Bigger, better, faster—for more than a century we have been driving toward greater efficiency by creating routine or automated processes that cut time, costs, or both.

While this single-minded focus has spurred continual growth, it has also blinded society to where the true value lies. Moving forward, perfect processes will not be of paramount importance. Future progress and prosperity may well hinge on the ability of our organizations and institutions to connect the right people with the right ideas at the right time.

“Our use of technology has sought to minimize the role of people. Now it is time to create more balance by accessing and leveraging the practices and knowledge that only people can provide,” observes John Seely Brown, the former chief scientist of Xerox Corp. and co-author of the landmark business book *The Only Sustainable Edge: Why Business Strategy Depends on Productive Friction and Dynamic Specialization*.

In contrast to previous generations of hardware and software that focused on automating processes—effectively forcing us to adopt the workflows of the machines we operate—a new generation of technology is emerging that will put people back in control. Clearly, so-called social software, which includes collaborative workspaces, blogs, and wikis and allows anyone to update and edit webpages instantly and democratically, will continue to be part of the solution. Indeed, this breed of software is now developing much more robust capabilities to enable individuals, organizations, and institutions to connect with each other.

However, it is the rapid advance of the mobile internet and the vast array of devices, applications, and content types that have accompanied its meteoric rise that allow us to connect in new ways and push our collective abilities in new directions.

Indeed, advances in communications and computing technologies, the advent of the mobile internet, and the proliferation of advanced high-speed networks and devices are producing a new order in business collaboration, communication, and productivity. The global village envisaged by Buckminster Fuller is emerging; a communication- and information-centric environment where individuals work in concert with technology to streamline and enhance the capture and flow of an organization’s data, information, and knowledge and deliver them to individuals and teams engaged globally in accomplishing their specific goals.

**FLUID, FLEXIBLE CONTENT**

Against this backdrop, the popular term “mobile enterprise” cannot fully capture the transformation taking place in companies around the globe. For Martin Frid-Nielsen, CEO of Soonr, a company offering mobile cloud services, it’s not about enterprises embracing mobility: It’s about them absorbing mobility into every aspect of what they do. In the not-so-distant future, “The concept of mobility will be a given for every company everywhere,” Frid-Nielsen observes. Right now, the focus for companies is on cost savings and efficiency improvements associated with distributed workforces, permeable corporate boundaries, and the advance of personal mobile devices (ranging from smartphones and iPhones to laptops and notebooks). However, mobility will soon “be core to how we work and live, and connected will be our new default state.”

That day could arrive sooner than we think. The worldwide economic slowdown has pushed companies to rethink investments in real estate, reduce full-time staff, and revamp the tools and technologies they offer to provide more people more fluid access to...
information. “Companies are shutting down offices and asking their employees or freelancers to work out of their homes and hold meetings in Starbucks,” Frid-Nielsen, says. “The enterprise is decentralized, the workforce is fluid, and so is the data.”

Soonr’s solution enables this flexibility by providing users with an automatic and continuous way to back up files remotely to the cloud once they have marked the ones they wish to save. Soonr’s file structure allows every file or folder uploaded to be copied, shared, commented on, and searched. From documents to videos, users can access and amend their files on-the-fly using the software installed on their PCs, laptops, or mobile devices, removing the need to download web-based tools. Soonr is available from any device using a web browser as well as from a recently launched iPhone app.

**Extended Enterprise Productivity**

Determined to dismantle the barriers and restrictions that limit the concept of the connected company and hold back the development of the real-time enterprise, more organizations are demanding mobile access to the data and processes that allow them to transform how they interact with their customers, partners, suppliers, shareholders, and stakeholders, as well as the information that is their lifeblood.

Sensing a business opportunity, many vendors have introduced tools and technologies that significantly raise the value of handheld mobile devices by enabling companies to use them to deliver accurate, complete, and (in some cases) mission-critical data to people in the format they need, where and when they need it most.

One company helping organizations harness the business advantages of mobile information is EMC Corp., a provider of information infrastructure solutions. To this end it has released CenterStage Mobile as a native BlackBerry application, extending the company’s innovative Web 2.0 environment, which provides smart workspaces for business teams and communities of interest to people on the move. In a nutshell, CenterStage delivers the interactive experiences together with the associated systems’ resources and web services for accessing and managing collaborative content within the framework of an enterprise information infrastructure.

“In this environment CenterStage ensures that people can access, fetch, create, and use the wide range of content that supports their team-oriented and community-related activities,” observes Lance Shaw, group product marketing manager for knowledge worker applications at EMC. The objective used to be about extending information to the edges of the enterprise, but it’s increasingly about leveraging enterprise content management (ECM) to “funnel the ideas, discussions and discoveries [people make] back into the groups and communities with the aim of keeping them engaged.”

To keep everyone on the same page, CenterStage organizes content around work, not the other way around. It includes capabilities such as social tagging, syndication, visualization, and social networking. It also combines federated search with guided navigation, allowing people to search for content stored in multiple repositories and to retrieve results within a workspace where they can organize them by familiar categories. The mobile application has placed extra emphasis on helping people syndicate and track relevant information and events, delivering automatic alerts to mobile devices when content is updated or changed.

Initially, Shaw says, mobile applications will focus more on enabling flexible and fluid data access than on extending the
range of social media tools such as microblogging and ratings to workers on the move. “It’s a phased-in approach,” and it’s one that keeps pace with organizations as they begin to address the requirements for collaboration and communication that knows no boundaries.

However, Shaw adds that “collaboration is just the tip of the iceberg.” The next wave of mobility applications won’t just extend the enterprise; they will enhance it, offering mobile access to tools and technologies that promise us new ways of working together to create new content types. “We’ll see a lot more collaboration around rich media beginning with video clips and audio feeds and evolving into entirely new kinds of content over time,” Shaw says. “Sharing will occur more and it will be about sharing to the right screen—a laptop, a mobile device, or even a public display—with the systems in place to support this.”

GO WITH THE FLOW
The avalanche of content and the dynamic nature of the always-on, connected company highlight our legitimate concerns about security. Wireless devices provide people with information they need anytime, anywhere. But there is a downside. These small and highly portable devices are easily misplaced or lost. Many feature removable memory, and the advance of the smartphone means many devices have their own IP addresses, making them vulnerable to the same types of attacks we know on the PC.

Before deploying mobile technology, organizations must be confident that those threats have been addressed and that their data is secure. However, relying on authentication systems to ensure that only users with valid passwords, IDs, and related identifiers can access a system is a method that doesn’t always keep pace with the rate of change within and around the extended enterprise, where workgroups connect for specific tasks and then disperse when the project is done.

Ironically, the more open and collaborative a company is, the greater the need to lock down access to valuable data. But this Draconian practice flies in the face of collaboration, Web 2.0, and the business imperative to let data—and ideas—flow freely.

The solution to this dilemma may be enterprise rights management (ERM) solutions that protect the information wherever it travels rather than control who has access to it.

This is the focus of Liquid Machines, a provider of ERM solutions and software designed to persistently control access to and usage of electronic information, regardless of where it exists, without changing the way users work. “It’s all about protecting the data while, at the same time, enabling the enterprise to encourage people to share the data freely,” observes Ed Gaudet, Liquid Machines’ SVP of corporate development and marketing.

“This is possible because the data, not where it is or where it goes, is persistently protected, whether the data is in the cloud, on a USB, or stored in a mobile device.”

Put simply, access to and usage of sensitive and critical information is ensured without interrupting the collaborative and innovative environment that the extended, always-on enterprise must encourage. No matter if the data is emailed, placed on a portable storage device, or stored on an iPod, the files remain encrypted and the usage rights remain enforced. As files are added to or modified in a protected file share, policies are automatically applied. In addition to access and usage controls, Liquid Machines also collects a digital audit trail of information usage.

Liquid Machines recently unveiled a major release of its Liquid Machines Gateway with advanced features that allow persistent protection of attachments saved in more than 400 different file formats, including Adobe Reader, FrameMaker, Lotus AMI Pro, WordPerfect, StarOffice, WordStar,
But there are tasks such as the business ecosystem and across the free flow of data and ideas across the globe. But there are tasks such as encouraging communication, collaboration, and the free flow of data and ideas across the business ecosystem and across the globe. But there are tasks such as technologies, platforms, and devices to encourage communication, collaboration, and the free flow of data and ideas across the globe. But there are tasks such as the business ecosystem and across the free flow of data and ideas across

THE IMMERSIVE INTERNET

The enterprise is expanding in all directions, harnessing all manner of tools, technologies, platforms, and devices to encourage communication, collaboration, and the free flow of data and ideas across the business ecosystem and across the globe. But there are tasks such as learning, training, and prototyping where people need the support that only comes with face time.

This is where the “immersive internet,” a collection of emerging technologies that have their roots in the gaming and virtual worlds, comes in. Properly implemented, these technologies promise to increase and enhance collaboration, allowing organizations to connect more deeply with customers, partners, suppliers, shareholders, and stakeholders. In addition, advancements in personal computing power and high-bandwidth internet access mean that many people can participate in these 3D, interactive, multiuser environments. Even handheld mobile devices are starting to integrate with, as a well as a directly support, the immersive internet.

Real-Time Visibility

While companies are rethinking their business processes and procedures to erase the boundaries between fixed and mobile, they may soon be challenged to overcome the barriers between object and human.

The spread of internet and wireless technologies, combined with the availability of low-cost embedded microprocessors and sensors, is revolutionizing the workplace, allowing an increasing number of business processes to take place without human intervention.

But it’s not just about enabling communication between machines, aptly referred to as machine-to-machine (M2M) communications. It’s about finding new ways to join in the conversation between technologies, including wireless modules and “smart” RFID tags that track every item to gain real-time visibility into its key business processes.

To this end, businesses are installing M2M technology in containers for tracking, in homes for security, and in utility meters for remote reading. As a result of this increased activity, M2M as an industry exited the introductory stage of its life cycle in 2006–2007 and is now entering a growth phase. According to a recent report from Juniper Research Ltd., the total world market for M2M will increase from $20 billion in 2006 to more than $74 billion in 2011. This assumes an annual growth rate of 30% and the rollout of 3G and other forms of wireless transmission such as Wi-Fi to supplement 2G networks.

While much of the excitement centers on schemes to collect valuable revenues from services around fleet management, vending machines, payment terminals, alarm systems, outdoor advertising, and automotive telematics, M2M is not only a business-to-business play.

Harbor Research has described the effects of M2M networking as “Pervasive Intelligence”—allowing businesses to make immediate decisions based on accurate, real-time data from near and far-flung portions of their infrastructures.

“However, the market is broadening to also include the use of wireless networks to connect specialized devices in a variety of new businesses, from retail outlets and fast-food restaurants to major production and business facilities,” notes Alex Brisbourne, president and COO of KORE Telematics, an independent wireless services provider specializing in M2M communications.

Indeed, many companies are investigating ways to use always-aware sensors and networks to enable more creative mobile marketing approaches and target mobile users with advertising linked to their location or buying intent, such as presenting a special offer in a supermarket aisle or streaming a music clip to consumers in line for a newly released CD. “M2M lays the groundwork for an ‘Internet of Things’ and paves the way for enterprises to collect and use actionable data to improve the minute-by-minute processes of the business,” Brisbourne explains.

Wireless sensing and tracking technology is real and is driving innovation across numerous sectors, improving—and even helping—organizations reinvent a wide range of business processes, business intelligence strategies, and CRM systems. However, the impressive progress in M2M will ultimately turn up the pressure on companies to listen in on the conversation and get important data out to the people who need it where and when they need it most.
For Erica Driver, co-founder and principal at ThinkBalm, a company offering independent IT industry analysis and strategic advisory services to technology marketers and immersive internet advocates, the outlook for virtual worlds and 3D business applications is positive. Driver further expects adoption to “progress rapidly toward mainstream during the next 5 years,” driven by factors including the rise of social networking, the spread of video game culture, and the decision by large business technology vendors to jump into the fray.

A ThinkBalm survey of 66 immersive internet practitioners shows early investments in these emerging technologies are yielding business value. More than 40% of those surveyed saw a positive economic benefit from investments in immersive technologies in 2008 and 1Q 2009, and more than half expect to obtain a positive total economic benefit in 2009.

Looking to the future, more than 36% said their organizations will definitely expand their investments in 2009 and 2010, and another 38% indicated that they might expand their investment.

The real driver is the realization that the immersive internet “allows us to do things we can’t do in the physical world and can’t do (at least not as well) using other forms of communication and collaboration technology,” Driver says.

For example, people can meet in virtual spaces to create 3D mind maps and flowcharts and to brainstorm. “In a physical world, we can collaboratively create 2D mind maps or flowcharts on a whiteboard, but you can only fit so many people in front of a 10’ wall. And you can look at a 2D mind map or flowchart from only one angle: the front.” The immersive internet also allows us to see and do the impossible. From observing air and energy flow to experiencing a model of the human heart, anything is possible. “We can travel through subatomic particles or fly about the earth, all in tandem with other people,” Driver says.

A surprise even to Driver is the way the immersive internet impacts how we view, store, and recall data. Her regular encounters with members of the ThinkBalm Innovation Community, a collaborative community in Second Life dedicated to propelling the enterprise use of the immersive internet forward, reveal that people relate better to a visual representation of data.

In fact, she is finding that she and other community members are returning to the space they call ThinkBalm Island to access data such as spreadsheets, charts, and models rather than look for files on their PCs or laptops. The reason: collaborative, 3D data visualization is more engaging.

People can collaboratively view, drill into, and manipulate the data as well as discuss it with others. “People gain a quicker, more complete understanding of the data by literally walking through it,” Driver says.

It’s easy to imagine a day when virtual worlds move from replacing meetings and conferences (the most common use cases) to take the place of central data repositories, creating huge stores of visual information housed in collaborative spaces to nourish creativity and encourage our shared—albeit virtual—experiences.

The next round of innovation must improve the tools we need to create, manage, organize, analyze, discuss, and share content and experiences. Moreover, these new environments must enable us to work in multiple locations (even dimensions) with multiple devices at any time. While traditional office spaces become a luxury and dream teams become ever more dispersed, we can equip our enterprises with an emerging set of applications that not only help employees work effectively anywhere, but that have the potential to empower next-generation collaborative environments and even transform the way we do business.