Over the past several decades, we’ve moved from data-center models (where everything is inside the four walls of the enterprise), to PCs that push IT out to departments, to the Internet and Web, which expose information outside of the enterprise. Now, we’re moving to push more data outside of the enterprise and offering greater access to that data. With this move, an array of emerging technologies is bringing both technical and cultural change.

All of these items (the new technology, devices, mindset, and so on) are outside IT’s traditional “comfort zone,” but CIOs are uniquely positioned to own these challenges and the change management necessary to move their enterprises forward. Here, we present the top 11 pervasive technologies and trends for 2013, along with some down-stream implications to consider as these culture-wide changes start affecting your enterprise.

1. Mobility and BYOD
The number-one trend affecting today’s enterprise is the blurring of personal and work-related devices. Consumers and employees have introduced their personal devices to the enterprise, much as they did with the adoption of the Internet. The onslaught of new personal devices is starting to shape corporate culture and IT departments.

Some have said that the ancient Vikings were successful because they were the first to see water as a highway and not a defensive barrier. With a similar mindset, CIOs must invert their reactions to “bring your own device” (BYOD) policies. Instead of fighting such policies, we must find the best way to use personal devices while still securing the company’s data and intellectual property.

2. The Personal Cloud
Beyond BYOD is BYOC—bring your own cloud. This is the ever-expanding and risky personal cloud. In its narrowest definition, the personal cloud is where your employees will store work-related files and data. The broader definition is that this is where employees will begin transacting business in ways that are invisible to the enterprise.

In the government space, such actions would be illegal.

For e-discovery purposes, organizations should be aware of any channels and data sources used to transact business and perform the required (legal) activities for each. To manage business activities, these data stores and channels must be included in the enterprise architecture to ensure awareness, uniformity, and consistency for customers.

Why is the personal cloud ranked higher than the public cloud (number nine)? Because it poses more risks and will ultimately become more pervasive. Using the personal cloud, employees and visitors (welcome or otherwise) can expose information on their own cloud faster and more broadly than ever before.

One of the more interesting challenges will be the control of intellectual property and trade secrets that might be inadvertently exposed through personal clouds.

3. Mobile Apps and HTML5
After reading the first two items, you might already be thinking... (continued on p. 62)
about how you can create corporate-grown apps to leverage new devices and control what ends up on the cloud (on purpose or otherwise). Although HTML5 still has some deficiencies and is often decried in the press, most criticism comes from game developers—not corporate apps developers. It’s too early to predict victory or demise for HTML5, but many IT shops have immersed themselves in exploring HTML5 and appear to be having some success and discovering challenges, too.

HTML5’s survival might be driven more by digital rights management and platform-specific lockdown (as with iOS and Android) than by the long-term usefulness of the language and standard. In the short term, avoiding HTML5 and developing applications for specific devices appear to be the best choice (in terms of available expertise, system performance, and so on). This slow adoption of HTML5 will then drive modification of the HTML5 standard before broader adoption can take place. So, while building mobile apps, understand the two available paths: device lock-in, or future rework as the standards evolve.

4. Big Data

Depending on who you ask, “big data” means everything from managing all of your existing data to harvesting the broad array of loosely couple data in the cloud and merging it with your current environment. Luckily, the predominate definition seems to be that big data comprises datasets that have become too large to handle with the traditional or given computing environment (that is, big data deals with large growth rates and volumes of data and the need to store, analyze, and interpret such data).

Many firms are buying more storage, processing hardware, and advanced analytical tools, but why? Having a basement full of stuff doesn’t make it meaningful. Many organizations are capturing too much information and keeping it around too long. They need to analyze the data they already have—valuable information is likely hidden in that data base. So, thin down—not instead of beefing up your environment but as part of your overall big data strategy.

5. Social Media

So much ink has been spilled on this topic (including our own—see the Nov./Dec. 2012 issue of IT Pro for some great articles on the use of social media). Having said that, many enterprises are behind when it comes to exploiting social-media opportunities. Too many firms are still struggling with their social-media policies and presence and have yet to engage in a meaningful dialog with the outer world.

As firms eventually move into the social-media world, engaging customers and using the information available to them on social sites, they must sufficiently staff these teams (in terms of both headcount and skills) and fund them to maximize social media’s value. It will likely be 2014 before many firms begin extracting meaningful information and viewing social media as a regular, steady-state part of their enterprise.

6. Corporate App Stores

If you merge the first three items (BYOD, BYOC, and mobile apps), it becomes clear that organizations will need to prepare for the development of new apps for the variety of devices that will exist in the evolving cloud-based world. The challenge here won’t just be writing the new apps—it will also be about their deployment, upkeep, and security and about user-feedback-led product management and rapid response (regardless of whether your apps face internal staff, external partners, or external customers).

Many organizations still treat app development and deployment as a side job for one developer or for a small group of developers inside a team for internal applications. This organization and governance model is doomed to fail. As a CIO, you need a strong team of developers who understand the audience and mission and who are proactive and reactive in meeting the needs of the BYOD/BYOC users while still following the overarching IT strategy and architecture. If all of these parts aren’t working together, start by changing the structure of your team and realigning goals to get you moving in the right direction.

7. In-Memory Computing

If you’re not an SAP shop, then you probably heard of “in-memory computing” through the New York Times article first published in January 2012. Without going into the SAP-specific approach, the general premise is that computing from memory (particularly with large datasets) is extremely efficient, because you’re running at CPU speeds—not at the slower bus or even slower device “seek times.”

However, while in-memory computing is useful (and safe) for reporting, transactional systems using in-memory techniques require the utmost control of memory address space, along with a simultaneous get/put to disk and memory to ensure recovery in the event of failures. In the coming years, this approach will gain popularity as a method for managing big data, so CIOs should familiarize themselves with the techniques, advantages, risks, costs, and players in the in-memory computing space.
**8. Actionable Analytics**

It’s easy to create an unending array of “bubble gum for the brain” questions to lob at your analytics team, and they can spend untold amounts of money chasing down answers with varying degrees of precision and certainty. But, for the sake of argument, let’s assume they answer every question with perfect precision. What are you going to do with the answers? Are you prepared to take what you learn and create an action item with an owner, a due date, a measure of success, and closed-loop feedback for improvement? Not if you’re like most IT shops.

Before you spend tons of money on more analytics, analyze your prior work and see what was done with the results presented. Going forward, only tackle questions that will result in an actionable outcome. With the zero-sum game most IT teams are facing when it comes to resources, more efficient investments are needed to meet expected budget targets and business outcomes.

**9. Hybrid IT (Public Cloud)**

You’re probably surprised to see this pushed so far down the list (given the amount of money you’re spending on cloud capability). The public cloud has received a lot of attention, and many firms are using it to varying degrees. Most firms have already replayed the conversations performed during outsourcing (asking, “Is this core to our business?” and “Are there legal reasons to keep it in-house?”). The bigger risk now isn’t whether you should move some portion of your environment to the cloud but whether you’re prepared to continuously monitor and reexamine the move’s reasons, effects, risks, and returns.

The take-away on this item is that you need to organize an inventory and regular review of your cloud footprint and be prepared to adapt when solutions don’t meet your stated criteria (pushing more to the cloud or bringing things back in-house).

**10. Video and Voice Telepresence**

This is one of the most often cited and least applied “winners” for corporate productivity. Telepresence isn’t simply installing webcams on laptops—it’s about improving collaboration and productivity. If you’re only seeking to reduce travel expenses, you’ve aimed too low.

The total solution includes creating rooms dedicated to video conferencing and managing the norms and etiquette to enhance collaboration. Critical components include establishing core hours for teams (particularly for global organizations), reinforcing compact agendas with clear goals, ensuring correct attendees and participation, efficiently managing the clock, documenting outcomes and action items, and promoting successful outcomes. When done well, “travel savings” are trivial compared to the increase in productivity and effectiveness of project teams.

**11. Merging Consumption and Creation Devices**

Although we view many of today’s mobile computing devices as a challenge, we should recognize that we still treat them mostly as a “reader” to the user. We “consume” information with our smartphones and tablets, and we do some level of “transactions.” In the near future, more organizations will find ways to employ these devices to capture and create information for the enterprise. This future state will alter the way we see mobile app development and will dramatically change the mission, staffing, and role of IT in the enterprise.

Regardless of the size or complexity of your organization, you will be addressing one or more of the these items in your 2013 budget, and you’ll certainly face most of them in the coming years. Budget some time each week to apply more research to this list and discover how you can apply these trends and technology to your enterprise.

**Reference**


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