Top Consumer Trends That Will Impact the Digital Workplace in 2025

Changes in consumer behavior will have a profound impact on the digital workplace through 2025. Workplace leaders can implement long-term technology and facilities management strategies to drive employee engagement, remain competitive and exploit business opportunities.

Impacts

- Near-ubiquitous personal smart machines and wearables in the digital workplace mean IT leaders face disruption of organizational hierarchies and productivity metrics through 2025, due to lagging BI and analytics capabilities.
- The changing nature of work and people’s digitally intermediated perceptions of connected spaces mean IT leaders must reconceptualize the 2025 workplace as a smart, adaptable environment that conforms to workers’ contexts and evolved job requirements.
- One job in three will be replaced by smart machines by 2025, requiring IT leaders to drive fundamental change in support and engagement practices that help workers think and act differently in order to remain relevant to the digital business.

Recommendations

For IT leaders of digital workplace initiatives:

- Get ahead of the wave: Invest in incubators and technology development programs to test smart machines and wearables in your organizational context; build stakeholder consensus and processes through centers of excellence.
Institute a 10-year plan to underpin the digital business transformation of your organization, and map that to a long-term cultural and change management program.

Foster a calibrated devolution of greater levels of authority and autonomy to end users; as structural hierarchies fold, relationships of trust need to be rebuilt that balance the competing imperatives of security, privacy and innovation.

Develop profiles of the core employee competencies that will be required to sustain the organization through 2025; audit current staff competencies, and develop policies to address the anticipated skills gaps.

**Strategic Planning Assumptions**

By 2025, one in three jobs will be converted to software, robots and smart machines.

By 2018, 30% of organizations will formalize workforce digital literacy strategies to improve business outcomes and employee engagement.

By 2018, 50% of IT support organizations will support assets and services outside their IT services portfolio.

By 2020, 20% of organizations will include employee engagement improvement as a shared performance objective for HR and IT groups.

**Analysis**

Each year, Gartner compiles a list of macrolevel trends affecting the consumer technology market. It includes the social, economic, demographic and personal influences that shape technology buyer behavior. This year — as part of digital workplace coverage — we picked the most relevant trends and explored the impact they might have on the workforce and workplace (see Figure 1 for an overview).

The digital workplace is a workforce investment strategy that harnesses technology, people and consumerization trends to promote organization agility. One of the core concepts of the digital workplace is that IT leaders need to embrace a more visionary, longer-term planning process to deliver a continuous stream of better business outcomes (see "2015 CIO Survey and CEO Survey: As CEOs Commit to Digital, CIOs Must Flip Their Leadership to Deliver"). It is clear that organizations that are able to exploit employee digital dexterity and technology trends will gain a significant competitive advantage in the digital economy.

This research provides a horizon scan that will inform and provoke creative thought about how macrolevel trends will impact human capital management, information technology and facilities management strategies. For more detailed background on the trends, see "Toolkit: Consumer Technology Macro Trends 2024" for the original report on consumer technology trends. It will be useful for digital workplace leaders as they plan their digital workplace transformation.
Impacts and Recommendations

Near-ubiquitous personal smart machines and wearables in the digital workplace mean IT leaders face disruption of organizational hierarchies and productivity metrics through 2025, due to lagging BI and analytics capabilities.

Smart machines and wearables combined will have a broad disruptive impact on organizational hierarchies as they empower individuals asymmetrically to the organization and its structures. Individuals who exploit these capabilities will have the technology resources to act faster and more effectively than their peers and their bosses. Individuals will have faster access to critical data at the time and in the context it is needed, the ability to automate or execute decisions more rapidly, and the ability to mitigate risk and augment reward. Not only will smart machines be nearly ubiquitous by 2025, but they will have begun to exhibit "general machine intelligence." That means they will have moved beyond current capabilities of operating only in specific knowledge domains and solving specific problems. By 2025, smart machines will be able to understand problems and their contexts, mimic human reactions to questions in natural language, make decisions, and learn from experience (see "Predicts 2015: Smart Machines to Complicate Labor Markets and Ethics").

By the end of this decade, human-literate smart agents will be commonly built into all new products and will leverage machine learning, natural-language processing, inference engines and other
capabilities in order to learn about their users' needs in individual contexts and in certain cases act on their behalf.

The use of these technologies in the workplace will create BI challenges and new information shadows, not least the ability to correctly assess the performance of workers exploiting these capabilities to boost their personal performance.

As IT leaders deploy these technologies through their organizations, their ability to make use of large volumes of sensor data will be critically dependent on their analytic capabilities, which also will tend to lag behind. In the next sections, we break down the impact of wearables and smart machines.

**What Is the Impact of Wearables?**

Wearable devices worn on and in the body will be pervasive by 2025 and will have a significant impact on workplace behavior and productivity. More broadly, they will have an impact on global health: Gartner projects that, by 2020, developed-world life expectancy will increase by half a year, due to the widespread adoption of wireless health monitoring technology (see "Top 10 Strategic Predictions for 2015 and Beyond: Digital Business Is Driving 'Big Change'”). Today's wearable devices, such as wireless earphones, smartwatches and fitness bands, are precursors of elaborate wearable technologies that will be pervasive within 10 years: Wearables embedded in clothes, head-mounted displays (HMDs), sensors on the skin and sensors fitted internally will extend the range of human action, cognition and capabilities. The use of data derived from wearables for personal activity monitoring applies a layer of analytics to the wearables' proposition. Other wearables, such as smart glasses, enable people to see helpful information when they need it for doing their jobs. This opens up new ecosystems that tie together physical sensors and networked intelligence that enhance human capabilities.

**How Will They Impact the Workforce and Workplace?**

Sensors will radically increase the amount of data generated by individuals about their activities, location, performance, emotions, health and well-being. The impact will be double-edged because it will empower individuals through greater personal and situational awareness, but it will also expose them to greater levels of surveillance and intrusion.

Impacts will be felt in three main areas:

- **Efficiency and productivity:**
  - Health and safety
  - Auditing and tracking
  - Identity and authentication
  - Quality control
  - Navigation and workflow
Training
Remote control
Field service
Security, surveillance and policing

**Personal satisfaction and individual achievement for the worker:**
- Assistive technologies (hearing and visual enhancement)
- Health, fitness and wellness
- Personal productivity
- Entertainment and connectivity
- Social, status and identity applications

**Customer/staff engagement:**
- Brand touchpoint for loyalty schemes and services
- Customer data collection

By 2025, wearables and smart machines will have driven a change in IT strategies analogous to the introduction of "bring your own device" on enterprise mobility policies and procedures.

Within the workplace, employees will participate in their own performance monitoring in exchange for value from personal analytics, gamification and social benefits. To get ahead of this curve, organizations will need to invest in, partner with or own incubator or technology development programs to exploit wearables opportunities in their core businesses. Examples of companies that have exploited wearables opportunities include Nike, Disney and Bayer (see the discussion on wearable user interfaces in "Hype Cycle for Human-Computer Interaction, 2014").

This is key to overcoming privacy concerns: Users must have a compelling personal benefit before they can be expected to collect and share personal data. In addition, user trust will have to be earned slowly and progressively. People will distribute their trust selectively to many different smart agents. Individuals will place their trust to varying extents in different smart agents. IT leaders will need to accommodate this dynamic trust imperative in deployments of smart agents.

**Recommendations:**

IT leaders of digital workplace initiatives should:

- Work with development teams and key stakeholders to prioritize wearables research and investment in areas where early wins are most likely. These include occupational health and safety applications, such as cameras worn on the body and for HMDs for personnel engaged in difficult, dangerous or remote environments; as well as preventive healthcare and corporate wellness programs for staff or insurance purposes.
- Work with business unit leaders to evaluate workflows to determine if wearables, such as HMDs, would improve efficiency of walking workers who do process-oriented tasks, such as inspection, delivery, warehouse picking or nursing.

- Consider establishing incubators or pilot programs to test and develop the use of wearables that meet your organization’s business objectives. These programs should include risk assessments (privacy, corporate data loss, duty of care) and should explore opportunities for customer engagement.

- Invest in device-agnostic platforms with common APIs where possible; the wearables market is still in an early stage of maturity and is heavily influenced by a few megavendors, such as Google, Apple and Samsung. Bet on the ecosystems where the most developers are most actively aligned with your organization’s business objectives.

- Work with business unit heads and applicable field force leaders to explore the potential of smart garments, including woven sensors made with conductive threads, coupled with algorithms, to monitor employees in physically stressful environments.

- Source, where possible, software development kits and APIs for wearables, and make them available to in-house developers. These will enable apps to bring additional capabilities to wearable electronics and to provide the right recommendations at the right time.

- Be sensitive to behavioral, cultural and societal factors that come into play during design activities.

Figure 2 provides an overview of market shipments through 2020.

**Figure 2. Growth of Wearable Electronic Fit Devices, 2014-2020**

![Graph showing the growth of wearable electronic fit devices from 2014 to 2020](source: Gartner (April 2015))
What Is the Impact of Smart Machines and Personal Analytics?

Smart machines deliver contextually relevant personalized content, advice and tools that enhance people’s personal productivity and lifestyles. The arrival of these technologies will have a transformational impact on the workplace and potentially subvert existing hierarchies, as BI data shadows and analytics fail to keep pace with the bring your own (BYO) smart machine trend.

We expect the most agile smart machine — the virtual personal assistant (VPA) — to hit the toe of the curve of mainstream adoption in 2017 (see Figure 3). The convergence of smart advisors and VPAs from 2020 on will provide unprecedented personal analytic capabilities that will enable people to make smarter decisions about what they do and how they spend their time and money. Early iterations of VPAs include Google Now, Apple Siri and Microsoft Cortana. Smart advisor technology from IBM’s Watson is delivering cloud-based analytics and customer engagement capabilities for banking, education and customer service, as well as medical applications.

Assuming that smart agents embedded in smartphones deliver comparable performance (or access to) supercomputer capabilities by 2020, it follows that wearables will by 2025 have evolved radically from current iterations of smartwatches and HMDs into embedded, implanted or invisible (micro) form factors.

How Will They Impact the Workforce and Workplace?

Like tablets and smartphones, VPAs will permeate the workplace as BYO devices, whether or not they are sanctioned by the organization:

- The evolution of personal analytics will enable employees with no data science training to intuitively leverage customized analytics in daily job activities.
- Employees will take advantage of capabilities such as assistants, apps and services to get things done more intelligently and efficiently. In certain cases, VPAs will take actions on behalf of their owners according to preset or machine-learned rules.
- Expect the emergence (in various forms) of independent personal data banks (PDBs). These are independent custodians of consumer data and will arbitrage the data with third-party services. It is likely that business data and activities will be stored in PDBs.
- The rapid growth in personal data will lead to the development of personal information management as a new discipline. This will be similar to enterprise information management (including data quality, information governance and even master data management) and will add engaging elements, such as life logging, gamification and visualization. The result will be a service to employees with no information management experience.
- Personal smart machines in the workplace will create new BI data shadows, exacerbated by lags in BI capabilities.

Recommendations:
Invest sooner rather than later in smart machine capabilities. These tools — including those that enhance personal productivity — can offer competitive advantages, if adopted early. They are not the typical utility tools implemented today.

Open a specific dialogue with other executives in the organization to understand the business implications, opportunities and risks of smart machines in the workplace, as well as how to apply their capabilities to product and marketing objectives.

Develop training programs to ensure maximum exploitation of VPAs across the organization.

Be aware of the dangers (and opportunities) of employees mixing personal and professional data, tasks and services with VPAs.

Prioritize BI investments to gain greater visibility of nonroutine work activities, and apply machine learning to analyze and build models that can handle "dirty" data. Use deep learning techniques to uncover structures in nonroutine work.

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**Figure 3. Smart Machine Diffusion Profile: 15 to 30 Years to Achieve 90% Penetration (by Segment)**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Curve Above 0%</th>
<th>Toe of Curve Reached</th>
<th>Years to 90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Advisor</td>
<td>2014</td>
<td>2017</td>
<td>Segments Merge and (and Fragment) 2020-2022</td>
</tr>
<tr>
<td>VPA</td>
<td>2017</td>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>Autonomous Personal Transport</td>
<td>2022</td>
<td>2030</td>
<td>30</td>
</tr>
<tr>
<td>Semi-autonomous Robotic Assistant</td>
<td>2025</td>
<td>2032</td>
<td>30+</td>
</tr>
</tbody>
</table>

Source: Gartner (April 2015)

The changing nature of work and people’s digitally intermediated perceptions of connected spaces mean IT leaders must reconceptualize the 2025 workplace as a smart, adaptable environment that conforms to workers' contexts and evolved job requirements.

There are two key trends that will impact the digital workplace through 2025: The "connected space" and the changing nature of work itself, detailed in the next two sections.

**The Connected Space**

**What Is the Impact of the Connected Space?**

The places we inhabit are increasingly defined by the technologies we take into them.
Places (such as the lounge, dining room, office, boardroom or bedroom) will become less dedicated to specific activities and more adaptable to what people decide to do in them, at any particular time, with the devices and gadgets they bring with them.

In addition, the Internet of Things (IoT) is tending to blend the physical environment with the digital: This is fostering the development of the "smart workspace" that is flexible and adaptable to different demands. By 2025, smart workspaces will provide seamless integration of different work locations in order to support the diverse work styles and needs of different employees. This capability will underpin collaboration and support needed for digital businesses, while improving workforce engagement and employee experience.

There will continue to be planned interactions in meetings in physically colocated spaces, and traditional meetings rooms are not going to disappear. This includes rooms for meetings held remotely and via Infopresence and telepresence. Real-time and ongoing "conversations" via tools that can store and forward work sessions will enrich these interactions. The challenge in choosing collaboration tools will be finding the right mix of assets that can accommodate large immersive meeting rooms, huddle rooms, individual screens for remote workers and workers choosing to "attend" a meeting from their office desks.

In addition to formal meetings, there is the value of unscheduled spontaneous meetings — that is, "water cooler" sessions that can take place anywhere, like the kitchen, cafeteria or elevator lobby. Workplace space design needs to enable these types of interactions. Providing collaboration tools such as "smart screens" help make these ad hoc meeting spaces more productive. Sensors and IoT can add layers of security, environmental controls and presence sensing; for building flexible, extensible infrastructure with abundant bandwidth for networking, unified communications and collaboration and IoT will be essential.

Digital intermediation shapes our perception and experience of the physical world. This changes how we control and use the physical spaces around us.

**How Will It Impact the Workforce and Workplace?**

The smart workspace reconceptualizes the idea of space. No longer is the "activity-based workplace" a physical location, but a virtual space that can operate however the employee chooses. For example, this could be a virtual office where mediated discussions take place using collaboration software or team activities using networked augmented reality headsets.

Within 10 years, the average developed market household will contain 750 connected devices; many of these will be enablers for work and productivity. Digital businesses will need to embrace similar levels of complexity in order to remain competitive.

Smart workspace will enable embedded programmability to the physical work environment that surrounds employees, providing a layer of digital connectivity and intelligence to facilitate the booking, customization and use of meeting rooms, cubicles, in-building open spaces, home offices or mobile settings, whether they are physically and/or virtually together. In the smart workplace, "objects" (whiteboards, building interfaces, large digital displays, workstations, mobile devices,
wearable interfaces) participate in work activities via communications features that create a network of "things," which contextually facilitate people’s interactions (see "Hype Cycle for Digital Workplace, 2014" and "Cool Vendors in Social Software and Collaboration, 2015").

A smart workspace adopts a people-centric focus on how a connected enterprise of things can help employee performance, promote new ways of working and take advantage of smart machines (such as VPAs, smart advisors and other "software things").

Smart workspace innovation will be influenced by embedded consumer technologies. Smart workspace will also be constrained by the pace of the dependent contributors listed above (excepting IoT). There are also synergies between smart workspace and personal analytics, as personalized sensors provide employees with analytics and feedback related to mood, stress, posture and where the individual spent most of his or her focus (tasks, applications or conversations, for example).

There is an inevitable tension between innovation, privacy and security, and IT leaders will need to balance these three contending imperatives. To do this, it will be necessary to devolve greater levels of authority and autonomy to end users and forge new relationships of trust with people and machines across the organization.

**Recommendations:**

- Create a 10-year strategic view of how the smart workplace will support your organization's business objectives, and build toward that vision.
- Foster a calibrated devolution of greater levels of authority and autonomy to end users; as structural hierarchies fold, relationships of trust need to be rebuilt that balance the competing imperatives of security, privacy and innovation.
- Develop a rolling 10-year change management program that will drive the cultural change and business processes needed to exploit the smart workplace.
- Begin to pull together strategies for IoT, digitalized processes, smart machines, digital workplace graphs and the digital workplace.
- Exploit employees' IoT knowledge and assets, including those emerging from the connected-home environment.
- Allow the smart workspace to trigger its own form of consumerization ("bring your own thing"); encouraging employees will add their own objects to a smart workplace environment.
- Ensure that smart workspaces are part of the facilities management strategy.
- Ensure that smart workspace technology is seen as a benefit, not a threat, to the employee community.
The Changing Nature of Work

What Is the Impact of the Changing Nature of Work?

This trend describes how the nature of work will change over the next 10 years. Extrapolating from today, by 2025 we envisage that work will be far more untethered from traditional and current working practices, remuneration schemes and career structures. Gartner has developed a scenario-based approach to the evolution of the digital workplace (see "Workplace Reimagined: Four Scenarios to Help Visualize the Future"). Key drivers for change include the following:

- The accelerated speed of doing business, combined with the volatility and instability of the operating environment, will disrupt the existing job market and the necessary employee competencies needed to build and sustain digital businesses.
- The best-paid jobs will be increasingly unstructured and nonroutine.
- Cost reduction imperatives and casualization of the workforce will deconstruct the traditional business and hiring practices: Just-in-time work practices will prevail.

As a measure of the scale and scope of impact, Gartner has developed the following strategic planning assumptions:

- By 2020, as much as 65% of knowledge worker career paths will be disrupted by smart machines in both positive and negative ways.
- By 2020, nonroutine work will account for more than 65% of U.S. jobs (up from 60% in 2013).

How Will It Impact the Workforce and Workplace?

- Workers will need to think and act differently to remain relevant as one job in three will be replaced by robots by 2025, driving fundamental change in support and engagement practices.
- Workers will be employed to handle exceptions rather than routine tasks, and as a result will (of necessity) have greater flexibility in the way they do their jobs. In this environment, versatility will be a key competency.
- Jobs will become more specialized, and workers’ agility and mobility will be key to individual success. This means workers retraining themselves and retooling frequently, applying themselves to different jobs in different industries, and using their acquired skills. A focus on digital literacy, analysis, collaboration and interactive skill will be required.
- There will be a fundamental shift in power relations between employers and employees, as “virtual staff” become the norm. The proportional growth in professional and technical jobs will necessitate the use of temporary innovation clusters and drive collaboration supported by smart workspaces. Ad hoc and virtual teaming will be needed to handle multiple projects at the same time and frequent changes in projects and partners.
- Employers will pair smart machines with lower-skilled people to deliver better services at reduced cost (see the bottom-left corner of Figure 4).
Globalization, work shifting and the flattening of organizational structures will continue to drive changes in work practices, involving greater effort in coordinating work across time zones and managing regional differences, as well as greater levels of devolved responsibility and time management.

Figure 4. Future Structure of the Labor Market

Over time, a symbiosis of machines and humans will prevail, since both have strengths and weaknesses, and complementarities between people and machines will dynamically redefine the types of activities and contributions of the two in the digital workplace.

Recommendations:

- Develop profiles of the core employee competencies that will be required to sustain the organization through 2025; audit current staff competencies, and develop policies to address the anticipated skills gaps.
- Create an engagement initiative that spans IT, HR and other senior executives to anticipate how to attract and retain the core staff required to sustain the business.
- Internalize the "personal cloud" and other aspects of a consumerization-friendly governance approach in all staff-facing activities.
- Develop proactive initiatives to encourage smart machine technologies in the workplace — not least those that will make people more effective and productive.
- Revisit ethical frameworks, staff policies and management practices ahead of the expected loss of jobs to smart machines and the transition from routine to nonroutine work that will be expected of employees.

One job in three will be replaced by smart machines by 2025, requiring IT leaders to drive fundamental change in support and engagement practices that help workers think and act differently in order to remain relevant to the digital business

What Is the Impact of Digital Workers Thinking Differently?

Cognitive frameworks are changing as a result of digital intermediation: The brain adapts to the different sensory inputs from screens, Internet devices and virtual interactions. Peoples' attention span alters, memory functions change, digital search and digital literacy skills become more important, and reading less text in smaller chunks increases reliance on video and image content (see "Accelerate Digital Workplace Momentum by Understanding How the Brain Works," "Maverick* Research: Living and Leading in the Brain-Aware Enterprise" and "Maverick* Research: Myths and Realities in the Brain-Aware Enterprise").

How Will It Impact the Workforce and Workplace?

Based on the prevailing neuroscience of the plastic brain, we expect the thought processes of digital workers in 2025 to be somewhat different from the thought processes of most people today. For example:

- Workers will typically memorize far less stuff than they do today; instead, they will rely to a greater extent on quick and efficient information retrieval on the go, memory prompts and visual cues from the devices they carry.
- There will be an accelerated shift in one-to-one staff engagement and customer marketing; employees will expect it from their employers, and consumers will move to brands that can provide customization through digital technologies.
- Just as human brains adapt to the technologies they use, digital technologies will evolve around human behaviors. Neuromorphic computing mimics biological processes using very large-scale integration systems and software for motor control, sensory integration and perception. We expect these systems to be in common use rather than exceptions within 10 years.
- There will be more mainstream adoption of neurobusiness techniques (see Note 1) that combine psychology and other social sciences to deliver actionable business insight into perception, reasoning, reward responses and people's sense of belonging. Further insights will be gained from advances in brain-scanning techniques, such as functional magnetic resonance imaging
(fMRI), which detects patterns of neural activity based on blood flow in various regions of the brain.

- Many HR professionals in large organizations are already deeply involved in tracking and applying social, behavioral, and organizational psychology and change management, and they are adding neuroscience to the list of relevant research disciplines that inform their programs. Targets for behavioral change might include innovation, creativity, ethical awareness or productivity.

**Recommendations:**

- Develop a long-term profile of the employee competencies that will be required to sustain the organization through 2025; audit current staff competencies, and develop policies to address the anticipated skills gaps.
- Examine alternative recruitment channels, especially mobile, since the future staff you need may not read traditional recruitment ads.
- Explore neurobusiness techniques and thinking today in order to understand workforce culture and to promote employee engagement.
- Exploit engagement techniques, such as gamification and emotional design, for better business outcomes.
- Use neurobusiness approaches to enhance employee creativity, productivity and decision making — for example, by addressing challenges such as unconscious decision biases or adopting practices such as mindfulness training. The insights can be effectively delivered as training and coaching or embedded into software and website design.

**Gartner Recommended Reading**

*Some documents may not be available as part of your current Gartner subscription.*

"Executive Leadership and Innovation Interview: Professor Susan Greenfield Discusses Scenario Choices and the Impacts of Digital Intermediation"

"Maverick* Research: The Industrialization of Nonroutine Work"

"Hype Cycle for Digital Workplace, 2014"

"Toolkit: Consumer Technology Macro Trends 2024"

"Toolkit: Sample Job Description for a Digital Workplace Leader"

**Evidence**

This report is based on Gartner’s consumer primary research, Gartner-published research and research community output, published industry statistics, and secondary research.
Note 1 Definition of Neurobusiness

Neurobusiness is the capability of applying insights from neuroscience, behavioral science and psychology to improve business outcomes (from "Hype Cycle for Digital Workplace, 2014").
GARTNER HEADQUARTERS

Corporate Headquarters
56 Top Gallant Road
Stamford, CT 06902-7700
USA
+1 203 964 0096

Regional Headquarters
AUSTRALIA
BRAZIL
JAPAN
UNITED KINGDOM

For a complete list of worldwide locations,
visit http://www.gartner.com/technology/about.jsp