to readers of this report to help you turn the vision into reality. Please get in touch for more information.

The face of work will change substantially as information management matures. Work in 5 to 10 years will likely be very different from today. It is up to organizations how soon and to what extent it will be characterized for them by higher productivity, more creativity, more innovation, more quality as well as better work satisfaction and engagement for employees.

The majority of organizations will likely need another 2-3 years to begin heading in the right direction. We assume, that those will be unable to close the gap which the lead early adopters will gain by starting earlier. Even with all technological advancements taken into consideration, we see the change in organizational aspects, outlined above, as the main limiting factor.

A potential multi-year lead over your competitors in regard to work performance, quality and tools would seem to be quite an outstanding rationale for taking "action this day" as Sir Winston Churchill used to famously and rightly put it.

Chances are also high, that if we look back to our current work practices in only a decade's time, that we might refer to them as the equivalent of the stone age of digital work. The "Rocket" as we know it has come to the end of its lifespan, it is time to create a new engine to power a radically new way of working in the information age.

About this report

About Infocentric Research

Infocentric Research AG is an innovative consulting, software and research company based in Baden, Switzerland. From intranets to digital workplaces, from corporate websites to social media, from collaboration to enterprise content management – we cover the entire spectrum of information management and online media. Our professional services reflect the full project lifecycle ranging from strategy definition, conceptual design to usability, governance, architecture and implementation. As a dynamic, mid-sized consulting company with highly experienced and dedicated specialists, Infocentric Research has helped many satisfied customers, small and large and across all industries.

We are passionate about unleashing the value of business information to transform your organization into a truly digital enterprise!

About the Author

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His past activities include being the intranet manager at media and telecommunications companies. Prior to his current role he has been operating his own consulting firm with notable success and was also heading the European chapter of a leading benchmarking organization.

Stephan is a regular publisher of articles in the trade press and on the web, has contributed to four books and his seminars have been visited by more than 150 companies already.

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