Collaborative solutions
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The evolution of office work.

Part 2—IBM® Workplace™ activity-centric computing

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ON DEMAND BUSINESS™

Contents

Introduction

On Demand Business both requires and drives fundamental, systemic changes in the way businesses operate. These changes span the entire spectrum of business activity, from customer communication to supplier interaction, from component manufacture to strategic management. Their impact is felt from the minute-to-minute activities of each and every worker, right through to the myriad IT applications that run today's automated operations.

The focus of this series of papers is on the people who work on behalf of these businesses, and on the customers, suppliers and business partners who interact with them. We explore how the On Demand Business paradigm necessitates a deep-seated evolution—perhaps even a revolution—in their needs and behavior. It is to these people, their actions and interactions, that the IBM® Workplace™ approach speaks. As used throughout this paper, IBM Workplace refers both to the overall strategy to empower people to collaborate within their everyday work and to the product family including IBM Workplace, IBM Lotus® Notes® and IBM Lotus Domino®, and IBM WebSphere® Portal software.

Part 1 of this series examined the overall IBM Workplace strategy and its support for On Demand Business. There, we showed that the fundamental changes in business brought about by an On Demand Business approach also require a significant change in behavior for users. As the underlying business processes become adaptive, their users will also need to become more flexible and more reactive to change. As business processes are integrated from beginning to end of the value chain, users must be able to move between different parts of the process with ease.

Highlights

Unfortunately, many aspects of today's IT environment are more of a hindrance than a help to users in becoming productive and comfortable in this new adaptive world. The IBM Workplace vision has created a new paradigm for the end-user environment. It is called activity-centric computing and is the subject of this paper.

Our approach to the topic is via an extensive usage scenario that describes how a typical On Demand Business of the future will operate, and how one of its professional staff will be supported by an activity-centric computing environment. Many of the problems faced by this user will be quite familiar to any professional today. The scenario goes on to describe how today's problems will be solved by anticipated future product implementation of activity-centric computing.

We also examine how the foundations for activity-centric computing are being addressed in the IBM Workplace product set today. We show how this and the underlying concepts fit into the full scope of a compelling vision: the reinvention of office work in particular, and the redefinition of the broader world of work in general.

An On Demand Business is characterized by its flexibility to change and the end-to-end integration of its processes, both within its own organization and across enterprise boundaries with partners and customers.

Reinventing office work

An On Demand Business is characterized by its flexibility to change and the end-to-end integration of its processes, both within its own organization and across enterprise boundaries with partners and customers. These adaptive,

Highlights

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pervasive business processes will span the entire spectrum of end users' interactions with the activities of the business. As a consequence, and described in more detail in part 1 of this series, user roles and behavior will need to change:

1. *For many users, the scope of their interactions will become much broader. Voice communication, e-mail and instant messaging will expand to a wider audience and with increased frequency and urgency. Efficient management and use of these facilities will be a priority.*
2. *Users will interact with a broader range of business processes, applications, information and people. A new approach is required to structure and manage this expanding environment and give personal control to the users to drive engagement and productivity.*
3. *Due to the increased importance of process management, the need for seamless linkage within and between processes, and the widespread use of information outside the context in which it was first created, documents used in collaborative activities will require improved control and management.*
4. *Process change and flexibility require change and flexibility equally among users. Ongoing, on-the-job learning will be required for users, becoming a regular occurrence as processes change constantly to meet new business needs.*

The IBM Workplace vision introduces a new paradigm called activity-centric computing, which will be key to addressing these and related changes in user roles and behavior in the On Demand Business environment. The fundamental approach is to structure users' activities based on the actual business tasks they are performing, as opposed to the current approach, which is structured around IT applications and tools. In support of this, users will have personalized and distinct contexts within which specific tasks can be collected and controlled.

Highlights

This paper uses a scenario to show how office work in the future will be both very different from—but also surprisingly similar to—the way it is now.

Such contexts allow the user to draw together the people, information, tools and tasks needed to complete an activity. As a result, the user can focus in a personally controlled way on what must be done rather than how to do it.

To understand the meaning of this change in perspective and how the concepts of activities and contexts help, we will use a scenario that shows how office work in the future will be both very different from – but also surprisingly similar to – the way it is now.

A common office scenario—with a difference

Let's take a look at the future working environment of an archetypal empowered user in this new world of On Demand Business. Consider Martha, a manager working for Grapegrove, a large brokerage firm offering property and casualty insurance from a number of international insurance companies. Her role encompasses a wide variety of tasks, among which she must switch back and forth, often driven by high-priority interrupts.

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On a typical day, Martha begins by reviewing targets and results for the agents reporting to her, a commonplace business intelligence task. She runs the standard reports and begins to drill down into the out-of-line results. Two very similar teams are showing very different results. Martha begins an online discussion with the team leaders of the two groups, sharing performance results from the analysis over the electronic meeting.

Soon, she is interrupted by a call escalated from one of her agents. A client requires insurance coverage in circumstances that have not been encountered before. As Martha begins to handle this priority interrupt, the information,

Highlights

contacts and e-meeting details and log—the entire context of her previous task—are automatically saved for future reinstatement, together with an entry in her task list.

Before she can approve the business, Martha needs to consult with colleagues in Grapegrove and then search the policy databases of the more relevant insurance companies. Although she currently doesn't have access to all the databases she needs, the automated provisioning systems can recognize her current authorizations, grant her provisional, limited access to the systems, and download a missing search component to her desktop. The business is acceptable, and Martha moves seamlessly into the policy setup system—an operational system—automatically bringing across details of the customer and transaction needs previously gathered by the agent, as well as the product information she has just collected. Having successfully dealt with this task, Martha decides it should be written up in the online best practices manual for future reference. Recognizing that there's no time like the present, she immediately begins working on this.

The context of Martha's interrupted tasks are automatically preserved and linked to new entries in her task list.

However, before she can complete the work, an urgent message informs her that one of the insurance companies is about to introduce a new product the following week, and that she and her agents need immediate education to handle it. She signs up for an online briefing in order to assess the suitability of the education for her staff. The context of her previous task is again automatically preserved and linked to a new entry in her task list.

As she reviews the material, Martha becomes increasingly concerned about the suitability of some of the content. She joins the wiki provided by the education supplier and proposes some key changes to the course. Martha schedules a task for the following morning to revisit the wiki and check reaction to her suggestions. As she closes this task, the system informs Martha that both team leaders with whom she was working earlier are now at their desks and available to continue the saved task. Martha returns to her initial task for the day of reviewing agents' targets and results, which is soon interrupted

Highlights

by an instant message from the education provider. With the interrupt, she is presented with the opportunity to switch back to the context of the briefing. However, she chooses to defer the conversation with the education supplier, and the instant message is saved for future use. Returning to her review of agent performance, it isn't long before she's interrupted yet again…and so the day continues.

So, what's new…?

In this small vignette, we can see a number of features that most professional workers will instantly recognize. In particular, there's that constant and often disturbing switching from task to task, usually driven by events outside the user's control, but also initiated by the user in certain circumstances. Although these tasks often form part of larger processes, today's user must personally manage the information, contacts and status that must be carried between these tasks, even though she may only be dipping into them at irregular intervals over one or more days.

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Interruptions as well as interactions come in many forms: phone calls, e-mails, instant messages, as well as face-to-face meetings—within the organization, with customers and with business partners. Keeping track of all these interactions, who was involved in them, what was discussed or agreed, and so on, can be quite a headache.

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The user must also be proficient with a wide variety of tools and applications needed for different tasks, and moving or sharing information between the tools can be a challenge.

Highlights

By making business processes more flexible and integrated, the On Demand Business model also increases the frequency of interrupts, expands the range of tasks demanded of each user, enlarges the volume and diversity of information to be managed, and reduces the time available to complete each task successfully. However, if the user cannot cope with the speed and variety of tasks being asked of her, no amount of flexibility built into the processes themselves will help.

From the user's point of view, simplicity of operation is vital to improved performance and, indeed, job satisfaction.

From the user's point of view, simplicity of operation is vital to improved performance and, indeed, job satisfaction. Clearly, it is difficult to track, manage and execute the increasing number and variety of tasks that must be juggled. It is largely a manual process, and every user is left to figure out how best to handle it. As the number and variety of task switches increase, the level of effort required just to manage task switching and the associated drudgery stifles user productivity and creativity.

To be successful, the On Demand Business model must empower users to handle this new world.

Stepping out of the traditional office

The IBM Workplace strategy is not confined to the environment of the classical office worker.

The above scenario has been set in a largely traditional office environment in which most readers would feel comfortable today. However, the traditional office is really only a relatively recent invention, and much work takes place beyond its walls. Some might even suggest that it's only beyond those walls that "real" work takes place! Be that as it may, the IBM Workplace strategy described in part 1 of this series is certainly not confined to the environment of the classical office worker, and the concept of activity-centric computing applies equally to that broader context.

Highlights

Every business and, arguably, every human task is essentially a component in a larger activity flow.

Every business and, arguably, every human task is essentially a component in a larger activity flow. Stocking a supermarket shelf, for example, occurs in the context of customer purchases, marketing strategies and supplier delivery scheduling. A parent-teacher meeting occurs as part of the flow of educational activities around the student, teacher and school. Ensuring quality control on a manufacturing line requires a chain of activities stretching from product purchase and use all the way back to design and development. Activity-centric computing provides significant benefits in all these areas and more.

What we've described in this scenario is thus only the first small step on a longer journey. As Forrester states in a recent Big Idea paper, "The Information Workplace will redefine the world of work—at last!"

"The information workplace (IW) will be much simpler, yet richer than today's tools by incorporating contextual, role-based information from business systems, applications and processes; delivering voice, documents, rich media, process models, business intelligence, and real-time analytics; integrating just-in-time eLearning; and fostering collaboration. Using a service-oriented architecture, the IW will be rich with presence awareness, information rights, and personalization, and it will provide offline and online support to a plethora of devices. As this unfolds, information work will expand beyond traditional knowledge workers."*

The IBM Workplace strategy and activity-centric computing provide the means to reinvent work, both in the office and beyond.

Forrester sees this as a rather long-term transition, taking five to eight years. The IBM Workplace strategy and activity-centric computing provide the means to reinvent work, both in the office and beyond. And as we shall see later, the IBM Workplace product set is already beginning to deliver on these promises.

Highlights

The approach is to create a single, consistent and interconnected desktop environment within which all interactions take place.

A platform for the integrated management of all information provides the basic environment in which the contexts for users' process instances can be created and maintained from task to task.

A better way: activity-centric computing

An important initial step toward this new way to work is to empower users and make their work environment simple, obvious and well integrated.

Thus, a first goal of the IBM Workplace strategy is to mask the intricacy of the actual environment from its users. Note that the goal is to mask intricacy, not eliminate it. The complexity is inherent in the range and variety of tasks to be executed, the applications and information to be integrated, and human interactions to be managed. IBM Workplace solutions provide new structures and paradigms to enable users to cope with the complexity that exists.

The approach, therefore, is first to create a single, consistent and interconnected desktop environment within which all interactions take place. This environment is further optimized to the precise role of the user at a given time and can be personalized according to user preference. Together, these features provide the user with a single, well-integrated working space in which all the necessary tools are available and operate and interoperate in a logical and compatible manner.

Beneath this, a platform for the integrated management of all information, from documentation through to personal contacts, provides the basic environment in which the contexts for users' process instances can be created and maintained from task to task. This concept of a context is important, because it mirrors the way that users work. While a user may focus consciously on the activities, or actions—call Joe, enter order details into the system, confirm stock availability, send confirmation e-mail—required to accomplish a goal, at a less conscious level, a complete set of relationships between the actions, documents, people and so on, is being created. This is the context in which the activities are performed.

Highlights

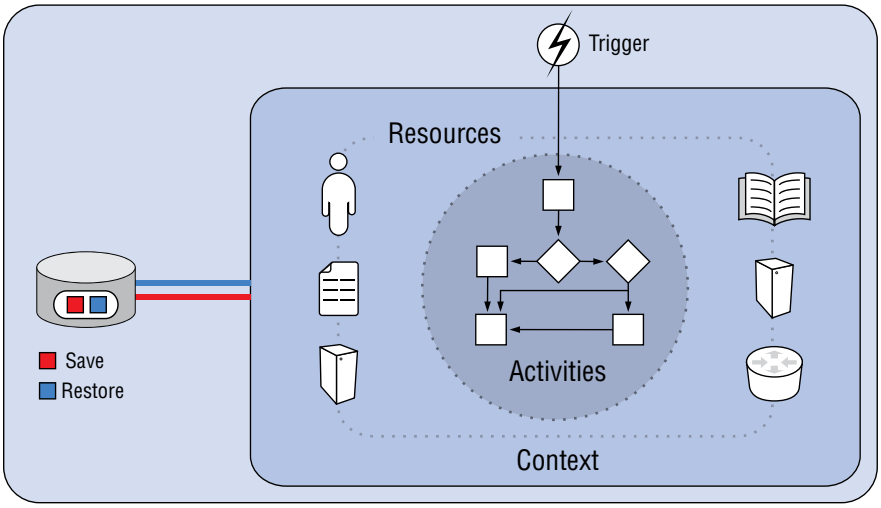

Figure 1: The activity in context

An interconnected set of activities makes up the user's understanding of what needs to be done to achieve a certain business outcome, and may be quite complex and need to be adaptive to circumstances.

Figure 1 represents this activity-centered view of a user's work. An interconnected set of activities lies at the heart of this representation. This set is actually the user's understanding of what needs to be done to achieve a certain business outcome and, depending on the scope of the work involved, may be quite complex and need to be adaptive to circumstances. These activities may also be quite diverse, requiring different technologies, involving a variety of people and so on.

The activity set is triggered by some event, which may be an external interrupt or a decision by the user to take some action. The required activities are then linked to all the resources needed to complete the job. This entire context can be saved, when something of higher priority occurs, and then restored when needed.

In this way, the user is empowered to react to interrupts in a more controlled manner. If she decides to react to the interrupt, she can be sure that the system

Highlights

The user is empowered to react to interrupts in a more controlled manner.

will preserve the current context for future use and thus make it easier to resume. The user can thus respond more easily and willingly to interrupts, knowing that she doesn't have to take time to recall who was involved and where were the notes she made, when she decides to return to the suspended task.

A user may schedule a suspended task for a fixed time, of course, or as we saw in the scenario, the IBM Workplace activity-centric environment can suggest when it is appropriate to restart it. This is because the environment is aware of the availability of resources needed for the task. In many cases, these intermittently available resources are people. The basic presence awareness already available in current IBM Workplace products can form the enabling technology for such functionality.

As mentioned above, every activity set takes place within a context of resources that must be available at that time to move the task forward effectively. These resources include IT-based applications and information as well as people. It is important to note that these applications may fall into any or all of the traditional application categories—operational, informational or collaborative. The IBM Workplace vision covers not only the area of collaborative work but equally encompasses all application types, because a user task is more than likely to cover more than one application type, as we saw in the above scenario.

The IBM Workplace vision covers the area of collaborative work as well as all application types, because a user task is more than likely to cover more than one application type.

The concept of a context and its embedded set of activities is quite different from that of an application or system as currently defined. An application or system can be seen as a set of functions that have been brought together by the IT department in response to a broad user need. As such, it is defined in advance and is relatively inflexible. An activity context, on the other hand, is completely flexible and comes into existence at the user's behest. What it contains is infinitely variable. However, it would be relatively unattractive to

Highlights

What is required is that the system itself recognizes related activities and links them together in an adaptive manner.

the user if she had to keep consciously including every resource explicitly in a context. Rather, what is required is that the system itself recognizes related activities and links them together in an adaptive manner.

Adaptive activities and contexts

We observed that every time Martha began a new activity, she gathered the known necessary resources at an early stage and then augmented them as the task progressed. Thus, for example, Martha began her day by opening a business intelligence (BI) application and generating a number of reports. Noting unusual situations in the standard reports, she ran additional queries to drill down to the information she needed. She made notes. As a result, she began an online discussion with two team leaders.

Clearly, at the beginning of this activity, the only resources she required were the BI applications and their associated data. As the activity progressed, she both accessed other resources and created new ones based on immediate need. To provide effective support for this process, the IBM Workplace environment must perform many functions, either at the request of the user or in the background. In some situations it can even anticipate users' needs based on prior behavior patterns.

First, the activity-centric environment should recognize the activity that Martha is performing and bring the BI applications and data into her work environment. Since this is an activity that Martha performs every Monday morning, the IBM Workplace environment can add it to her task list and even initiate the environment at the right time, if Martha so wishes.

Next, as the task proceeds and Martha begins to innovate based on changed circumstances and her experience, the infrastructure can track what addi-

Highlights

tional queries she's running, where she's storing notes, and with whom she's exchanging instant messages, as well as the chat transcripts. This information allows further personalization of Martha's environment in the future. This information is, of course, also saved as a record of where that task was at any moment when a higher-priority interruption arrives.

For the individual user like Martha, key benefits of this approach are the simplification and rationalization of an increasingly complex work environment. Resources, both IT and people, that have been used in support of a particular activity are linked to that activity whenever it is instantiated in the future. Activities are thus both adaptive and personalized to the individual circumstances of the user.

For the individual user, key benefits of the IBM Workplace approach are the simplification and rationalization of an increasingly complex work environment.

These functions provide Martha with the ability to effectively push an activity onto a stack when she sees an urgent interrupt, begin that new activity within its own context, and address the urgent need. Later, she can retrieve the complete context of the original activity, perhaps when prompted by a reminder that the IBM Workplace environment has added it to her to-do list. She can also actively postpone a task and reactivate it at a later stage, based on her own needs. This significantly increases the user's flexibility to handle interrupts, enhances personal control, and thus helps improve user productivity in a rapidly changing environment.

Group contexts and collaboration

The same resources that have been linked into a context for a particular user can now serve a wider role. This is because they will also likely be linked to many other activity contexts, both for the particular user and across the entire enterprise. Networks of value can then be constructed through these linkages. First, information of which Martha is unaware can be brought to her attention automatically when the IBM Workplace environment recognizes that many users performing the same role actually use particular resources that she currently does not.

The same resources that have been linked into a context for a particular user can serve a wider role.

More important, the environment for group collaboration also benefits signifi-

Highlights

The environment for group collaboration also benefits significantly from the creation of shared contexts for work.

cantly from the creation of shared contexts for work. Let's look more closely at what happens in Martha's interaction with her team leaders in Grapegrove. After she began the chat and shared her analysis of the BI reports with them, she was interrupted and had to hurry off to resolve the operational issue. Of course, her team leaders were motivated to discuss the problem further and did some further analysis of their teams' performance. They also included their mentor, Paolo, in the discussion, and together they created a new spreadsheet that added significantly to the understanding of the problem. Their discussion and the spreadsheet were automatically added to the context of the activity. Paolo was concerned about the training needs of the team leaders, however, and he set an alert in the context so that he would be notified when Martha was next working on the problem.

When Martha returned to this activity later in the day, her team leaders were at lunch. However, she was immediately able to see that her team leaders had taken substantial steps to resolve the problem. Using the information that had been added to the context, she could build on their work, even though the team leaders were unavailable. Paolo was informed that Martha was now working on this task and decided to phone her to have a chat about training. Martha immediately thought of her work with the new services education supplier earlier in the day, and added Paolo to the context of that task. Not only were Paolo's concerns about training answered, but he now had a new source of training material.

In the shared work context, teams can be formed implicitly or explicitly around shared activities, no matter how transient they may be.

The shared work context thus provides substantial benefits. Teams can be formed implicitly or explicitly around shared activities, no matter how transient they may be. Team members have access to the current state of work within the activity and can continue their own work in the activity, using the latest information, even when other members aren't physically present. New players can be included as required, and they immediately have access to the entire resources of the team. Members can choose to be notified when others are working on the activity, can track progress on allocated work items, and so on. These features are particularly useful when cooperating across geographies or time zones.

As previously mentioned, this type of activity-centric computing depends on

Highlights

Activity-centric computing is built on fundamental IBM Workplace functions such as awareness of who is online; consistent and reliable information about what documents are available; an understanding of organizational structure; and support for applications to share data in real time.

a rich and pervasive infrastructure that spans from disparate information sources, through a wide variety of applications, right to the users' desktops. Activity-centric computing is built on fundamental IBM Workplace functions such as awareness of who is online; consistent and reliable information about what documents are available, including their provenance and history; an understanding of organizational structure both within and across enterprises; as well as support for business and collaborative applications to share data in real time. Also required is workflow management—not in the sense of a fixed and immutable operational process, but as a living and adaptive network of the tasks and resources that can be combined in highly flexible processes, bridging the gap between total ad hoc behavior and highly regulated and controlled business processes.

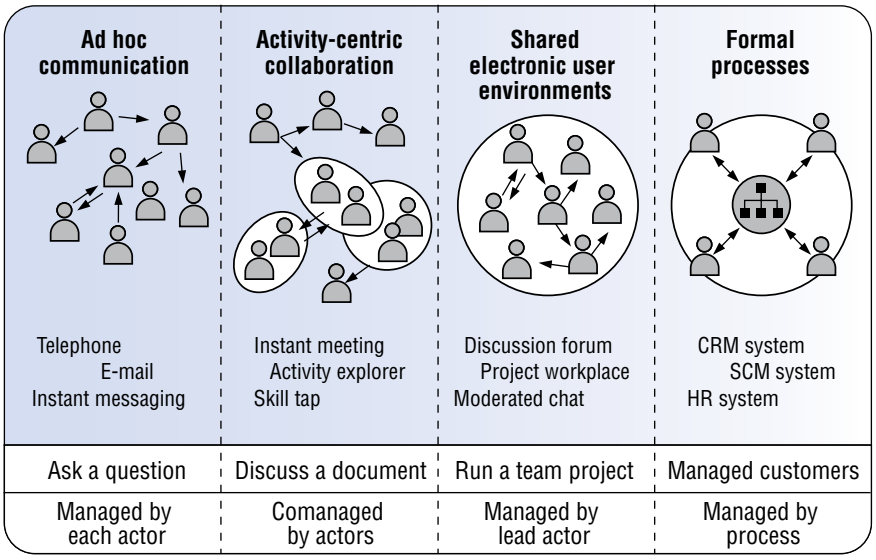

Figure 2: The broader context of activity-based computing

Highlights

Enabling flexible processes and effective collaboration harnesses people's strengths to interact creatively with the process world, and among one another, to move freely into an On Demand Business world.

Activity-centric computing is a significant step forward in increasing user productivity, both at a personal level and in collaborative work, and represents an important step forward in getting appropriate return on the investment in desktop computing. This is because, as shown in figure 2, it represents a key—but currently missing—component in the spectrum of process control and collaborative work. At one end of this spectrum is totally ad hoc activity, personally managed and completely flexible. At the other end are formal processes that are rather inflexible and system managed. The middle ground, enabling flexible processes and effective collaboration, harnesses the strengths of people in interacting creatively with the process world, and among one another, to move freely into an On Demand Business world.

From vision to reality

The foundation function required for everything described in this paper is already largely available in current IBM Workplace products.

The purpose of the scenario just described is to show the direction and vision for activity-centric computing that is part of the IBM Workplace strategy. It's really aimed at getting you to think about what could be possible and, indeed, to solicit your views on what would be especially useful. We should, however, also stress that the foundation function required for everything described above is already largely available in current IBM Workplace products. Furthermore, an application called Activity Explorer, based on some of the ideas just discussed, has already been previewed in IBM® Workplace Managed Client™, Version 2.5 software, and delivered in Version 2.6.

Activity Explorer applies activity-centric computing within the traditional collaborative computing area by providing a semistructured process for completing tasks that revolve around the way users work; moreover, this is all done in one easy-to-navigate, integrated environment that supports different work

Highlights

styles and schedules. The primary technical focus for Activity Explorer is the creation and use of the shared objects that form the context for collaborative activities. Five types of shared objects are supported: shared note, persistent chat, shared folder, shared file and shared screen.

As more and more shared objects are added to an activity, an activity thread evolves. An activity thread is a hierarchical view of the interactions that take place in an activity. Shared objects can be at multiple levels within the hierarchy, depending on how they are posted; for example, as a reply to an existing shared object or as an added resource. This activity thread can clearly be seen as a rudimentary form of the more powerful activity flow that is shown in figure 1.

The Activity Explorer application supports five types of shared objects: shared note, persistent chat, shared folder, shared file and shared screen.

Anna O'Neal provides a comprehensive description of Activity Explorer in her IBM developerWorks® document "Discovering Activity Explorer in the IBM Workplace Managed Client," at this URL: www-128.ibm.com/developerworks/lotus/library/ae/.

Activity Explorer is not the only place where elements of the activity-centric computing approach are already being applied in the current product set. Currently available team collaboration features lay a firm foundation for the more pervasive collaboration described in the scenario above. Template-driven development can already allow savvy users more control over how they do their jobs and enables them to begin linking tasks together in ways

Highlights

Activity-centric computing shifts the focus of interaction from the IT applications and tools available to the users themselves to their tasks and activities as seen from a business viewpoint.

Activity-centric computing is a reality that is already beginning to take shape in the current IBM Workplace product set.

not envisaged by the IT department. IBM WebSphere Portal software provides integration between portals, allowing automated data transfer between them, presaging the more advanced levels of integration required in the future activity-centric computing world.

Conclusion

On Demand Business, with its aims of flexibility and integration, creates new and exacting demands on people within the business processes it defines. Users will be faced with increasing levels of interrupt-driven behavior, broadening access to different parts of the business and the explosion of information that will entail. At the same time, we can expect to see continued and more intense pressure to improve productivity and reduce costs. It is becoming increasingly clear that current approaches to end-user computing will be unable to cope with these demands.

The IBM Workplace strategy directly addresses this set of issues through a new way to work, that is, activity-centric computing. Activity-centric computing shifts the focus of interaction from the IT applications and tools available to the users themselves to their tasks and activities as seen from a business viewpoint. Key concepts here are the creation and persistence of contexts within which users operate and that contain the resources—documents, applications, people and so on—needed to accomplish the tasks. These contexts and the activity flows within them provide users with an intuitive way to interact with the business processes, responding to interrupts, and better managing their time and energy with increased productivity and job satisfaction.

Activity-centric computing is partially a vision of how end-user computing can be. But it is also a reality that is already beginning to take shape in the current IBM Workplace product set. In particular, an initial view of how some of the features can operate is available in Activity Explorer.

As the IBM Workplace vision of activity-centric computing is refined and manifested over the coming months and years, we can envisage the emergence of what Forrester has called the Information Workplace. Office work will finally have evolved, and evolved beyond the world of the office. End-user computing, like the application-level computing behind it, will become truly on demand.

For more information

To learn more about activity-centric computing and the IBM Workplace product set, please visit:

ibm.com/software/workplace

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* ConnieMoore and Erica Rugullies, Forrester Big Idea, "The Information Workplace will redefine the world of work—at last!" Forrester Research, Inc., June 1, 2005.

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