The Smart Workplace in 2030 - Summary

[Image: A sketch of a futuristic workplace with advanced technology and communication.]
Contents

Thought provocateur
Executive Summary
Key Issues
The Smart Workplace
The Hive… The Network
Eco Office… The Community
Gattaca… The Fortress
The Smart Workplace
A Day in the Life of Nina
Key Outputs
Top 10 Trends
Methodology
Partners, Experts and Authors
Contact

The full report is available for sale ($500) at www.globalworkplaceinnovation.com
Thought Provocateur

"I have some good and some bad news for you. The good news is that we are basically prepared for global business, the way global business should be. The bad news is that we can remain in business until someone figures out how to do it. Since things don't change overnight, I would say we have another couple of years before it hits. By the time it hits, I know that I would have my money on the companies that truly understand and exploit the value potential of collaboration and collaborative knowledge work.

There are disruptive changes looming on the horizon. By bringing the right people together in a collaborative effort, companies like Dell's are sharing the power of engineering and skilled employees. The oil & gas industry and software companies can increase productivity by 50%, but by 50-100%. What happens this year is the key factor. It's time to decide if you would like to sit the boat and watch what happens, or hit the accelerator. If you go for the former, chances are you won't know what hit you when you wake up."

Dr. Kjell Krostmanen, Kristiansen Consulting, Norway

What do we do—specifically—to boost the creation, acquisition, and exploitation of knowledge? Very little, if anything at all.

Weak links still exist within the valuable knowledge processes that define the core of our business. Have you heard the story about the blind man and the elephant? When it comes to supporting real knowledge processes, that is it.

"Whenever you find yourself on the side of majority, it is time to pause and reflect." Mark Twain

What do we do? We copy best practices. We react. We walk behind. We navigate by looking in the rear view mirror. Real success stories are not built by copying. It's as simple as that.

"Many a false step has made an ancient wise and steady and strong."

"Every business is an illusion. There is no business case. There is no budget for building a business case. There is no risk involved. There are 10,000 exceptions to this rule. None of these are in any good. If you have a knowledge intensive business, 70-80% of your most valuable workers' time is spent on knowledge interactions. How about offering some real support for this? And so, no apology for the success story, and the dynamic, dynamic story of what is not."

"Everywhere has access to these tools, there is no competitiveness to be found anywhere around here."

What gets measured gets managed.” Peter Drucker

What do we manage? Costs, Risk, Network capacity, Office Hours, Service Level Agreements. Poolable per minute.

Although necessary cost elements these all are very, very little to do with actual value creation and knowledge exploitation. If we want our collaborations to be productive and support innovation, this is what we have to start measuring and managing. You cannot support collaborative decision making in global teams by managing bits. Yes, they are a part of the overall picture, but it's not the whole picture. The value of the overall process must be managed, if this is what you want to achieve.

"I chats to where the puck is going to be, not to where it has been." Wayne Gretzky

It's a complex, fast-moving world out there. We may not know every little detail, but we can project the general direction if we know who has the puck. The puck is not coming to a standstill anytime soon. Do you have your skates on?"

"Phenomenal innovation" is a key element of being ahead of the game. Business leaders who are able to mobilize the energies and passions of everyone within the organization to achieve successful work through organizational design, ways of working and working environments that make the best use of the knowledge and creative potential of their people, will be the ones that succeed.

Dr. Anne-Marie McDann, The Smart Work Company

"How can we adapt to an environment where work just goes on, whatever happens? How can we evolve to meet a changing world? We have to think of the future and listen to the people who are in the future."

"The knowledge worker is at the intersection of technology and creativity. The knowledge worker is the key to the future."

"Professor Cary Cooper communicates an urgency in recognizing a changing economic order in the world. At the time of writing, it is far from clear that the US and Europe still have the luxury of 'affluence and economic growth'. One major feature of the changing order of work is the drift from an industrial to a knowledge economy. Another is the use of flexible employment contracts, including short-term contracts and freelancing."

Flexible contracts can be used by businesses and knowledge workers for their own benefit. In this context, some organizations are becoming leaner and have the ability to focus on the core aspects of the business while partners and associates, including freelancers, take care of the supportive activities. As for knowledge workers, many are choosing the flexible, self-employment arrangements to give them control over where they work and with whom. Taking these two developments together—self-determined knowledge workers and lean organizations—companies are currently creating means of individualized and streamed work experiences, performed in a variety of different workplaces. The opportunity to personalize your own workplace is happening now, with current collaboration and communication technologies which allow us to think of social distance and engage in synchronous and asynchronous communication across time and space. Future technologies will only become more innovative and enabling of this individualized approach to work.

The picture of natural beneficial agility is far from common experience for many, if not most people. The nearest generation in the workforce, Generation Y, may well in the future be the trigger for workplace transformation because of their skills, social connectedness and the way in which they use the technologies. It behooves us to say what will happen in the near future, particularly if businesses become more risk-averse in recession conditions.

For we, workplace transformation is about re-recognizing the primary role of people's skills and their ability to demonstrate the desire to share ideas and work with those they want to work with. This will be a key driver. It is believed, according to how much leverage can be exerted by skilled knowledge workers or people who have skills that are in short supply. Research consistently reports that managerial practices are slow to change."

Unlike change is forced through a shift in balance of power towards knowledge workers, who continue to take matters into their own hands and leave traditional workplaces to do it alone, and unlikely for decision makers who are becoming managers who are repositories of trust and self-assurance, able and willing to support distributed, autonomous and collaborative working practices, then it is apparent that there will be no widespread transformation of work. This has not happened in the past. Just because the need to change is greater and the communication technologies provide an unprecedented opportunity to transform work, does not mean it will happen when it needs to happen.

Future technologies are already here. Many businesses are not changing old working habits and are not taking advantage of the potential these tools offer to transform the world of work.
Executive Summary

The Smart Workplace of 2030 will see:

- A complex and competitive world focused on collaboration, innovation and creativity
- An industry focused on knowledge and co-creativity
- A culture for collaboration and collective intelligence

Facilities Management and Real Estate:

- The role of cities will be extremely important as the very large majority of people live and work in mega urban cities, deserting rural areas
- Public spaces will be extensively used to support the community of workers, swarming into public areas to meet and collaborate
- Cities will become intelligent growth zones – smart growth zones

The Smart Workplace of 2030 will present the following characteristics:

- The permanent physical location of work will be The Hive
- Work will grow through Cloud Networks
- The Eco Office will become an intelligent growth zone where individuals with a common interest meet and collaborate
- Gattacas will be at the size of cities – highly secured mega cities divided into smart zones
- Collective knowledge will form a powerful collective intelligence, automatically scanned, recorded and classified
- Our technological solutions will be intuitive, embedded in our environment and non intrusive, yet controllable by each individual

The Smart Worker of 2030 will be equipped with remarkable technological tools and solutions, intuitive systems and solutions
Key Issues

Real Estate:
- We will witness a devaluation of Real Estate, as the necessity of having a physical location is minimised.
- Corporations will need to develop both a physical space as well as a virtual space – Corporate Space on-line is predominant, forming a new RE demand and offer and a new RE market – value of virtual space will be higher than the physical space.
- Telecommunication infrastructures are crucial, forming a web of connections and networks between organisations.
- Geographical boundaries lose meaning and a no border rule applies – dispersion of business is unlimited throughout the web.
- Individuals have a high level of control over their professional activities through their network.

Workplace:
- Both physical and virtual are present.
- Branding is core to the workplace strategy.
- The cloud network is open to the all world – no boundaries = no limits.
- Social creativity is more predominant.
- Increase of individual expression to form a collective intelligence – WE THINK – to provoke a cultural revolution in the way our society functions.
- Ideas are shared amongst all.

Work:
- Training, collaboration, socialisation and flexibility are at the core of the working model.
- Decentralisation is commonly accepted.
- Employees are specialists.
- Alliance and Partnership form new corporate structures and systems.
- The search for Talent is growing as the value of Talent can be a powerful marketing tool for each individuals.

Technology:
- Technology is present in ALL human activities.
- Technology enables a greater level of choice over location.
- Everybody uses a dynamic control dashboard.
- There is a high degree of self personalisation of the technological solutions and tools.
- The network is organised in clouds and humans have a bio digital interface with the cloud.
- Knowledge is managed via an inter enterprise communication system to share collective intelligence.
- A virtual experience = A real experience.
- We witness a multiplication of virtual worlds (parallel worlds) in communities.
- Telepresence is the norm.

Human Resources:
- The flexible working contract is the norm, at a personel level, forcing a collaborative approach in the workplace: Swarming, Gathering, Collective working.
- There is a demand for an Agile Workspace – agility in the workplace is the norm, providing a transformable and adaptable working environment.
- A synergy between Work – Space - Technology.
- This approach forms a “mosaic of individual experience”.
Workplaces have undergone dramatic changes during the last number of decades as society makes the transition from an industrial age to an information age. In the wake of this, new work styles, locations and patterns are underpinning the changes being experienced in the workplace today giving rise to a better connected, more competitive and increasingly complex work environment. Some features of this are: the emerging trend of knowledge work; the changing demand for flexible employment contracts giving rise to leaner organisations; and, the increased number of mobile workers.

Technology is the most important factor influencing and enabling the scale of change within workplaces today. Unfolding IT developments include: the continued growth in computer capacity and speed, and shrinkage in size; the development of fibre optics are reducing the costs of telecommunications, making wireless communication considerably cheaper while changing how business is done and where people work; ubiquitous smartness in buildings and workplaces; and, software applications such as web-meetings, videoconferencing, teleconferencing, instant messaging, application sharing and e-mail are being improved to increase efficiency, improve productivity and harness creativity while adding value to business performance (Coates, 1999).

As a result of these developments, geographically separated teams and client bases are becoming the norm across global corporations, for which the key feature is the smart workplace enabled by technologies.

In this context, the Smart Workplace is being projected as a new workplace interface to support these changes.

The Smart Workplace: The provision of a workplace infrastructure that empowers employees through self-regulation, engages employees through collaboration and communication, promotes a strong environmental ethic and sustains organisational agility, all of which are enabled through the adoption and implementation of new technology platforms.
Agility, anonymity and access and autonomy
“the networked workplace structure”

In The Hive, we could imagine a world where growth accelerates and technology explodes, driving corporate agility. It would mean a world of entrepreneurs in a free market, where the corporate world as we know it today is totally distrusted by the rest of society.

As major disasters strike our society, homeworking is becoming a welcome refuge, and the corporate office is no longer in existence. With revolutionary technical advances, a new working environment would provide people with the ability to control the workspace using what would be known as a ‘neuro-headset’.

The Hive as a workplace would be more agile, almost formed into ‘clubs’ for highly mobile, remote and virtual workers. Communication would be essential for survival as the workplace would become a hub.

In this scenario, by 2025, climate change will have turned on its heels, and upon the emergence of the networked ‘Hive’ workplace structure, the traditional office becomes a memory. FM becomes the key actor in this environment as all data is stored, controlled and disseminated through the FM support desk. The Hive is the vessel in which working environments are incorporated into people’s daily lives.

While there would be obvious technological benefits to The Hive, there are some serious issues being addressed. Workers would lose their sense of belonging – organisations themselves would become more virtual, allowing for less human interaction and team building.
A radical form of industrial democracy and corporate re-engineering
“a new collaborative work style, from a knowledge revolution to a wisdom revolution”

Eco Office depicts a sustainable world where the creation and sharing of knowledge drives economic wellbeing, and where there would be a global consensus for change and preservation. Wise Counsel would also mean diversity. The world would operate around a community - and knowledge based society, as opposed to skills based, would drive the economy forward.

The workplace would be more community orientated, with ‘employee villages’ forming to create workplace communities. Workplaces support shift from hierarchical to self-managed teams, working within a flexible work / life balance. Workplaces increasingly are supported by ICT’s, connecting workers with community peers.

Like Jazz, this scenario would see a strong reliance on technology. However, the workplace would be based around social activities, creating common workspaces and focusing on team based working.

“An Eco-Hive is a workspace that allows more and more people to work from home but collaborate via new technologies forming a honey pot centre”.

In Eco Office, a new work style would emerge, where employees would be given a greater voice in how to improve business during hard times. In this scenario, the Eco-Office would be the primary workplace and work style across the globe. Sophisticated and innovative information and communication technology (ICT) would appear, enabling employees to be highly agile in their way of working.

Eco-Offices, similar to hotels, would be created, that would provide good services to improve quality of life and work – attracting top talent. Eco Offices see a rise of local office communities, the development of employee villages combined with sustainable transport initiatives and biodiversity plans.

The emergence of new workplace structures, life-long learning and corporate culture would lead the direction from a knowledge revolution to a wisdom revolution.
The rise of the corporate office

"a ‘swarm’ society, grouped together on the basis of shared interests and commercial affinities"

Gattaca is by far the most negative and the darkest of the three possible outcomes. It would see a high concentration of economic growth in prosperous areas, with mass migration to richer areas bringing new difficulties and growth in illegality and exploitation. Taken in this context, we would see a society with a ghetto mentality – and we could potentially experience a series of major catastrophes, from health issues, to environmental meltdowns, to terrorist attacks.

Gattaca would see the corporate society becoming a power to be reckoned with, with corporations becoming feared by society far more than they are today. Businesses and people would start to show characteristics of a ‘swarm’ society, grouping together on the basis of shared interests, both personally and commercially.

“The shadow of Gattaca exists as a non-intrusive, invisible security control”.

By 2020, the corporate world would be established and advertised as a fully integrated, self-managed place. Great importance would be placed on the acquisition, development and management of property, processes and people. The primary focus would be on access and information protection in this scenario, and less on the workplace, resulting in a degradation of work ethics and health and safety procedures.
The Smart Workplace
The Smart Workplace… Sensory

The power of collective intelligence

The 2030 office takes different forms, and differentiates itself from other workplace offerings by providing identity and superior process support for critical business processes. Instead of trying to be everything for everyone, the 2030 office is a context-specific, dynamic, living entity that transcends the physical boundaries of the office and offers fluid interaction possibilities among on-site and off-site knowledge workers alike. As a result, the office has evolved into an arena that combines high-performance collaboration solutions, social interaction zones and managed spaces for inspiration, creativity, and reflection.

Workplaces have undergone dramatic changes during the last number of decades as society makes the transition from an industrial age to an information age. In the wake of this, new work styles, locations and patterns are underpinning the changes being experienced in the workplace today giving rise to a better connected, more competitive and increasingly complex work environment.

5 key elements:
- Choice
- Abundance
- Service
- Attractiveness
- Accessible

The proposed scenario reflects a position where technological achievements over the last three decades have reshaped the role of the corporate office from a prerequisite for work to an enabler of smart, effective work. Rich communication and collaboration functionalities and interoperability across different IT platforms make it possible to engage in productive collaboration from home or when travelling.

Workplace agility is emerging as an important priority for the providers of workplace services and infrastructure. An agile workplace is one that is constantly transforming, adjusting and responding to organisational learning, change and uncertainty by continuously improving work and the infrastructure that enables it.

Workspaces are being designed as new autonomous and individualised work experiences with collaboration and communication technologies that shrink social distances and engage in synchronous communication across time and space. Geographically separated teams and client bases are becoming the norm across global corporations, for which the key feature is the smart workplace enabled by technologies.
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- What would be the life of a worker by 2030?
- What would his/her journey to work look like?
- What working environment would be offered?
- What would be the place and role of technologies within this working environment?

The following scenario of a day in the life of Nina in 2030, a single woman, 38 years old, business director, takes us through the world of work in twenty years from today, where people, place and space are in synergy and where our environment is highly responsive.

- Nina lives in a mega city in Brazil
- She is environmentally conscious and behaves as a socially responsible individual
- Nina is mainly working from home, but today she is travelling to her office…
Nina arrives at her business park where her Club Office is located. The business park is a mixed blend of corporately owned and public spaces. The Club Office is the new headquarters of the clean tech giant CoreGreen Global[i]. While walking to her customisable space of choice, GreenSpace[ii], iServeU[iii] starts the range of on-demand integrated FM&IT services she requires based on her personal profile. Her workspace is equipped with a range of sensors which detect her presence and monitor her activities to adapt the Building Management System (BMS[iv]) and provide customised services to her. When she arrives at her workspace, she places her mobile device [her unique ID] anywhere on the interactive multi-touch surface[v], and the relevant documents are displayed based on her agenda and follow-up actions using smart semantic services. She rearranges the documents with the flick of her finger, and studies a few key graphs that have arrived together with a video message.

Her day is full of meetings and she will be away from her multi-touch desk for most of the day. The time she utilises the desk is automatically charged to her account[vi].

Nina must now meet with her team in preparation for their first meeting with a major Brazilian-Russian alliance, CO2Prom. She video messages her team and asks them to meet with her ClubHub to review the first virtual prototypes of an autonomous industrial cleaning robot. The ClubHub was designed as a Physual[vii] collaborative space enabling high levels of interactivity amongst the collaborators. Upon entering the ClubHub, Nina uses simple voice commands to set up a multi-site telepresence session with Kashagan and the MIT India Satellite Institute. 3D holographic telepresence is not yet available in Kashagan so iCoreGreen[viii] connects them via regular 2D telepresence. The MIT sub team is critical to this exercise as they are leading the development of the prototype. The unit in Kashagan is responsible for manufacturing the commercial product.

i. Cleaning has become an industry of its own, the measures of control of major epidemic breakthroughs and healthcare breakdowns of the 2020s became a major threat to societal stability, and this service industry is now a regulatory requirement in any publicly accessible space

ii. IBM BlueSpace

iii. iServeU is her voice-controlled personal virtual assistant service accessible through multiple platforms (including various home and office platforms, in-car infotainment system and mobile devices), and handling a range of business and personal matters

iv. Building Management System

v. See e.g. Microsoft Surface [www.microsoft.com/surface]

vi. The VISIBLE space management and real time occupancy tool is a web-based, wireless application which monitors and analyses in real time the position and movements of occupants within a workplace. It also charges back the cost of utilising the space throughout the day [www.globalworkplaceinnovation.com]

vii. Physual combines physical collaborative arenas, virtual collaborative tools and large-scale visualisation support for high-performance collaboration in distributed and partially distributed teams [www.kristensenconsulting.com]

viii. iCoreGreen is the virtual office space of Nina’s company, designed along the concept of Second Life, adapted to a business context.
Nina reflects a second on the dramatic quality improvements since the first telepresence units were rolled out in the years 2007-2010. Now the video is crystal clear and laser sharp, and there is no latency and no interruptions after moving to IPv9. Perhaps most importantly, data sharing is now really seamless and works even with complex, dynamic graphics in high-resolution mode[i]. Nina proceeds with the agenda and opens the PLM[ii] system on the large multi-touch display.

All participants openly share their ideas about the alternative designs, and use gesture-based annotation to comment directly on the designs. The team proceeds by using the integrated rating mechanism to select the best design and agrees on the next steps. One team member raises the issue of BMS integration.

The product will require ubiquitous, roaming connectivity with the client’s BMS which requires additional work on the BMS API. The required competency is not available in the team, so Nina asks iServeU to propose a suitable subject matter expert. iServeU searches all available internal and external networks for relevant expertise. Within seconds, it returns a short list of two academics, one IT consultant and a software engineer with extensive knowledge of software solutions for robotics. One academic researcher and the software engineer have published their online presence and availability.

They decide to call the software engineer, and he responds from his Hive. Nina and the rest of the team quickly talk him through the list of issues, and he agrees to come up with a proposal using the standard compensation scheme used by CoreGreen for level 5 experts. Nina asks iServeU for the ePO, which is returned immediately, and she confirms the order via voice command. Happy with the results, the team agrees to close the meeting and the ClubHub is released for another team.

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[ii] Product Lifecycle Management, see e.g. [www.cocreate.com]
Key Outputs

Over time the facilities management industry has shifted from a reactive model to one that embraces complexity and unpredictability…

No longer are buildings sustainable by just having green technologies, sustainability is now measured by space utilization efficiency and one advantage of these hubs is the fact that it is reducing the number of vacant and abandoned properties in the cities, which is improving space utilisation efficiency. As a result of this, ‘intelligent growth zones’ begin to emerge which represent a fundamental shift in global spatial planning.

The Smart Workplace in a nutshell:

- The permanent physical location of work is the Hive
- Work grows through Cloud Networks
- The Eco Office becomes intelligent growth zones where individuals with a common interest meet and collaborate
- This collective knowledge forms a powerful collective intelligence, automatically scanned, recorded and classified
- Our technological solutions are intuitive, embedded in our environment and non intrusive, yet controllable by each individual
- The Smart Worker is equipped with remarkable technological tools and solutions, intuitive systems and solutions
The future of the Smart Workplace is being shaped by numerous driving forces, trends and a vast range of trends, issues and factors. Being aware of these forces affecting the workplace can help organisations proactively anticipate challenges ahead. However, this section does not intend to discuss the ultimate causes of change, but to concentrate on the more direct and immediate effects on the smart workplace:

- **Demographics**: population growth, ageing workforce, multigenerational workforces and changing family patterns
- **Economics**: pension crisis, knowledge economy, the lack of predictability of the financial systems and management performance
- **Employment**: demand of flexible working arrangements, competition for qualified workers will intensify, growing complexity of legal compliance
- **Society**: 24/7 culture, work-life integration, lack of social contact, the power of mass collaboration
- **Technology**: travel vs. video conferencing, connectivity, virtualisation, security
- **Environment**: awareness of planetary preservation, not enough resources, green technologies, transport systems
- **Office Design**: space utilisation, the end of private offices, work performance, collaborative space
- **Governance**: management attitude, generation Y, autonomy, partnerships and alliance
- **Facilities Management**: automation, budget constraints, value driven design, change management
- **Global**: outsourcing, security concerns, competition, sustainability agenda
Methodology

Johnson Controls hosted the third in a series of futures workshops aimed at anticipating the possible long term implications of the current global trends on the workplace and exploring how technologies will impact on tomorrow’s workplace to create the Smart Workplace we all anticipate.

A diverse group of academics and workplace practitioners spent a day looking at these global trends from a Technology perspective. Following some provocative, scene-setting presentations, the drivers and issues were brainstormed to create a new vision of the workplace by 2030 and the role of technology in this smart environment.

The Futures ‘imagineering’ process, pioneered by the Dublin Institute of Technology, is not intended to give answers but to open one’s mind to the opportunities – the journey is more important than the destination. The report takes you through the thought processes of the participants.

The concept of ‘futures’ is encapsulated in the idea of trying to make things happen, rather than guessing what might happen.

We explore a preferred future vision of the Smart Workplace, while considering the following questions:

- How will our world of work be transformed through technologies?
- What would be the impact of future technologies on the shape and form of our workplace?
- How will they affect employee’s productivity and creativity?
- How should property occupiers and owners, managers and service providers prepare for these changes?
Partners, Experts and Authors

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