

Work and Learning Futures

Enabling New Organizational Models for a Digital World

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March 2013



Cisco Internet Business Solutions Group (IBSG)

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This paper is the latest in a series of perspectives by the Cisco® Internet Business Solutions Group (IBSG) on the future of geographically distributed, networked work and learning, and how this approach is enabling profound changes to organizations, communities, and individuals. It focuses on the common approaches to and mutually beneficial outcomes from new ways of working and learning—an approach Cisco IBSG calls “Smart Work and Learning.”

Introduction

Across the globe, business, government, and social structures are buffeted by sweeping generational change, technological innovation, and the emergence of new economic development models. Although these forces differ by geography, they provide opportunities for social innovation, community engagement, economic growth, sustainability, and country transformation. Much of the change under way contains, at its core, a new relationship among individuals, communities, employers, public authorities, and educational institutions.

Smart Work and Learning are two inherently related trends indicative of profound cultural shifts in society. The responsibility to enable a Smart Work and Learning culture lies not only with employers, individuals, and workplace learners, but also with the existing formal education system. By developing skills at an early age for self-motivation, decision making, and critical thinking, people can become productive Smart Workers.

In every sector of the economy, people are opting for more collaborative and flexible forms of work and learning that allow them to participate when they want, from virtually anywhere, with almost anyone. At the same time, increasing demands for speed and real-time access to information, people, and services—combined with the growing complexity of knowledge work and the increased need for timely and targeted learning opportunities—are driving collaboration and encouraging the broader community to develop new expertise.

Opportunities to learn in ways previously unimaginable are increasing. Learning—whether informal or formal—is taking place not just in traditional environments such as schools or in the workplace, but also in the home, in conversations, in public debates, in museums, and elsewhere.

The potential for networked learning extends beyond formal institutions in terms of how, where, and when learning takes place and how informal and formal learning are integrated. Workplace learning experts such as John Seely Brown¹ and Jay Cross² were among the first to recognize and reward informal learning as the most effective way of turning theory (explicit knowledge) into practice (tacit knowledge) by working alongside and/or conversing with more experienced people. Brown, while working at Xerox, observed how engineers who repaired photocopier machines ignored the manuals, opting instead to discuss during breaks and after work how to troubleshoot one another's problems.

The convergence of formal and informal work and learning is spawning new models for how work and learning are achieved, as well as presenting significant opportunities for innovation. As the nature of work and learning changes, communities, organizations, and individuals will become more empowered, thereby generating a variety of economic, social, and environmental benefits that will result in a newly defined resilience.

How Are Work and Learning Changing, and Where Will They Be Done?

The nature of work and learning, including where and how they are done, has fundamentally shifted, fueling a number of trends:

- **The worker is being redefined:** New forms of talent acquisition/retention strategies and employee reward programs are taking hold as the traditional workplace gives way to a broader range of workers and employment models that feature more complex relationships among individual workers and peers, learning modes, teams, and, occasionally, multiple employers.
- **Work follows the worker:** Technology is enabling numerous physical and virtual modes of work, collaboration, and communication, creating a new paradigm no longer defined by a physical epicenter.
- **Virtual work and learning environments:** Behavior patterns of organizations, educational institutions, and individuals are shifting as people increasingly work and learn from various locations other than the traditional office or classroom. Just as e-books are transforming business models in the publishing industry, the emergence of cloud services will cause a momentous change in the way we work and learn.
- **Peer-based workgroups:** New workgroups rely increasingly on collaboration, self-regulation, and access to expertise that may not reside in the traditional organization. Community participation for economic production is increasingly peer-based.
- **Work and learning spaces are user-centric, hybrid, and dynamic:** As “central” and “peripheral” physical spaces are replaced by “connected” and “peer-based” spaces, the result is hybrid environments that blend the physical and virtual to serve multiple purposes at different times and to suit individual preferences.
- **New models of work and learning:** A new blueprint for Smart Work and Learning offers employers and workers an integrated, flexible model that combines physical and virtual work and learning environments with collaboration tools that present the opportunity to reduce operational expenses and increase productivity. The provision of distributed services and infrastructure can reduce commuting and travel times; enhance accessibility for all sections of society; provide economic benefits; increase individual motivation, work effectiveness, and collaboration; and advance community engagement.
- **Technology is merging the individual's work and personal lives:** Advances in various technologies—and their increasing convergence—are changing how people consume information on a daily basis, reducing the boundary between work and personal lives.
- **“Smart Work” is taking hold:** Smart Work has emerged and is being driven by extreme changes in approaches to work, work cultures, business architectures, premises, decision making, communications, and collaboration. Emerging technologies are enabling people to choose whether to work at home, close to where they

live, or a commute away. However, society is just beginning to recognize and develop the ability to prepare and support the individual in making such choices. Some employers have recognized the value of Smart Work to both them and their employees, and are providing the tools, services, and wherewithal to enable them to work from any location

- **Smart Learning is emerging:** Smart Learning occurs when skills development and learning are adaptable and accessible in a variety of mediums that suit the individual's needs, learning preferences, and socioeconomic and cultural situations. Smart Learning is facilitated by technology and is available from any device, anywhere, and at any time. Smart Learning connects people to others, to information, to knowledge, and to ideas in the form of multimodal resources, including digital texts, interactive books, video and audio media, simulations, animations, and games. However, Smart Learning may be perceived differently by different cultures. The following quote shows how South Korea, for instance, views Smart Learning as a cost-reduction mechanism for private tutoring.

"Smart education is a system that provides customized education with student-to-student and student-to-teacher interaction via smart devices connected on a broadband network. Smart education reduces the burden of private education expenses, creates markets for new information devices such as digital textbooks, and contributes to the development of the content industry such as games and movies based on the technology of virtual/augmented reality."³

- **Jobs and skills are evolving:** Advances in technology are shifting demographics and increasing global competition. Given this, Smart Work and Learning are merging, making learning integral to personal and professional development. Because of this, people are learning to do their jobs in two ways: 1) through explicit knowledge, which takes place in formal learning situations, and 2) through tacit knowledge, which occurs when people work with more experts and learn the nuances of a job (informal learning). Both types of learning methods have a place and will need to be accessible on demand.

Overall, these trends will create a new value proposition for both organizations and individuals as work and learning evolve—from an industrial-era model built around isolated and centrally organized/controlled stand-alone models to distributed modes of working and learning. These trends will also facilitate a new hybrid model driven by 21st-century characteristics of collaboration: shared, multipurpose, virtual spaces and experiences; mobility; trusted, on-demand communities; and technology-enabled environments.

The Culture of Smart Work and Learning

Smart Work and Learning is an act of production performed independent of time and place. In its ultimate form, the "office" or formal classroom setting no longer exists, and traditional work and learning conventions such as work hours and place-based learning are irrelevant. Smart Work and Learning is results-oriented: it is often social, collaborative, and the result of a networked way of operating, with exchange, collaboration, and co-creation processes optimizing work and its output.

Our knowledge, tools, and technologies shape the types of social, economic, and political organizations we inhabit. However, such organizations are being disrupted at an unprecedented level. According to a report by the Institute for the Future, “Many organizations we are familiar with today, including educational and corporate ones, are products of centuries-old scientific knowledge and technologies. Today, we see this organizational landscape being disrupted.”⁴

At the heart of this disruption lies a Smart Work and Learning model and culture enabled by new networking and collaboration technologies. Not only is Smart Work and Learning truly networked, it also is distributed, encompassing unwritten rules, values, expectations, and premises that determine how work and learning get done. Because of this, the network has evolved from a technological facilitator to a cultural blueprint that not only enables people to work and learn smarter, but also influences and determines their personal attitudes toward work and learning: where and when they work and learn; and how they compete, collaborate, communicate, exchange information, and envision new approaches to work and learning.

Stated differently, the Internet and “networked things” are in the fundamental process of changing—from mere optimizers of existing work and learning processes to sources of new ones. What was once a physically constrained innovation process is now open, location-free, and based on collaborative rather than on sequential co-creation. As such, a Smart Work and Learning network becomes the incubator of innovation, both within the enterprise and among different organizations. This cultural shift is central to the paradigmatic evolution of work and the nature of innovation, social engagement, and resilient communities.⁵ Indeed, innovation is the inescapable imperative of “doing things better” and being more resilient.

Key Imperatives and Strategies

Organizations and individual workers, in both the private and public sectors, are challenged with delivering better results for an increasingly diverse, distributed, and mobile set of customers and beneficiaries. How can organizations find the right people, skills, and expertise to achieve success? How can educators ensure that students acquire and develop the right skills for a resilient and productive society? How can collaboration be enhanced across organizational, informational, and cultural barriers to apply collective workforce and learning experiences and knowledge to the problems of the day? How can the operational costs of work and learning environments be reduced while improving employee engagement, innovation, and outcomes?

Community Perspective

Governments and organizations seeking to enable their communities through a Smart Work and Learning strategy must, at a minimum, address the following elements:

- **Infrastructure strategy:** Combine connected and sustainable built environments, smart mobility ecosystems, and broadband networks.
- **Series of governance choices:** Bring together relevant employers, public-sector entities, investors, non-governmental organizations (NGOs), and other relevant stakeholders, and then enable new partnerships, business models, and policies to facilitate the resilient community vision and infrastructure strategy.

- **Resilient communities:** Create and share a vision for tomorrow's resilient communities that includes how work will be done, where learning will take place, and how to facilitate these new patterns of work and learning while enhancing economic output, social cohesion, and community attractiveness.

Workforce and Organizational Perspective

To ensure an effective, engaged, and dynamic workforce, Cisco IBSG recommends several strategies integral to enabling collaboration and, ultimately, success:

- **Vision** that encapsulates the type of workforce, how that workforce will operate and interact, and which education and training models are required to realize organizational and individual objectives.
- **Change management model** that encompasses an organization's culture, motivational aspects, and ICT solutions.
- **Rich media or video strategy** to increase the speed, context, and confidence of decision making and the effectiveness of learning.
- **Presence-based mobility strategies** to increase the agility and speed of information transfer and decision making ("presence" is knowing the status, state, and preferences of someone before you contact him or her, allowing you to connect successfully the first time, regardless of that person's location or circumstance).
- **Enterprise social networking strategy** to increase availability of trusted teams, peer groups, or collective brain trust, thereby improving the workforce's engagement level and rapidly connecting the right people, content, and knowledge to expand innovation, productivity, or quality.
- **Secure, borderless enterprise** to make resources, peers, tools, and data securely available everywhere, and to provide an environment for connected, lifelong learning.
- **Connected workplace** that provides a collaborative, empowering network of physical environments that are space-efficient, technology-enabled, and environmentally friendly. Such spaces should support teams, mobile workers, customers, and suppliers, as well as provide just-in-time learning, promote informal learning through peer collaboration, and support on-the-job training.

Individual Perspective

The impact of Smart Work and Learning on individuals includes:

- **Peer networks:** Smart Work and Learning increases social connections, entrepreneurialism, and participation in peer networks (external and within organizations). Professional expertise and reputations can be maintained and developed through a wide range of peer networks and lifelong learning mediums, both online and in traditional or new educational modes.
- **Trust and motivations:** Individuals must be cognizant of trust and of their intrinsic / extrinsic motivations when working and learning across disparate peer communities. Conscious actions are required to ensure that the opportunities presented through Smart Work and Learning—such as improved skills, capabilities, and work-life balance—are realized. The challenge for individuals will be in navigating a more

complex but ultimately richer ecosystem, and ensuring that their expertise, talents, and passions are actively explored and advocated to a wider audience.

- **Technologies:** Information and communications technology (ICT) gives people the freedom and flexibility to pursue personal interests while enabling work productivity and efficiency. Networked ICT can potentially improve our personal lives in many ways: from having access to advanced and affordable healthcare and high-definition movies on demand, to collaborating in virtual environments with work colleagues or university classmates around the world, to accessing real-time data about home energy use or travel plans—all from the comfort of a living room, home-based work environment, or community space.

Given the emphasis on flexibility, organizations must respond with better, secure solutions—particularly mobile ones—to attract the best talent and ensure an efficient, high-performance work and learning community.

Benefits of a New Paradigm

The new paradigm of work and learning provides benefits that will vary by economic sector, geography, and the individual:

- Enhanced economic output to individual stakeholders and to the community at large
- Reduced carbon footprint and improved energy efficiency of the organization and the individual
- Decreased operational cost of real estate
- Dynamic work and learning environments that attract and retain top talent
- Inclusive work and learning culture that values collaboration and diversity, and provides workers with more flexibility to determine where and how work and learning get done
- New and enhanced social cohesion within communities enabled through virtual and physical, socially conducive environments
- Increased innovation in organizational behavior and management, as well as in the organization's product, services, and public mission
- Personalized work and learning that is timely and available anywhere, anytime, and on any device

Social Cohesion, Social Inclusion

As modern workers determine where to perform work, based on how a task, meeting, or job gets done best, Smart Work environments can help enhance social cohesion. Whether a virtual platform, Smart Work Center (SWC), broadband-enabled coffee shop, conference room, or co-working space, many environments have an array of users not associated with one “brand,” employer, or organization. These environments become dynamic meeting places for modern workers, promoting social cohesion that allows for varying degrees of socioeconomic inclusion.

Recent evidence from Cisco IBSG's leading role in developing SWCs in the Netherlands suggests that the socially aggregating effects of Smart Work environments are significantly more successful than “anonymous” work environments. Crucial to this is the promotion of an

engaging social setting—incorporating programs, social events, and networking forums—to develop a sense of belonging and identity. Modern peer-to-peer, multimodal communication tools, user-aggregated data and reviews, and augmented-reality applications, among others, further facilitate these social dynamics. As we find better ways to blend the capabilities of new technologies into every dimension of our communities, we are discovering ways to touch the lives of people and the aspirations of the communities of which they are a part.

New Learning Modes

Physical and virtual learning environments provide both formal and informal ways for learners to come together with peers, teachers, and other experts in their field. As the growth in online learning mushrooms,⁶ the need to support learners with temporary environments—physical and virtual “learning hubs”—will become significant when these learners enroll in virtual courses.

The solution for the future of learning draws parallels to the future of work. Smart workers will choose work venues that suit the task at hand. Providers of virtual education will look for spaces in which to offer online students a physical learning environment at low cost and, if possible, close to where they live. Such spaces might support group activities (such as lab work) that are best done, or can only be done, in physical spaces.

Brick-and-mortar institutions might consider making such spaces available to students who study part time on campus, who are enrolled in an online program, or who have prior commitments that prevent them from spending significant periods of time on-site.

The human condition means that from time to time we need people around us for support, encouragement, or just for company. Physical learning spaces provide that human touch. Research at the U.K. Open University revealed that meeting a subset of your student cohorts is important to learning—and occasionally, a physical presence is more valued than a virtual one.⁷

Emerging Value Chains: Smart Work and Learning as a Service

Smart Work and Learning *as a service* is a distributed delivery model in which resources that enable work—such as workspaces, large offices or office locations, network connectivity, collaboration tools, office catering, and labor/staffing—are provisioned via the network. As Smart Work and Learning becomes mainstream, the truism that “one does not need to own an orchard to acquire apples” becomes increasingly prevalent. Furthermore, as Smart Work and Learning architectures mature, they will transform the way organizations and communities think about built environments and how they are financed, used, and managed.

The Role of Government and the Enterprise

Governments and enterprises must become providers of a solid ICT infrastructure—supported by a progressive regulatory environment and local policy framework—that stimulates investments from the private sector and fosters the use of open data to create collaborative applications and services for citizens. Such an environment will allow citizens, small enterprises, entrepreneurs, and NGOs to openly develop innovative products and services for both the public and private sectors.

Legislation and Regulation

A legislative and regulatory framework must be in place for Smart Work and Learning arrangements to be embraced. In many communities and countries, the relationship among employer, educational institution, and employee is defined in terms of the physical location where work is conducted, often prohibiting Smart Work and Learning implementation. While such legislation must be more flexible, or altered altogether, new rules and methods must also be defined to rate the quality of SWCs and services, for instance.

For example, South Korea's National Smart Government Implementation Plan⁸ includes a Smart Work strategy and program that oversees the deployment of more than 500 SWCs throughout the country's major urban and suburban areas. Executed by public and private stakeholders—including corporations and small and medium-sized businesses—the program also includes public-sector participation, inclusion policies, and operational and technical certification standards.

Security

Cloud services, device proliferation, social networking, video applications, virtualization, and consumerization are transforming businesses and shifting how security solutions are developed and deployed. There is a need not only to protect physical infrastructure end-points, but also to rethink the way that modular services operate securely across borders. Data integrity and users' ability to connect seamlessly become a major issue central to any technological solution. Therefore, security policies, tools, and applications must be integrated consistently across the enterprise, while ensuring that IT policies support external personal devices, applications, and platforms across locations.

Liberating people from fixed locations/devices requires changes to IT policies and practices. Dialogue among employees, learners, and IT departments must take place to ensure that the importance of security for all types of devices and peripherals is understood. A social contract is emerging that emphasizes the responsibility of both the user and the organization for ensuring the effectiveness of security policies.

Intrinsic Motivation

As work and learning changes, so do expectations. An employee, for example, is typically rewarded through income. What drives a person to be productive, efficient, effective, and collaborative is less likely to be determined by “carrot-and-stick” and central-control measures. Motivation is expected to become more intrinsic, as evidenced by wiki-style methods of working where there are no rewards, yet contributors remain motivated and output is high.

The social and collaborative nature of Smart Work and Learning, autonomy, individual responsibility, and, quite simply, joy may end up coloring, if not driving, the tapestry of tomorrow's work culture.⁹

Trust

Trust is central to a Smart Work and Learning culture. How can organizations trust employees and external partners in a distributed, global, and networked manner at a time when cultural norms and pervasive network technology are game-changers in the way work and learning get done?

For Smart Work and Learning to be effective, organizations must trust workers and learners to utilize information, devices, and relationships appropriately. Furthermore, when and where someone works and learns must be less constrained by rules and regulations: The focus must be on output. That is not to say controls and checks are not in place—the expectations, needs, and demands of a new generation of knowledge workers are changing the cultural norm. A tacit “contract” is required to share expertise, relationships, and extrinsic reward in return for a reciprocal level of trust. It is increasingly crucial for organizations to understand the nature of trust and intrinsic motivations, espouse and practice Smart Work and Learning, and, moreover, attract talent that views Smart Work and Learning as both a norm and a personal right.¹⁰

Call to Action

For Smart Work and Learning to take hold and become the norm, a system(s) must be in place that prepares people for such cultural change. The current education system in many countries is not geared toward self-discipline and intrinsic motivation. It is not just employers' responsibility to provide Smart Work infrastructures—the formal education system must teach people how to develop skills for self-motivation, decision making, and critical thinking, which will help them become productive Smart Workers. Therefore, policymakers must consider education redesign to prepare individuals for the new demands brought about by Smart Work.

There are a number of considerations to explore when developing a Smart Work and Learning strategy:

- **Develop a vision:** What is the outcome(s) being sought?
- **Address governance and collaboration:** Determine which organizational structures, cost models, incentives, services, tools, and cultures need to be in place.
- **Identify your stage of Smart Work and Learning cultural evolution:** Businesses, communities, individuals, and organizations devising economic development strategies should identify the stage they've reached in Smart Work and Learning cultural evolution to determine the required technologies and resources required.
- **Discover and research best practices:** Investigate best practices and leading examples for inspiration, and assess their relevance to other organizations and communities.
- **Explore key success factors:** How are strategic vision, stakeholder governances, new business models, smart infrastructures and services, motivations, and trust enabled in your organization or community?
- **Understand enabling technology:** Which technologies can provide better ways of working and learning to engage customers, partners, and existing/future employees?
- **Connect the dots:** Find out who is applying Smart Work and Learning strategies in your community? Can connections and collaboration take place there?
- **Develop new business models:** How can multisector partnerships be effective in your community? Identify social, monetary, and cultural incentives to forge new approaches to Smart Work and Learning.

Conclusion

Smart Work and Learning encompasses a dramatic change in culture and is a transformative step in applying ICT and network technologies so that people can work anytime, anywhere, collaboratively and effectively. Smart Work and Learning is also a way to attract and retain the next generation of talent.

Society's ability to grasp the Smart Work and Learning concept will be a key factor in enabling individuals, organizations, and communities to compete effectively and achieve operational excellence. Similarly, a community's ability to define and implement effective strategies for infrastructures, spatial environments, and regulatory frameworks will prove increasingly imperative.

The "future of work and learning" is not a new idea. Society is entering a new world of work and learning with the potential to change lives dramatically—including how we relate to work and interact with each other. The risks of *not* acting are as considerable as the benefits of acting *now*. Many public and private organizations are leading the way with transformational projects, and the best of these efforts will be adapted by other jurisdictions throughout the world.

A new paradigm is emerging. Technology is its catalyst, enabler, and innovation driver, empowering individuals and organizations, and generating social, economic, and environmental outcomes that otherwise would be unachievable.

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Endnotes

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