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Enterprise Collaboration for the Twenty-first Century

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By Paul Gillin

Today's globalized, hyper-competitive economy provides no room for complacency. Market leadership is fleeting in a world in which geographical and technological barriers are quickly dissolving. No company has the luxury of resting on its past accomplishments, and no enterprise can afford to run on automatic. An unpredictable economic environment has ended business-as-usual management practices and is forcing organizations to find new ways to reduce costs without impacting operational efficiency. The global economic downturn has intensified the need for both business and IT to make the most out of their existing resources.

New information technology offers managers the flexibility to adapt to this new nonstop, global business environment. Workforces are becoming more distributed and global. About 30 million Americans—or one-fifth of the nation's workforce—work outside the office on a regular basis. High-speed Internet service permits businesses to build truly global networks of employees and contractors so that work can “follow the sun.”

As geographic and technology boundaries between organizations fall away, the watchword for success is “differentiation.” Enterprises must identify their unique competitive advantage and work with customers, traditional and new partners, and even past competitors to deliver uniquely differentiated products and services.

This white paper will explore the ways in which collaborative technologies can deliver the heightened levels of internal and external cooperation needed to compete in today's global economy and will examine some of the challenges that can prevent enterprise collaboration initiatives from delivering increased productivity and innovation. It will examine how Oracle's new collaboration system, Oracle Beehive, tackles those challenges to provide a new richness of enterprise collaboration for twenty-first-century organizations.

A New Organization

As the world flattens around organizations, the dynamics within them are also changing. The market's demand for efficiency is forcing the compression of business cycles,

layers of management, and product and service innovation. The division between work and personal hours is blurring as office professionals tap out e-mails on their mobile devices while on the beach or at the symphony. About 80 percent of Americans work 40 hours or more each week, according to the International Labor Organization (ILO). Demographic trends are creating a new urgency for creating a more collaborative workplace. The Baby Boom generation is graying—more than 77 million Baby Boomers will reach retirement age over the next 20 years. As a result, we are in the process of completing the largest inter-generational transfer of knowledge in human history. Effective collaboration tools are needed to aid this departing workforce in transferring their skills and experience to a new generation of workers.

The Collaboration Mandate

Today's networked, hyper-competitive business environment demands new approaches to collaboration. In order to stay in tune with their markets and respond quickly to changes, organizations need to support efficient enterprise collaboration that connects employees, contractors, managers, supply chain and sales channel partners, customers, constituents and government agencies.

The need for collaboration will only intensify as more people in the workforce begin using public and consumer social-networking sites and as more Internet-savvy people join the workforce, bringing with them new expectations for how organizations should communicate and share information.

As the world's largest enterprise software company, Oracle is very aware of these market forces. In response, Oracle has created Oracle Beehive, the only unified collaboration system built from the ground up for the needs of the modern enterprise. Oracle Beehive incorporates the latest standards, technologies and architectural principles, and it improves user productivity while dramatically decreasing complexity and administrative overhead.

Let's next look at the factors that have contributed to today's fragmented collaborative infrastructure and how Oracle Beehive's unified approach offers a simpler and more productive alternative to users and administrators.

Collaboration Tools: A Disjointed History

For the purposes of this report, collaboration software is defined as tools that enable individuals to work together toward common goals. Popular examples of collaboration software include e-mail, instant messaging, online whiteboards, threaded discussion groups, shared document repositories and web-based virtual workspaces.

Technology vendors have been attempting to use software to improve collaboration since mainframe office suites dating from the early 1970s and early e-mail-based tools introduced more than 25 years ago. Discussion forums were one of the earliest forms of online collaboration, and they continue to be widely used for technical support as well as informal conversation. In the 1980s, groupware products were introduced that targeted small groups of workers collaborating in relatively simple and predictable ways.

Over the last few years, a wave of new technologies has emerged under the category of Web 2.0. Tools like blogs, wikis and social networks are proliferating in the consumer market and increasingly are being adapted to the unique needs of a modern enterprise. These tools offer richer interactions across less structured communities and faster and more flexible sharing of a variety of media. Many early Web 2.0 tools were distributed online or as public domain freeware, adding to the already crowded and confusing patchwork of available collaboration technologies.

Decades of evolution have yielded great innovation in collaboration, but the largely unplanned and uncoordinated deployment of a variety of specialized collaboration tools has also resulted in complex, fragmented and fragile IT environments within many enterprises. Many large organizations have assembled collections of point products over the years, each of which addresses a problem in a unique way using a unique combination of technologies. Many organizations today find themselves locked into outdated or proprietary collaboration systems whose hard-wired approach limits

process and cultural innovation. Because extracting these products wholesale from an IT infrastructure can be expensive and potentially disruptive, many organizations have tried to make do. However, the increasing pressure to improve information-worker productivity, coupled with the need to contain IT costs, has led to a growing need for an incremental approach to modernizing enterprise collaboration. This type of approach requires a flexible architecture that offers an immediate improvement in the user experience without necessitating a sudden abandonment of existing systems.

Towers of Babel

Many of today's incompatibility problems among collaboration systems have their roots in early stand-alone collaboration packages constructed on customized file systems and tied to proprietary communications networks. In the days before standardized development services and toolkits, vendors had to develop their own ways to manage critical elements like storage, communications and identity management. These systems treated their information and processes as distinct from other enterprise applications and in many cases failed to evolve their underlying platform as more functional and flexible IT technologies became prevalent in other areas. For many years, collaboration tools were designed to provide new rather than improved services; even the standards that were developed for existing tools did not address the underlying limitations of popular tools. As a consequence, many enterprises have accumulated a mish-mash of isolated, parallel collaboration tools that do not talk with each other or with any of the standardized applications like ERP and CRM that are now at the core of modern IT operations.

Over time, the legacy of aging collaboration systems has become a seriously limiting factor on the ability of IT organizations to adapt to changing business requirements. Many IT managers may find themselves supporting a half-dozen different collaboration tools based on a seemingly random selection of file systems, user directories, databases and administrative consoles. The potential results, detailed in Table A on the following page, are tremendously inefficient in terms of both required system capacity and redundant manual processes. Supporting everyday events like employee onboarding or internal transfers can require rights being

Table A

Integration and administrative problems posed by legacy applications built in isolation.

Problem Area	Problem	Impact
User Interface	As result of legacy interfaces designed and optimized for each application, users are forced to learn multiple UIs.	<ul style="list-style-type: none"> • Higher training costs • Lower user productivity • “Cut-and-paste” integration • Higher risk of error
Database	Legacy database integration can be difficult to impossible, and as a result, some older systems may go unsupported.	<ul style="list-style-type: none"> • Partial to complete data incompatibility • Higher administrative costs • Unnecessary license fees
File System	Legacy applications often use proprietary file formats. Operating system incompatibility compounds the problem.	<ul style="list-style-type: none"> • Partial to complete data incompatibility • Higher administrative costs • Unnecessary license fees
Directory	Because legacy directory synchronization is often difficult and sometimes impossible, one user identity may exist in many directories.	<ul style="list-style-type: none"> • Risk of error and omission • Higher administrative costs • Higher risk of user error
Network	Applications may ride on top of outdated, proprietary networks. Older systems may be unsupported.	<ul style="list-style-type: none"> • Higher administrative, infrastructure costs • Higher license fees • Performance bottlenecks

changed many times, using a different procedure in each application. The process is not only time-consuming but error-prone. Consistent policy enforcement, the backbone of many regulatory programs, becomes difficult, if not impossible. And sensitive information must be protected in many different locations—each of which may present its own vulnerabilities to internal and external threats.

Productivity Drain

Although it is difficult to overstate the pain involved in administering an aging collaboration infrastructure, from a business point of view the bigger cost of an uncoordinated collaboration environment is the impact on user productivity. These productivity concerns include:

Slowed or flawed decision making—Duplicate information scattered across multiple locations increases the chance that business decisions will be made based on outdated or inaccurate information. Conflicting versions of information can be hard to reconcile and can stall time-sensitive processes.

Inability to support new business rules—

Collaboration needs to function in a constantly shifting environment. When collaboration tools cannot quickly

adapt to new business processes, user communities or regulatory requirements, the burden falls on users to manually implement new procedures until IT can craft custom solutions.

Lack of integration with structured processes—

Collaboration tools are typically deployed without thought about where the input information comes from or where the work products need to be placed back into critical business applications. Some of the most intensive collaboration processes involve information workers who need to take information out of and enter data back into enterprise applications like HR, CRM and sales-automation software. Lack of integration once again leaves the workload on individual workers or IT to cobble together one-off solutions.

Poor in-process visibility—Uncoordinated collaboration systems make it easy for things to get lost. Critical decisions and processes are delayed when communication and information fall through the cracks. Auditing and tracking performance become problematic when every status report needs to be assembled across disparate systems with different ways of recording activity.

User burnout—Users quickly become disillusioned when systems slow down for no apparent reason or

when they are forced to migrate away from familiar tools for no obvious benefit. User adoption, which is crucial to the success of any project, suffers when the overall collaboration experience is fragmented, and an aging and fragile infrastructure degrades service levels and responsiveness.

Loss of trust—As the information and processes executed through collaboration tools become more important and more sensitive, organizations have become increasingly aware of security and privacy concerns. The risk of data loss or inadvertent exposure of sensitive or private information increases with the complexity and inconsistency of the collaboration infrastructure. Outdated systems contain known vulnerabilities, and customized integrations are often built without careful consideration of data security. The productivity benefits of any collaboration system are negated when people don't use it. It takes only a few incidents to erode a community's trust in a collaboration system's ability to protect critical information.

Creating a New Foundation

The increasing importance of collaboration in business performance is driving change both in technology and in business culture. As the largest enterprise software company in the world, Oracle has a unique understanding of the needs of an innovative, collaborative culture. Its next-generation solution, Oracle Beehive, provides an open architecture that can be quickly deployed alongside existing legacy collaboration systems to add immediate user benefits and improved systems management. The information and communications managed by Oracle Beehive can be accessed through familiar end-user tools already on employees' desktops and uses industry standards to integrate into standardized or customized workflows.

Although Oracle Beehive provides a foundation for advancing the technology of collaboration, it is also important to consider the organizational characteristics of collaborative cultures. In a recent report, Forrester Research outlined the critical success factors for these organizations¹:

Management support and user buy-in are obtained.

Collaboration software succeeds when management

¹ "What It Takes to Foster a Culture of Collaboration," Forrester Research Inc., January 2009.

endorses its use. Successful organizations use the carrot-and-stick approach. Employees are required to use the tools, but the tools themselves have clear and compelling value. Managers then follow through by using the tools themselves.

Participation is encouraged and rewarded. An investment in collaboration software is an investment in the knowledge capital of the organization. Management recognizes and publicly rewards active users in order to promote acceptance by employees and other constituents.

Managers and users view collaboration as an opportunity, not a threat. Some employees may regard a collaboration initiative as a threat to their job security because it encourages them to pass along their expertise to others. In successful collaborative organizations, managers make it clear that participation enhances career success and that sharing will be rewarded.

Focus on the most immediate problems. Complexity was a limitation of early solutions, which often required significant ramp-up times to achieve long-term goals of uncertain value. Successful companies introduce collaboration solutions gradually, starting with short-term problems and ramping up as users buy into the process.

Workers must change the way they work.

Collaboration demands a more resourceful approach to projects and problem-solving. Employees learn to include input from other departments as well as external experts. They expand the definition of their jobs to include these previously unreachable resources.

Ease of use and integration with daily routine are essential. One of the greatest weaknesses of legacy collaboration tools is that they are difficult to use and often require specialized training. Users should not need to be reminded to collaborate; the capability should be as intuitive as sending an e-mail. Effective collaboration software integrates with the inbox, the contact-management system and other applications that users already know.

Modernizing Collaboration

We have seen that supporting a portfolio of legacy collaboration solutions presents a significant challenge from both the user and the IT perspective. Still, the

prospect of migrating away from collaboration systems that may be decades old may be daunting.

Organizations seeking to modernize their collaboration infrastructures need to understand both the compelling benefits of the new solution and the roadmap for migrating at an acceptable cost and without unacceptable disruption.

Modern collaboration solutions begin with a flexible, scalable repository that can handle exploding volumes of information, new data types like video, and heightened requirements for security and regulatory compliance. Among the many benefits of this approach are the following:

Reduced duplication—The database serves as not only a common area for storing and indexing shared files but also a foundation for directory services, e-mail, calendars and user profiles. Workflow templates, standards documents and other critical guidelines are also stored in one place and shared as needed between collaborators. This minimizes confusion and the potentially damaging effects of erroneous information.

Oracle Beehive is based on the industry's most widely deployed and high-performance repository, the Oracle Database. All the elements of the collaborative process, including files, directories, identities, contacts, calendars and so on are maintained in the Oracle Database. Storage management and security are optimized, and duplication and redundancy are eliminated, as illustrated in Figure A on the next page.

Simplified administration—When user profiles and security credentials are stored in one place and shared among applications, the risk of error is greatly reduced. Updates need only be processed once. All participants in the collaboration have access to the latest information about each other. Contact lists are stored in one place and tailored to the needs of individual users through customized views. There is only one security profile and one set of authentication credentials.

Oracle Beehive provides a single console for managing users, policies and deployment options. Administrative complexity is reduced by an order of magnitude. Users benefit by having all the most recent information about

all their collaboration tools centralized in one accessible but secure system.

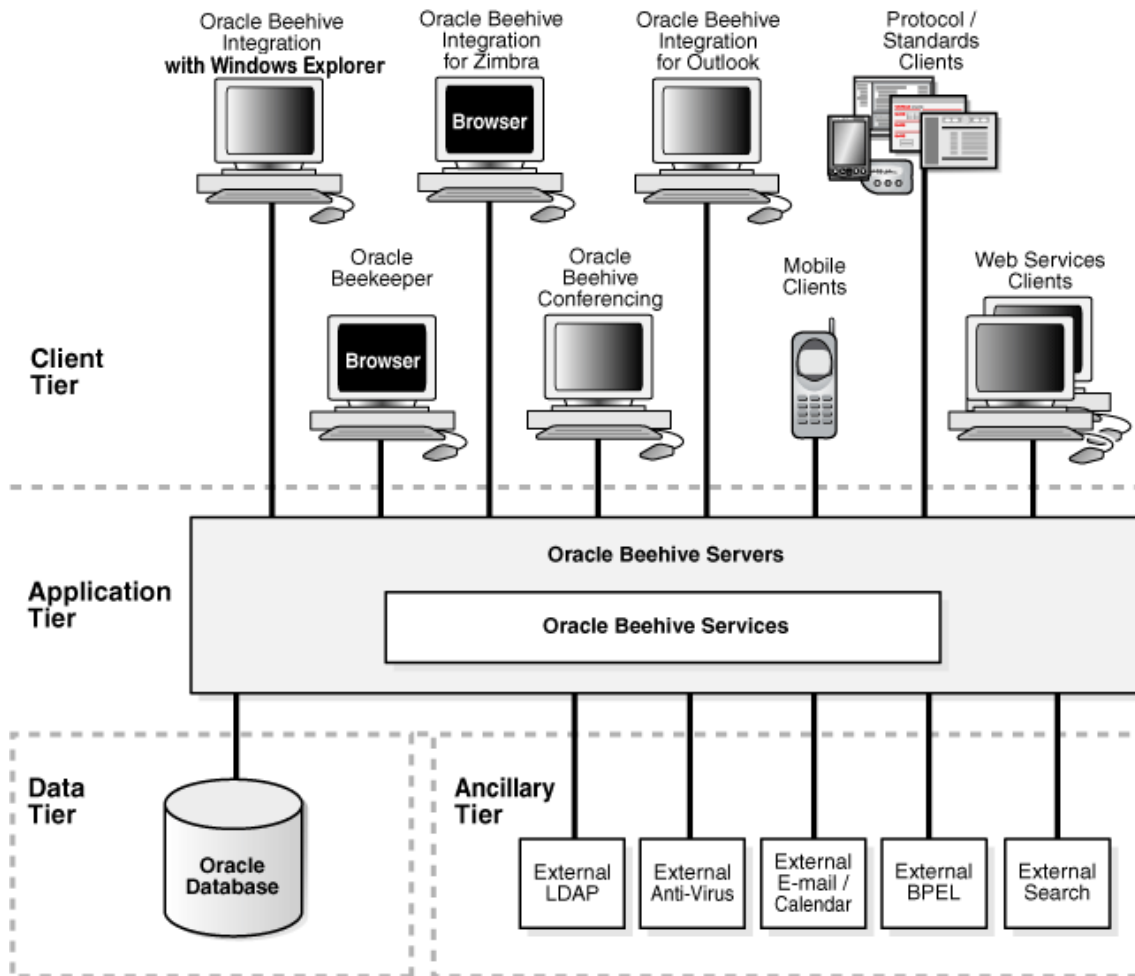
Elimination of busywork—Users don't want to be bothered by maintaining the same information in multiple places. For example, why should an employee need to maintain separate contact lists in their e-mail and instant messaging systems? Why does a document need to be stored multiple times in an e-mail, a team workspace and a calendar invite? When all data is stored in one place and referenced consistently across collaboration interfaces, it can easily be repurposed without generating redundant copies.

Security and compliance—Fewer logins and passwords mean fewer opportunities for systems being compromised. Not only is it easier to protect a unified repository, it is easier to apply and monitor policies. Regulators are requiring businesses to provide more complete records of activity and to respond in shorter periods of time. eDiscovery requests now require complete disclosure of e-mail, text and instant-message correspondence. It is cheaper and easier to meet these demands if all those records are in a single place.

Oracle Beehive is the first collaborative platform that enables a single set of policies to be applied across multiple forms of collaboration. For example, administrators can specify that after an e-mail has been read, it should be stored in an online archive for six months and then moved to off-line storage or deleted. Policies can also be applied to instant messages, voice recordings, discussion threads, revision histories and other forms of collaboration. For highly sensitive data, Oracle Beehive can utilize Oracle Information Rights Management to encrypt, track and audit documents even after they leave the Oracle Beehive system.

Support for multimedia content—Modern relational database management systems can accommodate all types of media. Users increasingly communicate through whatever means are most convenient and effective, including voice, video, images and screen-shares. These sessions may need to be captured for reference or for compliance reporting. By using keywords, tags and descriptions, these interactions can be stored, indexed and manipulated almost as flexibly as text.

Figure A



Oracle Beehive delivers a completely integrated collaboration system using the Oracle Database as its foundation.

Because it is built on a database foundation, Oracle Beehive is able to manage any kind of data within the context of a collaborative process. Users can store and connect multimedia files to calendars and web conferences as easily as they attach text documents to e-mails today.

Keys to a Successful Migration

As compelling as these benefits may seem, the threat of disruption to ongoing operations and the looming prospect of an expensive and risky migration may cause some organizations to hesitate in the modernization of their collaboration systems. These businesses must understand the principles that need to guide a successful migration to a modern collaboration system. These principles include:

Adherence to standards—Relevant collaboration standards include both open standards defined by industry bodies and de facto standards that are broadly accepted by the market. By basing an updated collaboration architecture on well-understood and widely accepted standards, organizations can avoid the traps of dead-end propriety technology.

Oracle Beehive has the broadest and deepest standards compliance of any collaboration system on the market. Oracle Beehive works with standard protocols such as WebDAV and FTP for document access, CalDAV for calendaring and scheduling, IMAP/SMTP for e-mail and XMPP for presence and instant messaging. Oracle Beehive is also compliant with leading mobile e-mail and data-synchronization standards, and it supports mobile

clients as diverse as Research in Motion's BlackBerry, Apple's iPhone and Microsoft Windows Mobile.

On the client interface side, Oracle Beehive supports e-mail clients such as Microsoft Outlook, Mozilla Thunderbird and Apple Mail, as well as the Zimbra webmail application. For process management, Oracle Beehive supports Oracle BPEL Process Manager as the default workflow engine. Its support of the widely adopted BPEL standard makes it possible for organizations to more easily integrate collaborative processes with packaged and customized applications.

Coexistence with existing systems—Most organizations simply cannot afford to drop their existing collaboration tools all at once and need to understand how they can deploy new capabilities in parallel with their current systems. Because collaboration has become so critical to operations, IT needs a roadmap for incremental migration that minimizes the risk of outages.

Oracle Beehive can not only coexist with existing client solutions like Microsoft Outlook but also add value to server-side tools like Microsoft Exchange. Oracle Beehive's flexible metadata model can manage objects from third-party systems and provide valuable information that spans e-mail, calendaring and real-time collaboration systems from different vendors. Oracle Beehive can also utilize investments in third-party infrastructure such as Microsoft Active Directory or LDAP servers.

Flexible and fast deployment—Collaboration systems need to be available via a delivery model that makes sense given each enterprise's unique requirements. It is vital that users have the same experience whether their IT group wants to install and run the system itself on premises or prefers third-party hosting or wants the convenience of an on-demand deployment. Given globalization and the rapid pace of mergers and acquisitions, many enterprises are realizing that their own requirements will vary by group and over time, and thus they are looking for a solution that can accommodate a variety of distinct configurations.

Oracle is a leader in flexible application deployment with vast experience in supporting the most complex deployments on premises and a commitment to

promoting the most advanced on-demand architectures. Oracle Beehive can be installed at the customer site; can be hosted in Oracle, partner or customer data centers; or can be licensed through a software-as-a-service model. Regardless of the deployment model or combination of models used, Oracle Beehive provides a reliable, secure and consistent user experience.

Driving Change from Above and Below

In relating the experiences of two successful adopters of modern collaboration technology, Forrester Research cited their holistic view of the transformation. The commitment to collaboration was clearly communicated by top management but implemented differently according to the needs and styles of each workforce. Early adopters were encouraged and their achievements promoted. Critics were enlisted to participate and suggest improvements to existing processes. The effectiveness of software tools was enhanced by changes to process workflow and sometimes even by modifications of the physical workplace. Experimentation was encouraged, and failure was accepted as part of the learning process. Management focused on driving process improvements rather than the technology itself. As a result, users took ownership of the change process and drove acceptance from the ground level.

As the prospects for an eventual global economic recovery take shape, successful organizations will leverage the process improvements implemented during difficult times to make their organizations more agile and competitive. Today's pressures offer an ideal opportunity for forward-looking enterprises to drive efficiency across a diverse and distributed workforce. By providing employees with a comprehensive, diverse but consistent set of collaboration tools, an organization can create a more effective and innovative enterprise.

Oracle Beehive is the first collaboration system that offers a unified user experience and fully leverages Oracle's highly scalable, secure and integrated technology framework. Its comprehensive support of open industry standards and coexistence with popular legacy collaboration tools make it an ideal solution for today. And Oracle Beehive's integrated, flexible and extensible design will make it an enabler of innovation for modern business leaders of the twenty-first century.

Oracle

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About the Author

Paul Gillin has chronicled the information technology revolution since the dawn of the PC era. He joined *Computerworld* as a staff writer in 1982 and served as senior software editor at *PC Week* and founding news editor at *Digital Review* before returning to *Computerworld* in 1987. In 1999, he became the sixth employee at a startup soon renamed TechTarget, where he engineered its transition into a leading source of original news and technical advice. He now operates his own firm, helping technology companies connect with their customers through quality content and innovative communications strategies.