White Paper

The Digitization of Work

A Structured Approach to Transforming the Workforce Experience

Part 1

Authored by Mark Eggleston

Connected Experiences Innovation Delivery Team – Cisco Advanced Services - Cary NC, USA

Contents

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Introduction

This is the first in a two-part series of white papers designed to help business leaders better understand the topics associated with the **Digitization of Work** – the application of advanced technologies to connect people, spaces, and things together with business processes in order to enhance productivity, drive innovation, engage the workforce, and reduce costs. This paper will provide an overview of transformational trends, identify business drivers, and introduce a new framework. It also offers tools to help define the scope of the opportunity and the interrelationships between seemingly unconnected options for improving the workforce experience.

The second paper in the series introduces a structured method for the strategy and planning of a transformation of the workforce experience suited to the needs and culture of the organization. It includes a model to help understand the seven basic needs of the workforce, tools to identify the various requirements, intersections and dependencies of proposed solutions, and a comprehensive reference architecture to help establish a common strategic framework for digital work initiatives.

Overview

Digital business transformation – the convergence of people, business, and things to enable new business models that drive revenue, gain competitive advantage, and improve efficiency – is currently top of mind among many business leaders. This trend to transform businesses and disrupt industries includes radically new and evolving technological advances around mobility, collaboration, security, the Internet of Things (IoT), and more. Analysts predict that four in ten businesses are destined to disregard this critical shift, and will therefore fail within the next five years.[1] Currently, the focus of these transformations is on specialized business processes, primarily in manufacturing, logistics, healthcare, and other verticals. The dramatic improvements in those functions are obvious. Manufacturing plant floor operations, for example, have radically evolved to increase automation, improve speed and quality, and to analyze every aspect of operations processes. Similarly, logistics has been revolutionized to the point that a package recipient can know within minutes of when their delivery will arrive. It seems certain that investment will continue in these areas with the expectation of significant benefits for the foreseeable future.

> “Digital business is the creation of new business designs by blurring the digital and physical worlds”
> — Gartner

Unfortunately, the digital transformation of the workforce, and especially the knowledge workers – those working in the “carpeted spaces” of the organization – has been much less impressive. In fact, most workers have a much better digital experience in their personal life than they do at work. Savvy millennials video chat with friends on their mobile devices; receive restaurant recommendations, and make reservations at the touch of a finger; learn to do almost anything through online videos; live in homes that sense and automatically adapt to their needs (lighting, temperature, entertainment, and security); and store and share all of their information in the cloud.

Meanwhile, in their workday, they live in a world of email and desk phones; using uncoordinated and often manual processes for organizing meetings and equipment; searching for information in sparsely populated and largely unstructured intranets; all amidst the bleak landscape of the familiar cube farm. It should not be surprising that employee engagement among workers is at an all-time low – only 32% in the United States and much lower in many other parts of the world. For most companies, employee pay is the second largest operational expense and this lack of engagement is costing roughly one-third of that line item.[2] Clearly, something must change or many of these organizations neglecting the needs of their workforce will soon fall to a new generation of nimble startups.

The good news is that many enterprises are beginning to embrace the idea that changes in the work environment are critical to the recruitment, retention, and engagement of top talent. Furthermore, these changes can significantly improve other business imperatives such as productivity, cost control, and innovation. These are powerful and often disruptive changes that are not restricted to the workplace, or to the workforce. Instead, they cross the boundaries of work, home, and travel; and they impact employees, contractors, partners, customers, and more. This undertaking – the Digitization of Work – is fundamentally changing the way people think about work.

There are a number of excellent publications, such as **Workforce Transformation in the Digital Vortex**[3] from the Global Center for Digital Business Transformation and **The Future of Work**[4] by Jacob Morgan, that more fully describe the problems, implications of various solutions, and cumulative benefits. The goal of this paper is not to echo these works, but to begin to define the scope of the opportunity; to establish a referential framework to help understand and build integrated solutions; and to offer a method for creating a strategic approach for digital work within the organization.

Business Drivers and Trends

The entire concept of work is undergoing a radical transformation. Major shifts in culture, technology, and business are challenging the traditional ways organizations have operated for nearly a century. These shifts include:

- Employee engagement: The employees (and others in the organization's workforce) – the heart of the organization and the key to its success – are not interested in their jobs. Based on a survey done by Gallup across 142 countries, on average, 68% to 87% of employees in an organization are either disengaged or actively dis-engaged.[5] Disengaged employees are the ones that come in to work to "collect a paycheck." Actively dis-engaged employees are those that openly express a negative attitude. They bring the morale down by spreading discontent. This has an enormous impact on the bottom line, with over one-third of salaries simply being wasted.
- Multi-generational workforce: The workforce is aging and many organizations are having trouble recruiting younger talent. In manufacturing for instance, 35% of workers are set to retire in five years, leaving a huge knowledge gap.[6] Some companies are developing creative programs to allow older people to retire, but then stay on as remote contractors. Others are looking to digitization to automate as many processes as they can.

  Employee engagement factors vary by generation. A typical enterprise now has four distinct generations: baby boomers, Generation X, millennials and Generation Z. Each of these generations has different motivations, values, and work styles. Management must, to some degree, personalize an approach for each generation to improve engagement. By the year 2025, 75% of the workforce will be comprised of millennials.

- Mobility and flexibility: The proliferation of mobile devices is driving two major behavioral changes in the workforce. First, the boundaries of the traditional 9-to-5 workday are breaking down. While there still may be "standard" hours of work, many organizations now need workers to be available at almost any time during the day. This is driven in part by the increasing movement towards globalization found in most enterprises.

  Second, given the extended working hours, workers now expect some flexibility in their workday. This means the ability to take time to see a child's school play, or to squeeze in some time for exercise during the day. This seems especially true for younger generations who place a premium on flexibility in their work life and are measuring employers against the ability to support this.[7]

- Internet of Things (IoT): There are over 13 billion "things" connected to the Internet today, and this is expected to grow to over 50 billion by the year 2020. Powerful technology trends such as increasing processing power, storage, and bandwidth, combined with increasing capability for connectedness and shrinking form factors, all work together to ensure that the organization will see unprecedented changes in the next decade.

  Business value creation is shifting to the power of connections and more specifically, to the ability to create intelligence from those connections. Organizations can no longer rely solely on internal core competencies and the knowledge of their employees; instead, they need to capture intelligence faster and from many external sources. This will occur through connections enabled by the Digitization of Work.

To address these challenges and opportunities, organizations must adopt a holistic, structured, and architectural approach that focuses on aligning technological, social, and business drivers. Successful initiatives require:

- Clear, cross-functional strategies based on business imperatives, not technology
- Structured frameworks that identify and consider each of the various participants
- Clarity in understanding the diverse needs of the participants

For CXOs, this is a call to rethink business models, processes, and cultures. Most notably for leaders in facilities, corporate real estate (CRE), human resources (HR), and information technology (IT), this represents an opportunity to transform the role of their organizations in the enterprise. These organizations can evolve from service-oriented cost centers to strategic partners. They can demonstrate long-term business value for the organization by working with key stakeholders (including corporate communications, learning and development, finance, sales, and other departments) to develop a business-led strategy and an accompanying business and technology architecture (i.e., a unified model that shows key components and interrelationships). Beyond these shared-services organizations there are even more opportunities for line-of-business leaders to make a dramatic impact on the way their organizations function.

A few companies, such as Cisco, Nike, American Express, and GlaxoSmithKline, have begun to take a strategic and holistic approach to the Digitization of Work[8], but most organizations have not yet considered the importance of coordinating workforce and workplace initiatives. Isolated projects, often initiated by facilities or other shared services organizations, typically offer value for the business and the worker, but the long-term outcome yields inconsistent user interfaces, isolated data sources, and fragmented business processes. A holistic approach like those taken by best-in-class organizations will provide the opportunity to capitalize on concepts such as human-centered design, cross-systems integration, and eventually on techniques such as contextual processing.[i]

[i] The capability for automatically gathering and applying relative information about an activity or task (time, location, status, role, number and location of participants, etc.) to programmatically infer the desired outcome and thereby improve or streamline the process.

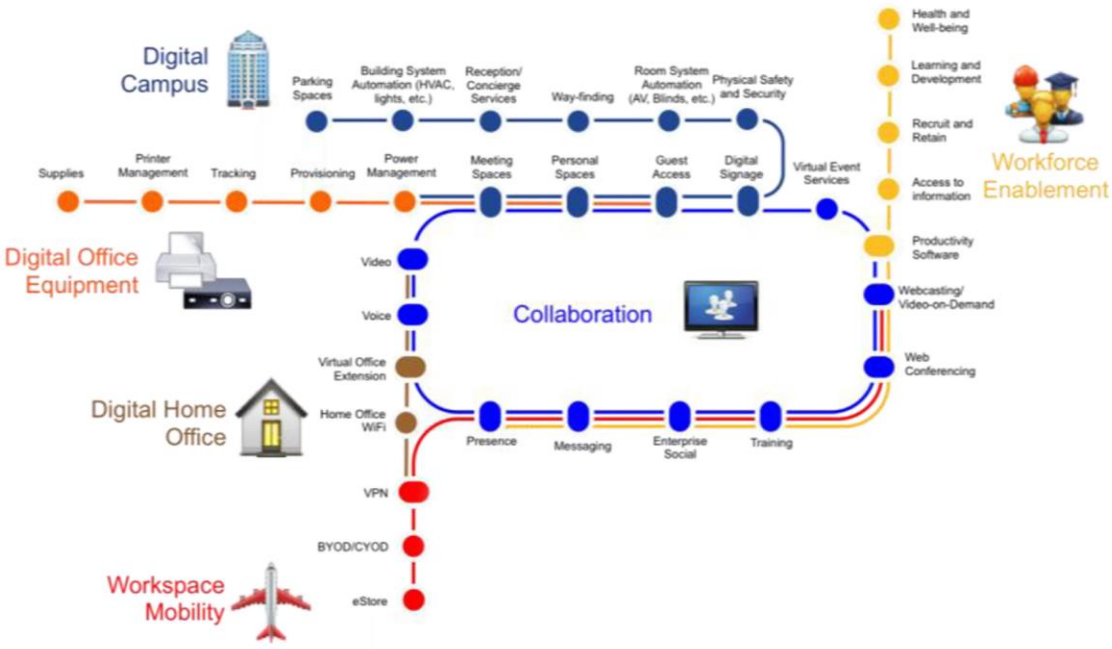
This level of focus and coordination will ultimately drive greater value for the organization and satisfaction for the workforce.

Cisco® Services has developed an approach to the Digitization of Work that reflects this comprehensive view of the opportunities for transformation. Included in this methodology are the Digital Work Landscape, Digital Work Framework, and Digital Work Reference Architecture, all of which are covered in this two-part white paper. Taken together, these tools can serve as a guide for any organization that is eager to best utilize collaboration technologies, mobile and location-aware applications, enterprise social, analytics, and IoT solutions throughout the workforce experience.

The Digital Work Landscape

Emerging social and technological trends are driving changes into every aspect of the work culture. Without some standards, it can be difficult to identify, understand, and prioritize the various opportunities for transformation. The Digital Work Landscape (Figure 1) helps define the scope by identifying six major domains of digital work with specific examples. This diagram is drawn in such a way that the domains intersect and overlap to show areas where they are strongly linked. For example, in the **digital campus** domain the **meeting spaces** opportunity has a strong connection to the **collaboration** domain because of the importance of having collaboration tools in the conference rooms. Where the domains do not intersect, there is either a weaker linkage or, in a few cases, no linkage at all. Further explanation of each of the six domains follows.

Figure 1. Digital Work Landscape



Collaboration

This is the backbone of any Digitization of Work program.[9] If there is any doubt about the importance of collaboration technologies, simply watch what happens to an organization when the email or voice system goes down for an hour. New collaboration tools and processes are exploding into the workplace as younger, tech-savvy workers constantly seek to improve their work experience. They easily find new tools, often for free, on the Internet. Although they are rarely sanctioned by IT – at least not at first – they are almost inevitable as workers access them using web browsers or bring them on personal mobile devices. This practice creates both a significant security risk for the organization as well as problems with multiple, inconsistent, and unsupported products. The only way to address this issue is to get in front of it by providing the kinds of tools that the workers expect. Doing this effectively means ensuring that any new tools are properly aligned or integrated into the workforce experiences delivered in the other domains. This is essential for avoiding a series of siloed solutions, each of which would require its own training and adoption programs.

Collaboration, in this context, includes capabilities that offer communications in real time (synchronous), like voice and video communications; and those that work at whatever time the individual desires (asynchronous), like email and voicemail. There is also a group of capabilities that offer near-real-time collaboration. It includes capabilities like texting, instant messaging, and persistent chat. When structured correctly, the solutions in the collaboration domain will intersect with each of the other domains in the landscape.

Digital Campus

This domain describes the opportunities associated with the **digital awakening** of an organization's real estate and facilities. As the IoT begins to permeate the workplace, sensors will begin to securely capture environmental and transactional data; systems will provide analysis and assessment; and actuators or other network-connected devices will react accordingly. The IoT is enabling dramatic changes for the workforce, many of which are or soon will be available, just in time for the dynamic changes emerging in the workplace.

Take, for example, the move to hot-desking (sometimes called hoteling or hot-swapping) to provide open, flexible spaces that allow for more efficient utilization of space and increased collaboration among workers. This approach is a dramatic change from our traditional model of assigned space and the associated expectations of personalization, storage, and privacy. There are a number of articles that describe the risks and difficulties associated with implementing this disruptive change in work style.[10] But many of those challenges can be mitigated when the worker is provided with online tools for reservation and configuration of the workspace. This facilitates a task-appropriate workspace when they arrive at the office (or lets them know when one is not available) and can even automatically personalize the environment in that space, including options such as desk phone extension, lighting, and temperature. Other examples in this domain include solutions such as smart campus parking[ii] and floor-by-floor building navigation (or wayfinding)[iii] to help get everyone to their meetings on time.

The spaces in which we work have a strong correlation to the ways we communicate. This is why the Digital Work Landscape shows such a strong correlation between the digital campus and collaboration domains. Collaborative tools must be both **straightforward** and **highly integrated** into the facility in order to be adopted and achieve maximum value.

[ii] "Smart+Connected Parking," Cisco, http://www.cisco.com/c/en/us/solutions/industries/smart-connected-communities/city-parking.html.

[iii] "Floor Navigation", Cisco, http://www.cisco.com/c/en/s/td/docs/wireless/mse/8-0/CMX-Connect-and-Engage-Mobile-SDK/guide/Cisco-CMX-ConnectEngage-Mobile-SDK-Config-Guide/CMX-Mobile-Application-SDK.html#83285.

Digital Office Equipment

Despite the recent media focus on virtual tools (mobile apps, web sites, social media, etc.), there is still a huge reliance on the physical objects in our offices – whether they are on campus or at home. Furniture, storage, supplies, and physical computing devices are all important parts of the workforce experience. With the exception of our computing tools, most of these have not improved much in decades. That is about to change.

With the IoT, many of the devices and equipment in the office environment are about to become "smarter". Desks and chairs will conform to the user's preference. File cabinets and lockers will know their contents and who is authorized for access. Even the humble ink pen will be able to communicate with the computer (these are actually available today!) Sophisticated solutions are now available for centrally controlling energy usage for electrical devices.[iv] Even for equipment or supplies that are slow to "wake up", there are processes that can be improved for stocking, delivery, tracking, management, and disposal. Many of these processes could, and likely should, be automated to reduce costs and improve productivity.

Of course, some types of equipment in the office environment have been digitally enabled for years. Network-connected printers and copiers, for example, send alerts requesting supplies when they are getting low on ink or paper. More recently, vending machines use wireless or even cellular communications to send messages to suppliers when they break or when they run low on chips or sodas. Valuable equipment may be tagged with some sort of electronic tracker to help prevent theft or accidental loss.

All of this equipment is important to our in-office experience. The Digital Work Landscape diagram indicates this strong linkage to the digital campus domain, especially in meeting and personal spaces in the office. It also shows the relationship with the collaboration domain. Collaboration often requires equipment like whiteboards, projectors, and even the tables and chairs we use when we meet.

Digital Home Office

The migration of large numbers of knowledge workers from corporate offices or branches to home offices – either full- or part-time – is one of the fastest growing trends in the Digitization of Work.[11] This is driven by factors such as facilities and real estate costs, employee satisfaction and retention, and the recruitment of key talent ("hire the best, wherever they may be"). The conventional method for equipping the home office – simply providing the worker with a cell phone and laptop and then assuming they will manage their broadband connection – is no longer viable. Many workers will require a full complement of office tools and equipment in the home. Employees who are not appropriately equipped for home working will demonstrate reduced productivity and much lower engagement. Collaboration tools should be as good as those available in the office.

This requirement introduces a number of challenges, with connectivity and security at the forefront. The home network environment is becoming increasingly complex. Typically, there will be many users and a variety of devices competing for bandwidth. Some home networks have multiple routers, switches, and other network equipment in a haphazard attempt to provide adequate bandwidth and range for all family members' devices. People are facing significant challenges managing their in-home network environment and configuring it to ensure that their work-related data is prioritized over their home entertainment data.[12] Video conferencing, a key factor in improving engagement and collaboration, is especially susceptible to a poorly configured network.

[iv] "Cisco Energy Management Suite," Cisco, http://www.cisco.com/c/en/us/products/switches/energy-management-technology/index.html.

Security is the other major concern. Each home office has the potential to create a new vulnerability for the organization. Standardized equipment, software, policy, and processes are critical to ensuring the integrity of enterprise information.

Workspace Mobility

The flood of mobile devices in the past six years has created an unparalleled disruption in our traditional ways of working. The expectations of workers, especially younger generations, have relentlessly driven change in the technology supported by the enterprise. In many cases these changes have introduced significant risk. Examples include restricted information that is inadvertently stored in unsecure repositories, and confidential conversations that are conducted on open communications channels. Many corporate secrets have been exposed with little or no effort by a hacker.

But even with these risks, the move to mobility is not going away. In fact, workers now expect these capabilities to be not only available, but also effortless. Leaders in many enterprises have increasing expectations that workers be available anywhere and anytime. Almost overnight, organizations have moved from a posture of resisting many of the mobile devices and applications, to embracing them. Fortunately, the supporting technology is evolving just as quickly. Secure and manageable solutions have emerged that effectively extend the boundaries of the office to include the mobile device, wherever it may be.[v] There are even offline modes in many applications that allow the workers to be productive when they do not have wireless or cellular access.

Managing the infrastructure to mitigate these risks is crucial. Standards and restrictions must be enforced on any mobile device that connects to the organization's network. This includes both bring your own device (BYOD) and choose your own device (CYOD) (i.e., a company-provided set of devices). Applications for enterprise use must be approved and vetted through a secure source (i.e., a mobile enterprise application store [eStore]) to avoid malware and other security risks. Policies are also crucial, especially when the worker uses the same device for both personal and business purposes. While some policies depend on the voluntary compliance of the end user, some functions such as location-specific access (for example, information only available when at an approved location) or compliance auditing, can be enforced through automated solutions.[v] When done correctly, the result is transformative and a key step on the road to becoming a digital enterprise.

Workforce Enablement

Nothing in the Digital Work Landscape has much meaning without the workers themselves. The needs in this domain are personal and specific to individual workers. As mentioned, today's workers are growing more sophisticated in their expectations of tools and techniques. These needs center on their ability to create and manage information; to grow and develop in their careers; and to succeed both in their job and in their personal life.

Some of the opportunities listed in this domain are traditional parts of the workforce experience. Productivity software (i.e., word processing, spreadsheets, and presentation software), for example, is standard for every worker. But there are changes in the way those tools are accessed and how they integrate into the rest of the workforce experience. Many tools are evolving to become co-creation tools. This means that the software exists in the cloud, enabling multiple users to edit a document simultaneously, and thereby enhancing collaboration and teamwork. Examples include Google Docs (word processor) and Smartsheet (spreadsheet).

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[v] "Cisco Identity Services Engine," Cisco, http://www.cisco.com/c/en/us/products/security/identity-services-engine/index.html.

Other opportunities in this domain often lack sophisticated, technology-enabled processes. Examples include health and wellness and learning and development. Historically, while the organization's senior leadership encouraged these important activities, implementation and management was largely left to the worker. Now, new software and equipment, such as wearable devices, allow the organization to play a much more active role. This will ultimately promote a workforce that is healthier, happier, smarter, and more engaged.

Strategic Uses

The various opportunities illustrated in the six domains of the Digital Work Landscape are only a sampling of what may evolve in coming years. There will undoubtedly be surprises in the exponential growth of technical innovation. Amid this rapid change, this model can help to identify, assess, prioritize, and track the opportunities and then align them with the desired culture of the organization. Maintaining a focus on high-level priorities can help avoid the temptation to pursue the latest fads and whims portrayed by some real estate, facilities, technology, and HR vendors.

The model can also help in considering how seemingly disparate solutions could and should work together. For example, the realization that the enablement of successful collaboration requires solutions for improving parking, wayfinding, guest registration, and meeting spaces can inspire some innovative and holistic thinking. Understanding and mapping these connections can also help with prioritization and allocation of resources. Ultimately, this model is a simple reference for driving organization and high-level planning. Additional models are required to develop a detailed strategy.

Reference Framework – Part 1

After reviewing the Digital Work Landscape, it is obvious that a major challenge for any organization seeking to embrace the Digitization of Work is the sheer number of opportunities available for improving the workforce experience. And, for every opportunity area there may be multiple solutions. Key questions must be addressed around what determines which opportunities should be in scope; which solutions are most appropriate for the impacted workers (knowing that different cultures may require different solutions); and how they should be prioritized,

It is also important to remember that the definitions for both **workforce** and **workplace** have become much more complicated in recent years. The **workforce**, for example, now consists of traditional employees along with contractors, interns, and partners. Customers are increasingly incorporated into workforce teams and even competitors are sometimes included to solve specific, pervasive issues. Simultaneously, the needs and expectations of these workers are becoming more complex as the workforce grows more diverse.

Likewise, the **workplace** is not only becoming more globalized, but also rapidly evolving to exist **anyplace** and **anytime** the worker wants to work. With so much ambiguity, it is important to find tools that can help frame the opportunity, identify the elements, and prioritize the solutions that are right for your organization. Absent this level of planning, solutions will suffer from poor usability, challenges in system interoperability, security vulnerabilities, and ultimately, low user adoption. Creating this strategy requires a structured approach.

Cisco Services has developed the Digital Work Reference Framework and Reference Architecture to help define the scope, and also to establish the connection to business outcomes; provide a means to visualize the interconnections; help prioritize the various solutions; and initiate detailed planning for implementation. The Digital Work Framework establishes this by using a tiered model that consists of four tiers:

- Actors – Five key participants in the workforce experience
- Needs – The **actors'** seven key requirements for success
- Capabilities – The three to five basic solutions that satisfy the **needs**
- Enablers – The various tools, processes, and capabilities associated with each of the **capabilities**

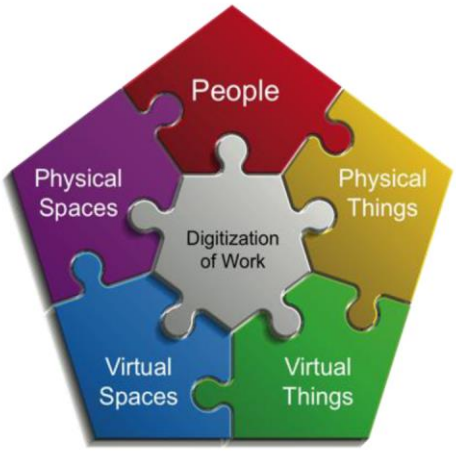
The five actors are briefly described in the next section. The needs and capabilities tiers are reviewed in the second part of this white paper series. Examples from the fourth tier, enablers, while occasionally cited, are generally beyond the scope of this white paper and will be discussed in subsequent publications or in more detailed discussions with Cisco workforce experience advisors.

The Actors – Five Participants of the Digital Work Experience

The first step is to understand the actors (see Figure 2). **Who**, or in many cases **what**, are the key participants in a workforce experience function. In other words, what resources, human or otherwise, are involved in a successful solution?

The most obvious group of actors is the **people** themselves. Since the focus of digital work is primarily on the activities in the "carpeted spaces" of the organization, this group primarily includes knowledge workers. But it can also include any worker when performing knowledge-type tasks, such as attending meetings, receiving training, or accessing internal information sources. The people group also includes any non-employees, such as contractors or partners when they are integrated into projects, planning, or other tasks critical to the organization's success. Customers and other third parties are a distinct class of people and must be given special consideration due to regulatory and security concerns.

Figure 2. The Five Actors in Digital Work



The next two groups of actors are associated with spaces. The concept of space as a resource may seem odd at first, but consider the importance in the workday. Many traditional workers spend most of their work life in an assigned office or cubicle. Workers attend meetings in designated meeting rooms. They congregate in break rooms. They seek quiet spaces to concentrate, open spaces to collaborate, and specialized spaces – sometimes outdoors – to relax or exercise. More and more frequently, these spaces may be in the worker's home or in a co-working facility. These are the **physical spaces**. Improved use of this real estate can offer tremendous benefits for the organization, both to the bottom line (real estate is typically the second largest operating cost for an enterprise[13]) and to the top line (employee productivity, innovation, and engagement is strongly impacted by the environment in which they work[14]).

Spaces in today's environment extend beyond the physical rooms. Organizations now thrive on their ability to use collaboration tools to drive teamwork and rapid decision-making across time and distance. Critical changes in the business environment, such as globalization of the workforce, the increase in home-working, and the explosion of mobile devices, create a pressing demand for bringing people together in **virtual spaces**. These are spaces where they can see and hear one another; present and share documents; and even co-create with tools such as virtual whiteboards. In highly collaborative, global organizations, these real-time, or synchronous, virtual meetings have become as common as those in physical spaces. Done well, physical and virtual meetings seamlessly integrate so that all of the participants feel like they are equally part of the meeting. The use of virtual spaces can also be asynchronous, meaning the participants do not have to be in the same place at the same time. This includes the "rooms" or "communities" in tools such as Cisco Spark™ or Jive. These enable people to participate at their convenience without having to wait for the rest of the team to be there. And like physical or virtual synchronous rooms, workers can still share comments, files and ideas, in a timeframe that is suited to them.

The fourth and fifth groups of actors are the things used every day at work. Like spaces, things are both physical and virtual. **Physical things** are all of the objects touched or handled in the workday, including supplies (pens, paper, flip charts), physical documents and files, computing equipment, furniture, communication and collaboration equipment, and more[vi]. In many cases, these physical things are "waking up" through technology and interacting with the people, spaces, and other things around them. Our computing devices, especially the mobile devices, are the most obvious example, but we see amazing new interactions almost daily. Ink pens that record what we write; wristwatches that do so much more than tell time; cameras that can detect emotion; and so on. The promise of the IoT assures that there will be dramatic changes in this area in just the next few years as we see a five- to ten-fold increase in connected things[15].

Finally, there are **virtual things**. This is undoubtedly the largest of the actor groups. Included are all of the intangible assets used for work. Examples are online documents, large enterprise systems (for example, enterprise resource planning [ERP] and customer relationship management [CRM]), mobile apps, databases, and essentially any other stored electronic information. Virtual things are the lifeblood of the knowledge worker, and increasingly important to everyone in the organization. A key challenge surrounding this group is the overwhelming volume of information available. Some of the most critical skills for today's workforce are the abilities to find and filter the right information while ignoring or deferring extraneous content.

[vi] For the purposes of this framework, buildings, including rooms, most fixed assets, and physical infrastructure are not considered to be part of the physical things group. Instead these are defined as physical spaces. Furniture and collaboration equipment may be considered physical things or part of a physical space, depending on the situation.

Virtual things are typically stored, accessed, managed and viewed using physical things.[vii] In some cases the physical and virtual things are so integrated that they become essentially indistinguishable (for example, a computer and its operating system software).

Each of the five actors has a strong connection to each of the others. And it is no surprise that the greatest opportunities will occur in these intersections. Examples include the new ways people are interfacing with physical spaces to control the meeting room environment (lights, heat, audio/visual, etc.) using a smartphone. Or conversely, the ability for the room to recognize who will be attending a meeting and automatically adjusting to the attendees' preferences. Another example is the interaction of people with both physical and virtual things, where the worker uses a smartphone to quickly find a parking space and then map the shortest path to their meeting room. This avoids a late arrival to a critical meeting, thereby improving productivity and reducing frustration. Finally, there are the examples where people are the beneficiaries but not necessarily aware of the interactions – the new possibilities of the IoT – such as when a building connects with mobile devices to observe space utilization and offers advice for improving floor plan designs.[viii]

Conclusion

Cisco's structured approach to the Digitization of Work addresses current trends that are compelling organizations to pursue **digital business transformation** to use collaboration technologies, mobile and location-aware applications, social media, analytics, and IoT solutions across multiple workforce experience opportunities. This first of a two-part white paper has provided an overview of the Cisco Digital Work Landscape and an understanding of the five key actors in the Digitization of Work.

The second white paper in this series examines the typical activities of a knowledge worker and shows that work can be divided into sets of activities that are common across roles – activities such as finding and gathering resources, meeting, communicating, interacting with equipment, assessing outcomes, etc. It then identifies these as the seven basic needs of the workforce (Figure 3) and offers tools to assess these needs and the supporting capabilities against the organizations goals and priorities.

Figure 3. Seven Basic Needs of the Workforce

[vii] Virtual places are typically accessed, managed and viewed using physical things or, in some cases, through the equipment in a physical space (for example, the in-room telepresence system).

[viii] "Connected Mobile Experiences (CMX)", Cisco, http://www.cisco.com/c/en/us/solutions/enterprise-networks/connected-mobile-experiences/index.html. "Optimo Predict", Rifiniti, http://rifiniti.com/predictive-analytics-for-space-planning/.

These papers are intended as an introduction to further reading and discussion with Cisco subject-matter experts. Cisco Services is committed to helping our customers define and implement a successful Digitization of Work strategy and architecture, and to deploy the associated Cisco or partner offerings in the enterprise. Cisco hopes that you will take advantage of services available through Cisco Services or our partner community to help guide your planning and implementation of your Digitization of Work solutions. We invite you to discuss your strategy with your Cisco account manager, client services manager, workforce experience advisor, or channel partner.

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