
The evolution of office work

Part 1—IBM® Workplace™ strategy



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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 of 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 paradigm necessitates a deep-seated evolution—perhaps even a revolution—in their needs and behaviour. It is to these people, their actions and interactions, that IBM® Workplace™ speaks. Throughout this series, we will discuss the IBM Workplace strategy to empower people to collaborate within their everyday work as well as the IBM Workplace product family including IBM Workplace software, IBM Lotus® Notes® / Domino® and IBM WebSphere® Portal. This, the first paper in the series, addresses the overall strategy.

To start, we consider the fundamental changes that on demand brings to the processes and applications of the business itself. Clearly, these changes also affect the users of the business systems, and we also describe this in the first section of this paper.

Next, we briefly examine a number of important IT trends that form the background to the IBM Workplace strategy and architecture. Key among these trends are the adoption of a Service Oriented Architecture, the management of a burgeoning information explosion and the need to regain control of the desktop environment in the face of increasing security exposures and growing maintenance costs.

The computing power available on the desktop of the average user has grown in leaps and bounds over the past twenty years, and businesses have made significant investments in PC hardware and software for their staff. Unfortunately, user productivity has not grown commensurately and businesses now seriously question the return on further investment in desktop computing.

These considerations lead directly to the key features of IBM Workplace software products, described in the final section of this paper: the careful balance between user flexibility and management control, the focus on minimising the total cost of ownership while maximising functionality for end users, innovative support for the full range of process control approaches from fully *ad hoc* behaviour to complete system control; all driving towards dramatically improved user productivity as people collaborate closely together and intimately interact with the applications and resources of the entire business ecosystem.

Part 2 of the series goes on to discuss one of the key innovations of the IBM Workplace vision—activity based computing—in more depth. The focus for part 3 is the variety of approaches that can be taken to implement IBM Workplace environments based on different starting points.

The evolving environment for business

At the heart of on demand lie two key drivers: integration and flexibility. An on demand business is characterised by business processes that are integrated from end to end, both internally and also externally with customers and suppliers. An on demand business is also one that can respond flexibly and speedily to any stimulus, internal or external.

Flexibility enables the business to change and adapt in an increasingly competitive world. However, nimbleness is a characteristic more readily associated with small companies than large, mature organisations. As a result, this need for flexibility often drives devolution of power and responsibility to smaller, more responsive units and groupings within the organisation. However, such largely independent units find it difficult to co-operate in support of common goals, as the very independence that gives flexibility simultaneously allows divergence in culture and communication.

Integration emphasises the need and ability for effective communication. Of particular interest for an on demand business is communication and interaction between disparate parts of a business process across traditional boundaries, both within the organisation and between a business and its partners, customers and others. However, the tighter the integration, the less flexibility that is possible. Such a loss of flexibility is typically seen in large, tightly integrated application systems, a problem that has plagued the IT industry for many years.

Balancing integration and flexibility in business processes

The principles of integration and flexibility, carefully balanced, allow the creation of end-to-end business processes that are at once precise enough to ensure the validity of critical business actions and flexible enough to allow speedy redefinition of the processes to meet changing needs. This approach supports new, emerging business models where companies or departments become increasingly specialised and focused on core competencies but depend completely on partners in extended value networks or business ecosystems to fulfil any particular process.

Recent years have seen intense focus on the definition and automation of such flexible yet controlled processes from both business and IT viewpoints. However, this paper focuses on how these changes affect the people who drive or are driven by these processes. New business models demand changes in behaviour of the people who interact with them. And if the processes themselves must become more automated and flexible, their users also require a new and unique combination of control and flexibility in order to be productive in this rapidly changing environment. The IBM Workplace strategy has been conceived with this combination of control and flexibility in mind.

On demand purchasing processes

Let's consider an example of how a simple process changes in the on demand model and the impact of such changes on the people involved. Purchasing office supplies has traditionally consisted of two processes. The first involves negotiating and exchanging contracts that govern purchases over an extended period. This is a

typical collaborative process, involving the exchange of messages and documents between the involved parties, scheduling of calls or meetings, version control of documentation and so on. The second process is engaged whenever a purchase is subsequently made. This process is strictly transactional in nature, whether conducted manually or via a Web site.

In an on demand business, these two processes become more closely connected, and ultimately may merge into one. The major driver is increased flexibility and speed of change in the negotiation and contracting process, so that suppliers may be changed quickly, contracted prices may be compared with spot prices so that the best deal on any purchase may be obtained in terms of price, quality, speed of delivery, etc. In the case of highly commoditized items, this negotiation and purchase process may be fully automated between two software agents. However, in the more general case, a combination of automation and human interaction is likely to be required. The resulting process can be seen as a partially automated, combined collaboration and transactional process.

Such a combined process unleashes the full potential of on demand. The standard, fully automated transactional path through the process may operate in most cases. However, under certain circumstances, such as sudden changes in the marketplace or certain combinations of transaction characteristics, human interaction can be drawn directly into play. In such cases, the purchasing officer will require a tightly defined context, combining specific but variable information, links to the appropriate people both internally and in the suppliers and a defined set of tools to collaborate with suppliers and to interact directly with the transactional ordering systems.

When considering the inclusion of people in on demand processes, the ability to create and maintain specific and specialised contexts within which a group of people can interact with one another and with the transactional systems is a key requirement that the IBM Workplace strategy addresses. Such contexts combine the variety of people, places and actions that a user needs in order to manage and run an on demand process effectively and easily.

On demand risk and compliance

The balance between flexibility and control within business processes has gained even higher visibility in recent times as governments and regulatory bodies have responded to actual and potential breaches of ethical and security guidelines or standards in business. While governments and regulators have focused on the definition and introduction of ever more onerous and tightly defined measurements and controls, businesses have struggled to minimise the cost of compliance and to limit the inflexibility to change that such controls can impose. Again, the optimal approach lies in a careful balance between defined processes and the ability to react with agility to change. Achieving this balance depends both on the technology and the people who must use it.

Consider the Sarbanes Oxley act, which imposes a set of stringent control and reporting obligations on companies publicly traded in the US. To add a little spice, company executives can go to jail for failure to comply! Initial implementations focus on the creation of reporting processes that can guarantee timely, accurate production of the required documents. However, in the longer term, issues of speed, cost and flexibility come to the fore. Some regulations require disclosure of material facts within four days. Such demands must be met at reasonable cost and

in situations where the business is changing due to market pressure or the regulations are being continuously updated, often across multiple jurisdictions.

A comprehensive and flexible implementation of a Sarbanes Oxley compliance scheme clearly requires on demand thinking, and the implications for people working within these changing and highly pressurised processes need careful consideration. Tight collaboration between executives, legal experts and those producing the reports is required. Information must be gathered and reports produced within the context of a particular version of the regulations as applied to a specific configuration of the business. This requires comprehensive control of document versioning and tracking. An audit trail of all actions taken or considered is also required. To further complicate matters, because these activities span different departments and organisations both within the company and potentially across business partners, the context within which these people operate will likely be distributed and heterogeneous. The design point and strategy for business process-specific IBM Workplace environments addresses these needs and a solution is provided through IBM Workplace for Business Controls and Reporting.

Power to the people

The prior examples provide an insight into just a few of the changes taking place in business today. However, the key trends are clear:

- Complex and pervasive business processes spanning multiple organisations are the means by which business will be increasingly conducted
- Driven by the need to reduce costs and enabled by these pervasive business processes, businesses will specialise on core competencies and become deeply enmeshed in extended value networks where individual activities within any process can move freely within the network
- Comprehensive controls will be required both to ensure the integrity of the business in such a distributed environment and to satisfy the requirements for probity and security set by business regulators and governments
- Counterbalancing such control, substantial flexibility within and around these processes will be needed to ensure that businesses are agile enough to respond quickly to unanticipated change or competitive pressure
- The end-to-end nature of business processes and their need to respond rapidly to change will eliminate the compartmentalisation of work into divisional silos or between operational, informational and collaborative computing activities

These trends lead directly to substantial changes in the working environment of people within all organisations. The goal of the IBM Workplace strategy is to enhance and extend people's ability to operate in this new world, simplifying and unifying their computing experience to enable better focus, improved collaboration and faster and better decision-making. The consequence is the potential for improved personal productivity and satisfaction as well as reduced overall implementation costs.

The new office environment

The key trends described above will likely impinge on users in a number of ways:

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. This new paradigm is activity based computing, which structures 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 personalised and distinct *contexts* within which specific tasks can be collected and controlled. Such contexts allow the user to draw together the people, information, tools and tasks needed to complete the activity. As a result, the user can focus in a personally-controlled way on what must be done rather than how to do it.
3. Because of 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. Spreadsheets, presentations and documents, as well as e-mails and logs of real-time interactions such as instant messaging must be preserved, versioned and maintained in a similar manner to transactional data today. Unstructured content becomes at least as important as transactional data in managing and tracking the business.
4. Process change and flexibility equally requires change and flexibility 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. Users will need to manage and track their own education both to keep pace with the continuous change and in order to progress their own careers.

The changing IT environment

Unsurprisingly, businesses require that the above-mentioned controls and flexibility within the end-user environment come with improved productivity and at reduced cost. Meeting these goals places significant demands on the IT environment.

Today, a symbiotic relationship exists between business and IT. As business needs and drivers evolve, the IT environment in organisations must change and adapt to satisfy them. Simultaneously, advances in software and computing enable business goals and approaches that were previously unthinkable. In this section, we examine a number of key IT trends that underlie the IBM Workplace strategy.

An architecture for flexibility and integration

Web Services are increasingly seen as an optimal approach to creating and providing "chunks" of business function with well-defined interfaces and that can be re-used and integrated as required. They can be built from scratch or created by componentising existing applications and adding standardised interfaces. These components can participate fully in a Service Oriented Architecture which enables a flexible, managed environment for the provision of business function. Services are linked together in workflows using business process management tools.

The IBM Workplace strategy builds on these concepts. It defines all user tasks and activities as fully-fledged services that can participate fully in any business process together with business application functions. This enables the integration of e-mail, instant messaging and other collaborative function into business processes. As a result, business processes can benefit directly from human interaction and collaboration. For a user, collaborative interactions that are a normal part of business processes are fully integrated into the process. The outcome is *composite applications* which eliminate awkward context switching for users and enable simpler transfer of information between traditional business applications and collaborative tasks. The creation, deployment and management of composite applications is a key focus of the IBM Workplace strategy.

As components become available and are easily linked, development of "new" applications can become simpler, because many applications are just re-combinations of existing pieces. IBM Workplace environments thus adopt a template model for application delivery that decreases or removes the need for complex programming in many cases and can even allow end users to create their own applications in many circumstances.

Information integration and management

The move towards Web Services and business process management is only one side of the coin in enabling on demand business. Equally important are the approaches to managing and integrating the information assets that underlie the business function. Data warehouses and operational data stores have had much success over the years in creating consistent and integrated transactional data

within and across organisations. However, in a full on demand business world, similar levels of consistency and integration are required for unstructured content. Such content includes text documents, e-mail and voicemail, presentations and spreadsheets, online conversations, blogs and the myriad of ways through which human beings interact. It provides the rich and essential context in which all decisions are made and all business transacted. Unfortunately, the current state of management of unstructured content today leaves much to be desired. Given the increasing importance of distributed content in on demand business and the insistence by regulators on an auditable trail for decision-making, the current situation is becoming untenable.

The IBM Workplace solution lies in providing an automated, server-managed repository which acts as a master copy of all PC-based content. This repository also contains the custom metadata needed to provide an effective contextual view of the information, enabling the linkage of documents and other resources across different activities, contexts and views. A secure, encrypted content store is also provided on the PC, with information being replicated between PC and server as required. This approach leverages the strengths of both centralised and distributed environments.

Regaining control of the desktop environment

By extending the concept of server-based management of distributed information to the software itself, the IBM Workplace strategy can help improve the ability of the IT department to manage the actual software on the PCs as well.

Today, maintaining a distributed software environment is costly and complex for both IT departments and the users of PCs. Upgrades, maintenance and virus patching consume considerable time and effort for users and IT alike. Problem isolation and repair is made even more complex by the variety of customised additions installed by users themselves.

IBM Workplace environments address these problems from two viewpoints. First, through the definition of roles and entitlements, the software available to different types of users can be centrally managed and customised to different user needs. Second, the required software is provisioned directly from the server whenever a component is upgraded, patched or a user's entitlement to it changes. This combined approach allows considerable flexibility in the function made available to individual users while helping reduce the total cost of ownership through centralised management and provisioning of the distributed software. Furthermore, this approach enables better support for pervasive computing and mobile computing devices where required by particular roles.

IBM Workplace strategy—an office (r)evolution

The strategy for IBM Workplace begins with the characteristics and needs of the people who use IT systems as part of their jobs. As previously shown, on demand business—with its drive towards immediate action, ultimate flexibility and complete integration—drives people to use a greater number and variety of IT systems on a daily basis in their jobs. This is particularly so for people involved in sales, administrative, analytical or managerial roles. However, it doesn't stop there. The IBM Workplace strategy extends to the entire population of the enterprise, including those who have no access to IT systems today. By taking an inclusive approach, from CEO to factory floor worker, IBM Workplace environments create a fully collaborative ecosystem within and across enterprises, allowing efficiency and innovation to thrive.

Everyone is different—even doing the same job

The on demand business requires great flexibility from its users, as already noted. But how can such flexibility be made comfortable? Change is difficult for most people, but it's widely accepted that if they feel in control, then change is more likely. IBM Workplace environments give users control over their desktops. This is achieved at a number of levels. First, it recognises the concept of a *role*. At its simplest, a role can be thought of as a job category. Based on a user's role, the IBM Workplace environment can make available the customised information, applications and contacts needed, and only those needed, for their current job.

Second, the concept of role goes much further. Most people, especially professionals and managers, perform different “jobs” in the variety of situations they meet throughout their day. Recognising these also as roles allows the user experience to be further customised based on the user's current context.

Furthermore, people work in different ways to achieve similar ends. IBM Workplace environments provide users with the means to personalise their computing experience according to their skills and preferences.

Defeating the tyranny of availability—activity based computing

But, change is even more pervasive. Business processes need to be adaptive to their environment, aware of the external world and continuously available to respond to changes in it. As a consequence, their users are subject to constant interruption, almost irrespective of the task currently in hand. People must manage their tasks to completion despite being continuously available to commence other urgent activities. This situation is found among managers and executives, but also among all professional staff who interact with a range of business processes.

One can observe the consequences of continuous availability already in the way that many users' days are entirely driven by the contents of their e-mail in-baskets. Incoming urgent e-mails during the day displace previously planned activities or interrupt ongoing actions, which somehow have to be parked for later attention. Less urgent activities, particularly those requiring maintained effort or a broad set

of resources, fall by the wayside. Resuming parked activities is inefficient as the resources previously lined up are often no longer to hand.

As the on demand business increases the urgency with which interruptions must be handled and more real-time technologies such as instant messaging and mobile phones increase the frequency and intensity of interruptions, a new approach is required to enable people to work efficiently and healthily in these circumstances. To be productive and satisfied, workers must be enabled to easily handle and manage their work; they need to be in control. The IBM Workplace strategy has introduced the concept of activity based computing to address precisely these problems.

Activity based computing, though simple in concept, requires an extensive infrastructure of resource management to enable its full implementation. As a consequence, its initial implementation today gives only an indication of its longer term possibilities. The second part of this series deals with this topic in depth through a detailed user scenario.

Empowering the under-served user

At the other end of the usage scale lies the factory floor, distribution centre or similar facility. Today, such workers are considered to have little or no need for IT systems. Indeed, providing them with such support would be seen as giving no return on investment. However, this attitude misses out on important societal trends and on the benefits and savings that could accrue from the application of modern technology in this environment.

Compared to the past, today's workers are relatively sophisticated in the use of technologies such as the Internet, e-mail and instant communication via text messages and mobile phones in their personal lives. However, in work, communication is largely limited to face-to-face meetings and paper-based messages.

With the introduction of a modern and cost-effective collaborative environment, many beneficial changes can be envisaged. The elimination of paper memos, payslips and other documentation can reduce cost and speed up communication. Direct, online access to intranet-based education and information websites can reduce training and support costs, as well as allowing timelier introduction of new skills and methods. Instant feedback and communication between team workers and with managers can allow rapid response to changing situations and create a collaborative ethos in which innovation is encouraged.

Clearly, it would not be cost-effective to provide every such worker with a standard, PC-based set of collaborative tools on a personal workstation to support this direction. IBM Workplace environments provide a simpler and less expensive solution, based on a number of strategic principles. First, through platform independence it provides equivalent collaborative function across rich-client, browser-based and mobile devices, enabling factory floor workers to send and receive e-mail through shared workstations, intranet kiosks, browsers on home PCs or even personal mobile phones. Mobile phones also support instant messaging. Similarly, e-learning courses could be taken at home or at work. By providing consistent support for collaboration across all platforms, IBM Workplace environments enable existing facilities for office-based users to be extended across

the entire enterprise. Second, IBM Workplace environments use a role-based model to match function provided to users' needs. Factory floor workers require less collaborative function than many categories of user. They may also require simpler user interfaces. Such differing needs are met by role-based provisioning of function. Furthermore, when a user takes on a new role, such as becoming a foreman or team leader, and thus needs additional functionality, this is automatically provided based on the new role.

The concepts described above also readily extend across enterprise boundaries. Cost-effective, easily managed and flexible collaboration tools enable and drive cross-enterprise co-operation and innovation. Examples include extending a school or college messaging system to parents, creating a network of small suppliers without any IT skills for a larger manufacturer or retailer, or establishing online communities of citizens involved with a particular government agency or programme. All these examples are characterised by the potential for an improved return on investment in desktop computing by extending an existing collaborative environment to people who should be involved but cannot be today due to the cost and complexity of traditional e-mail and messaging systems.

Creating an information ecosystem

Business people instinctively focus on activities; what tasks do they need to do to achieve some business goal, in what order? This focus on activity and process, both the IT and people aspects, is vital for on demand. However, there exists an underlying enabler for flexibility and integration—a well-understood, consistent and managed foundation of common, shared information: an information ecosystem.

The IBM Workplace strategy recognises and supports this need. It focuses on the creation and management of the class of information known as unstructured content, covering all classes of e-mails, message logs, documents, spreadsheets, presentations, rich forms that go beyond pure relational data, etc.—information that is the basis of communication and collaborative work between people. (Creating and managing structured data like transactions and reference data are addressed by tools such as IBM DB2[®], IBM WebSphere Information Integrator and data warehousing.)

The proliferation of personal computing tools—PCs, PDAs and mobile phones—provides enormous benefits but also creates considerable challenges for people in enterprise IT environments. Creating and disseminating all types of documents is so simple that the volume and variety of digital information has grown exponentially in recent years. Unfortunately, our ability to manage and control this information explosion has not kept pace. Users struggle to find documents, to discover their ownership, and to manage and control editing, retention and versioning.

Much of this difficulty stems from the way users must manually and personally take responsibility for all aspects of document management today. This is a result of an approach to file management which evolved when PCs were largely disconnected from the central computing environment, and the files on them intended solely for personal use. This approach is entirely technical and limited to the contents of each machine. Managing information that is vital to the context and understanding of business processes in this manner makes little sense in today's

distributed, connected world. Imagine the chaos that would ensue if business transactional data was treated the same way!

IBM Workplace environments and solutions provide a shared, centrally-managed but distributed environment for unstructured content, based on the successful IBM Lotus Domino approach. Although more complex than the largely centralised databases used for structured data, this powerful approach gives the performance benefits of processing and storing information locally, as well as the ability to work in a remote and/or disconnected manner. IBM Workplace environments thus provide both centralised and distributed repositories and automatically manage replication between the local and central copies, all encrypted for privacy and security. Information can be changed either locally or centrally depending on the capabilities of the local client and the preferences of the user.

IBM Workplace environments thus relieve the user of the responsibility for version management, distribution control and other fundamental content management requirements. The user is assured which version of a document is current, that the team is working from the same version and so on. Distribution of new and changed documents is streamlined. Users can pull new versions of documents from the repository when it suits them, rather than being bombarded with enormous e-mail attachments. And, because the content is described by a growing set of metadata, it can be tracked and used to drive automated workflows, such as escalation processes, and linked directly to the context of users' activities.

Users of PCs and other rich-client environments can also store documents outside of the IBM Workplace environment, providing additional privacy and personal control of information if particularly required. In addition, it enables transparent use of systems which cannot be immediately integrated fully with IBM Workplace solutions and environments.

The central, common store of information provides a focal point for managing and rationalising unstructured content throughout the enterprise. Because all shared, collaborative content resides here, the IBM Workplace solution's content store becomes the central memory of the enterprise for unstructured content and the focal point for integration and consistency, complementing the data warehouse that takes this role for structured data. Between them, they provide the focus for all searches of information representing the most current and correct view of the business.

Through comprehensive control and management of content, both central and distributed, IBM Workplace environments create an information ecosystem within which people interact coherently with processes. Creating and managing the definitions and descriptions, or metadata, of these resources will thus be key functions of IBM Workplace solutions and environments. By making such metadata available to participating components in a standardised form, IBM Workplace environments can enable all the different components to work together seamlessly in composite applications.

Conclusions

The principles of on demand business require end-to-end integration of business processes but insist that such integration be done with maximum flexibility. While much attention has been paid to the application and information integration needed for this approach, our focus has been on its implications for the people who ultimately must use the systems and processes of the business.

For end users, on demand business requires new ways of behaving and interacting. The old approach of providing users with PCs and an assortment of largely un-integrated tools will not work. Despite significant investments over the years in desktop computing power and software, user productivity has only marginally improved. A new paradigm is required.

The IBM Workplace strategy enables such a shift. For the user, it provides a new level of integration between all aspects of work—transactional, informational and collaborative. It supports users in linking together the applications, information and people they need to get the job done. And it introduces the concept of activity based computing as an alternative and much-improved approach to the current situation where the user must manage such complexity unaided. For the IT department, IBM Workplace solutions significantly reduce the total cost of ownership of end-user computing by combining the strengths of a server-managed, browser-based approach with those of a rich client environment.

The direction is clear. But IBM Workplace is more than just a strategy. It is also technology and products. Now turn to the other papers in this series to understand more of the technology and how to begin implementation.



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