Developing the Future Workplace – A Balanced Approach Towards A New Level Of Corporate Productivity

1 Motivation – Changing End-user Roles And Behavior 3
1.1 The Challenge 6
1.2 A More Technical View 8
2 The Functional Evolution Of User Demands – An It Perspective 10
3 Technology For Integrated Workplace Environments 13
3.1 Considering Workplaces – Where Do We Stand Today? 13
3.2 It Component Requirements – Where Do We Need To Be? 15
3.3 Workplace Platform – What Technology And Implementation Choices Do We See Emerge? 17
3.3.1 Componentry Map Of The Workplace Platform 18
3.3.2 Realization Scenario: Value-added Collaboration Services For Corporate Workplaces 21
3.3.3 Realization Scenario: The Managed Client Concept 24
3.3.4 Realization Scenario: The Client Consolidation Approach 27
4 Managing Diversity – The Other Dimension Of A Balanced Workplace Strategy 29
4.1 New Ways To Balance Distributed And Central Workplace Components 31
4.1.1 Management Techniques For Value-added Collaboration Services 31
4.1.2 Management Techniques For The "Managed Client Concept" Scenario 33
4.1.3 Management Techniques For "Client Consolidation" Approaches 35
4.2 New Levels Of Dynamic Profiling By Intelligent Subscriber Management 37
4.3 Workplace Management Beyond Traditional Itil Processes 38
5 Roadmap To A Workplace Platform Addressing The Next Level Of Productivity 41
6 Conclusion 45
7 Appendix 48
7.1 References: 48
7.1.1 Ibm Publications 48
7.1.2 Further Publications 49
7.2 About The Authors 50
7.3 Contributions 51

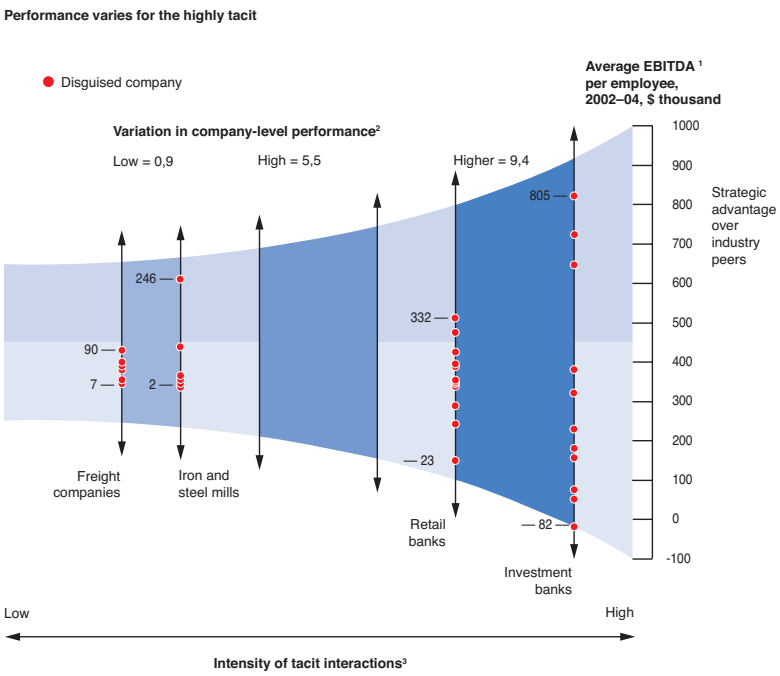
1 Motivation – Changing End-User Roles and Behavior

In order to innovate and differentiate an enterprise and to solve its complex business problems, an increasing proportion of work in developed economies is done by individuals who interact with each other in highly networked, constantly changing and global job environments. This happens in inter- as well as intra-enterprise settings. The boundary between private, public and commercial communication channels or collaboration settings is becoming blurred.

A huge number of applications implementing those differentiating of processes are continuously being developed, changed and integrated in order to support end users in their efforts. This leads to a number of challenges on both the consumer's side as well as the provider's side to build a system where participating parties can gain increased productivity instead of being overwhelmed by growing complexity.

Being able to provide end users or workers with the right set of collaboration capabilities and value-added services at the right time with minimum complexity, paired with maximum flexibility, is a new source of corporate differentiation that is not easy to copy.

Recent studies are supporting the value of tacit work and its impact on corporate performance, e.g. McKinsey & Compustat:



[1] EBITDA = earings before interest, taxes, depreciation, and amortization.
[2] Defined as ratio of standard deviation to mean for EBITDA per employee within each industry.
[3] Level of intensity defined as: low–below 14% interactions workers; high–14% to 62% interactions workers; higher–above 62% interactions workers.

(see Scott C. Beardsley, Bradford C. Johnson, James Manyika: "Competitive advantage from better interactions,", The McKinsey Quarterly, 2006 No. 2, pp 53-63, www.mckinseyquarterly.com/links/21293)

Therefore would it not be helpful to group the IT capabilities according to their usefulness to specific end user groups and their needs, in order to make best use of the differentiating factor? At the top of the hierarchy it would lead to a new type of worker, called by many the "Value Worker", who is able to perform tacit work by ad hoc collaboration with internal and external sources in order to solve the problem at hand.

If you follow those thoughts, you need to classify in more detail the types of roles that you have in the company. Peter Drucker and others talked about the „Knowledge Worker" as a new way to describe behavior and requirements. Today we find other terms such as "Value Worker" or "Tacit Worker" with subgroupings of workers with different information and technology usage characteristics. The "pattern-defining aspect" would to a great extent be the way in which people deal with data in their daily work.

Examples for varieties of worker categories' needs and their evolution are:

The Knowledge (Tacit/Value) Worker:

- *Fosters innovation*
- *Works with ideas and manages groups of people; encourages collaboration*
- *Needs to create, consume, change and analyze data in order to develop and improve processes and templates*
- *Works in an unstructured, free-form way, maybe starting with a set of ideas which are collaborated on and built into new documents or business processes.*

Examples of this type of worker include middle/senior managers, consultants, marketing execs, senior engineers, etc. This type of worker is typically evolving today into the Value Worker with a cross- and inter-organizational tacit work style.

The Structured Task Worker

- *Tends to work only with data and information*
- *Creates and consumes, but does not change or manage information*
- *Needs to be able to find facts quickly, create documents and edit, write & process information*

Examples of this type of user include bank clerks, call center operators and people in supervisory roles, such as a Store Manager or Bank Manager. This category of information worker may constitute 80% of the user base in most organizations. Individual empowerment of those job roles will evolve work behavior into the "Knowledge Worker" category.

The Data Entry Worker

- *Creates and consumes, but does not change or manage information*
- *Requests easy access to information, standardized processes and templates*
- *Does not tend to do free-form document creation*

This type of user typically works in some kind of administrative or secretarial environment. Initiatives to increase the value of the Data Entry Worker are enforcing an evolution to the Structured Task Worker.

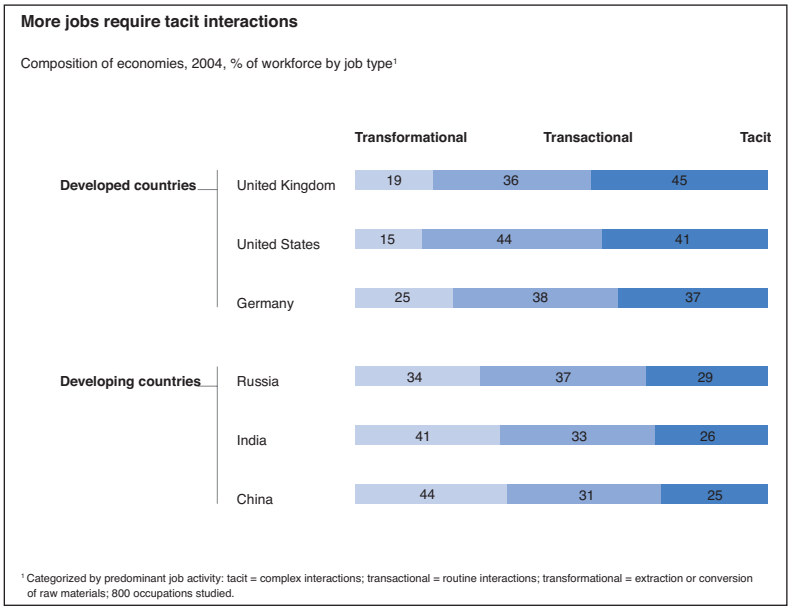
1.1 The Challenge

Today most collaborative solutions are aimed at the knowledge worker category, yet approximately 80% of the typical user population falls into the "Structured Task Worker" category. In addition, Structured Worker roles tend to evolve into the Knowledge Worker space. At the same time, the Knowledge Workers themselves need to become (Client)Value Workers, therefore Knowledge Workers are looking for ad hoc ways of collaboration even more.

One challenge for the future of end user environments is therefore to find a future workplace in which to effectively support the growing community of knowledge workers. This workplace has to give the end user the freedom of choice to set up their own workplace environments. It may provide individual users with, for example, a pool of reliable applications and tools for individual setups on demand, or the possibility to install ungoverned applications from anywhere.

To summarize, what is needed is a more flexible yet efficient and balanced way to support this variety of end user groups. The shift from transformational and transactional work to highly interactive, often 'tacit' work, represents a fundamental opportunity for competitive differentiation.

The interested reader will find many discussions on the changing working environment, based on advancements in the role of knowledge management in information-based societies, as well as in economies. For example:

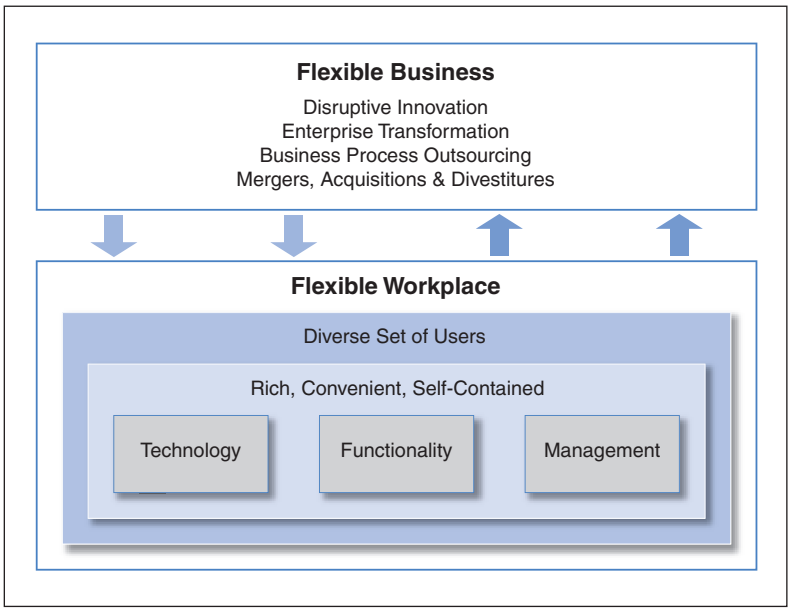


(see Bradford C. Johnson, James M. Manyika, Lareina A. Yee: "The next revolution in interactions", The McKinsey Quarterly, 2005 Number 4, pp 20-33, www.mckinseyquarterly.com/links/21130,)

The remainder of this paper will look into the technical aspects of solutions that deal with the various approaches to addressing new end user needs as motivated above. We must therefore be more specific in what the requirements are.

1.2 A more technical view

A tacit or knowledge working environment needs to support ad hoc collaborations with potentially anonymous individuals as well as with communities, by optimally facilitating support infrastructures from 3rd party sources, such as technology platforms or communication process setups. In addition, tacit workers still have the pressing need to integrate as before using intra- and inter-company business processes. In the future, business flexibility will depend more and more on the ability to empower and enable people to make the right decisions at the right moment, in order to change the way in which they do business.



As illustrated in the picture above, future flexible workplaces need to be discussed from various angles of their implementation, from a set of technologies to their functional composition and management tasks, in order to understand the implications to today's setup of working environments. The changing paradigm from function- to service-orientation in today's enterprises must also be considered at the workplace level.

Consequently, IT decision-makers will also have to start addressing the workplace complexity management challenge and establishing a consolidated, well-defined, managed workplace environment, which then prepares the ground for more flexible, configurable "tacit" workplaces, thereby truly improving employee productivity and ensure business value.

This paper continues with some discussion in regard to functional requirements, followed by its realization potential based on available technology, as well as management aspects of future workplace environments.

We will summarize with some conclusions on the issue of managing the correct balance between effectiveness and efficiency in support of a diverse workforce.

2 The Functional Evolution of User Demands – an IT Perspective

At the end of the day, the speed of change in businesses environments and the ability to adapt to those changes will be the defining parameter for success. The individual and his/her ability to manage change in a professional and distinguished working environment will be the lever for differentiation. Let us briefly discuss what types of evolution we can already see in today's workplace-oriented user demands from an IT perspective.

At a minimum, each staff member within an institution utilizes a personal computing device with various functional and non-functional capabilities. But the computing device itself is worthless as a business tool without the required data, processing, and communication functionality or access. So we cannot limit our discussion here to user desktops, PDAs or other Web-based means for a staff member to perform his/her duties.

More and more information is gathered and created ad hoc at the 'glass' which is appropriate at that moment. By this we mean richer functionality and availability of application logic, as well as information sources on an ad hoc basis at the users' access point. It will be difficult to predict completely when and how a tacit worker will digest what information and with which group of people. However, the arrival of wikis, blogs or podcasts in the corporate workplace is one indicator that an increasing proportion of work in developed economies requires a new level of interactivity and end-user empowerment. The Value Worker as discussed at the beginning is demanding technology support for gaining access to new sources of high-value information (real time, accurate, etc.)

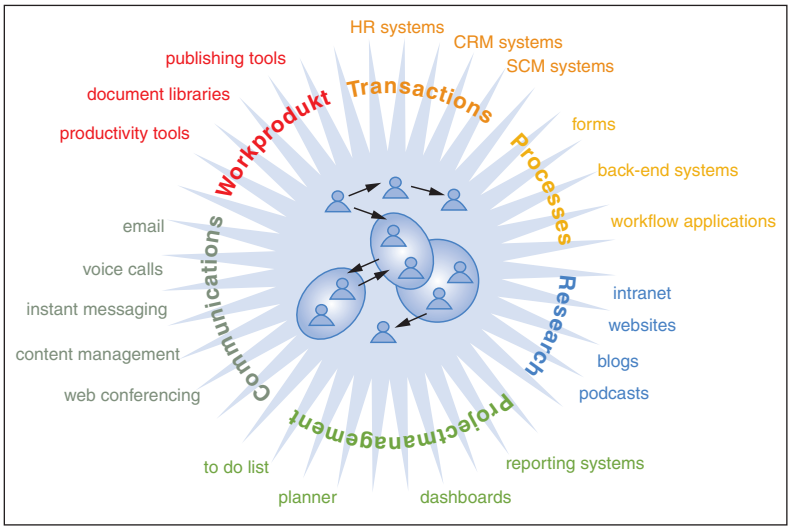
A future workplace needs to be a dynamic, adapting working environment, which gives maximum freedom to the user, for example in device types used to participate in collaboration. It needs to provide a set of productivity as well as role-based value-added applications that can be used either in mobile or on/off circumstances. The workplace instantiates itself based on user needs and it varies over time based on the task or process at hand. It needs to become more personalized without limiting choice and functionality, in order to improve convenience or the limitation on one access device such as a Personal Computer.

Openness and cooperation capabilities are the strategic enablers for new levels of trust with clients and businesses. Thus companies are able to improve their offerings by cooperative feedback loops and intelligent mechanisms of collaboration. As a consequence, new insights – gained by analyzing usage behavior, feedback and instant examination - will drive continuous improvement with the clients as collaborative stakeholders. Openness as a basic pattern is also well-known from the open source movement and could therefore be the role model for adaptive future workplaces.

All of these requirements will have major implications for the ability to manage those environments efficiently. Not every worker needs such a sophisticated workplace at its disposal locally. At the same time, one cannot assume that individuals have a certain IT savvyness.

IT departments must therefore understand profiles of workplace variations first and find technology for the demand side as well as the supply side of the IT equation, satisfying the required functions. A "programmable" or adjustable service-oriented workplace environment needs to be established.

The figure below highlights some of the service categories and applications involved and explains how collaboration across services and workers takes place:



Interestingly enough, Web 2.0 technologies, like Mash Ups, Blogs and Wikis, are already heavily used by tacit workers in their private lives, but they have only just started to enter the corporate collaboration and knowledge management space. Recently, innovative companies have started to offer Web 2.0 features at work, not only to foster interaction between tacit workers across the enterprise, but also to expand communication and collaboration with clients and business partners.

Moreover, while the new requirements of tacit workers are already challenging the existing IT, it turns out that requirements of transformational and transactional users are also constantly growing, primarily due to the need for improved employee efficiency and flexible process support.

The question for the underlying IT environment is how to productize the set of value-added services in order to achieve efficiency and flexibility simultaneously.

Massive and proactive integration is the model of choice – In general, we are experiencing the evolution of workplace functionality from a "User Interaction" focus to a "User Integration" focus.

3 Technology for Integrated Workplace Environments

3.1 With regard to workplaces – Where do we stand today?

Mastering complexity of the workplace environment is not a new challenge for IT decision- makers, but activities have often been limited to optimizing the workplace purchasing and provisioning process.

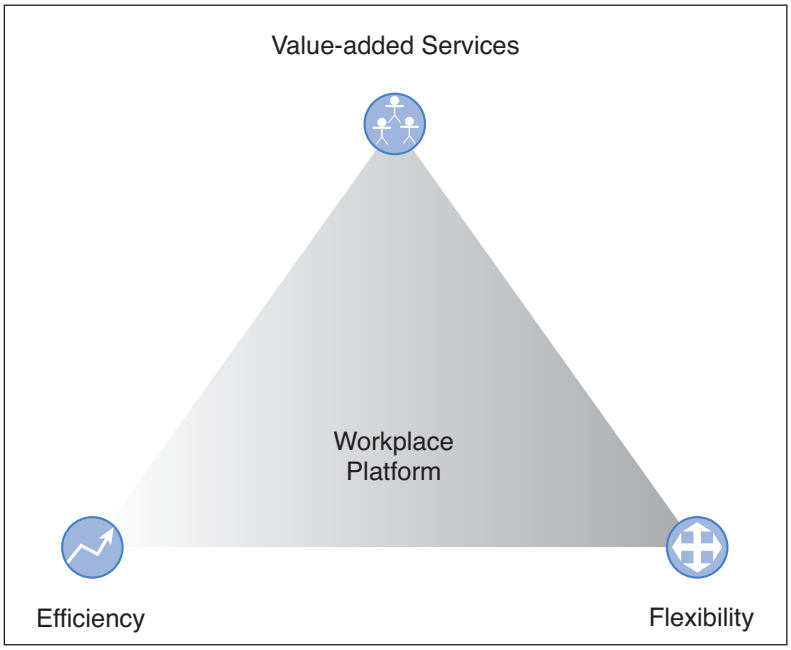
The major shortcomings of traditional workplace management approaches are:

- *They have concentrated on IT-efficiency:*
  IT departments headed for standardization by reducing the number of deployment profiles. They prioritized volume and price optimization, some companies even outsourced the entire workplace environment. However, they have not managed business demand as such and are therefore not capable of dealing with new, quickly changing requirements in tacit-dominated environments.
- *They have been technology-centred:*
  IT/engineers defined the workplace from an IT infrastructure perspective, focusing on new technologies (e.g. introduction of thin client hardware or Windows Terminal Server), but less on the changing requirements of the end users.

IT efficiency, standardization and the progress of feature functions are continuing to be valid elements of workplace evolution, but establishing a sustainable workplace environment, which is both well-managed and flexible in the long-term, requires a broader, platform-based approach using extended building blocks across the enterprise.

Essentially, companies and their business and IT building blocks have three levers to differentiate as part of a continuous adaptation process to drive innovation:

- *value-added services,*
- *flexibility and*
- *efficiency.*



Corporate decision-makers need to balance the Workplace Platform along these levers.

3.2 IT Component Requirements – Where do we need to be?

Focusing on the business side of workplace requirements, an advanced Workplace Platform needs to implement value-added services by increasing flexibility in terms of supported applications and devices, enabling new collaborative working styles and mobility. Recent studies (see GIGA, Forrester, IBM et al.) also strongly support the requirement for rich user interaction, eventually across heterogeneous devices. Moreover, users are asking for the ability to individually adopt, extend and personalize their working environment.

This means that an ever-evolving set of value-added services must be dynamically integrated in front of a rich and unpredictable set of potential users. Proprietary integration concepts as well as closed communication platforms with potentially slightly better IT efficiency are not the right answer. Enterprises need to leverage open standards and concepts to gain the right reach and enable reusable patterns for integration. Moreover, corporate standards have to be established, governing the process of keeping the balance.

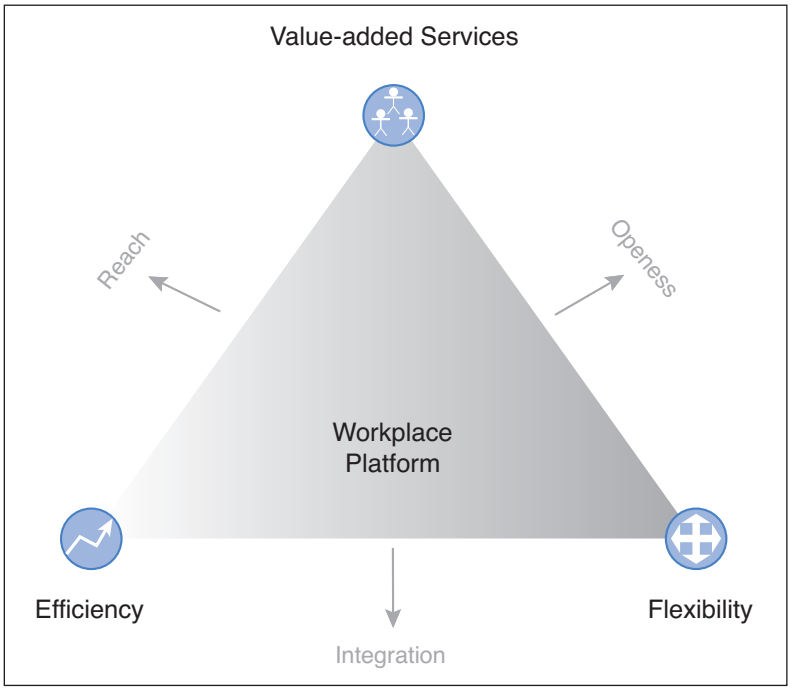
In general, the workplace needs to become a trustworthy and stable application platform that goes beyond the existing user experience with desk-side computing. This results in requirements for a clearly structured application framework. Having agreed to these requirements, one also needs to extend the discussion beyond the demand side of the equation.

The need to improve IT Efficiency clearly enforces additional functional components, implementing for example central user and configuration management, self-service portals and No-Touch deployment, just to name a few. IT-efficiency-centered approaches should be supported by integrated device management processes (order – 2 – disposal) and virtualization technologies, however they may not be reduced to these aspects.

Conclusion:

To deliver on existing and new requirements, candidate technologies need to be reviewed and selected specifically with regard to their

- *Openness and*
- *Integration of processes and components as well as*
- *Reach in terms of communities, devices and connection-states addressed.*



3.3 Workplace Platform – What technology and implementation choices do we see emerge?

Over the last couple of years, many technologies have evolved that make an impact on every potential desktop scenario. With the rise of new value-added services as well as management enhancements for a Workplace Platform, the list of emerging technologies becomes an almost endless enumeration.

Relevant categories are:

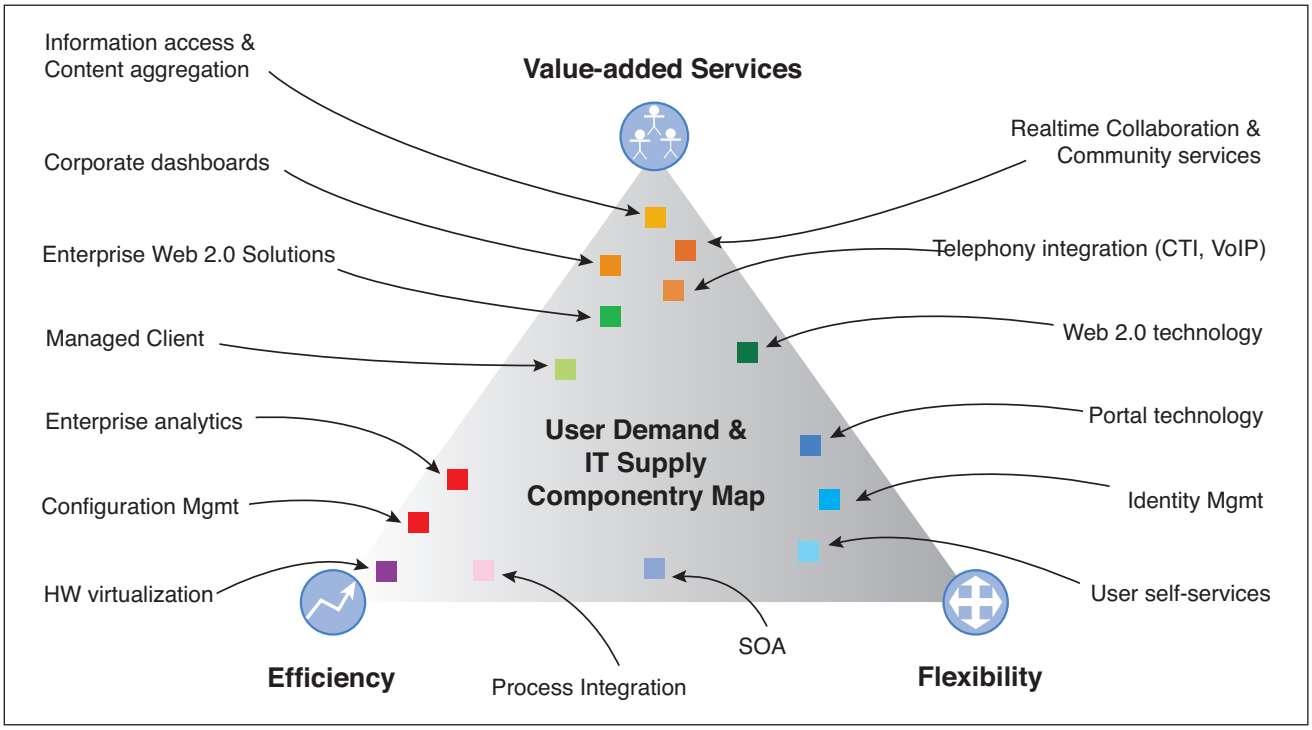
1. *Rich Front-end Services (e.g. Server Managed Client, Synchronization, Rich Internet Application, AJAX technology, Forms)*
2. *Emerging Collaborative Functions (e.g. Realtime Collaboration, Teamspaces, Web 2.0, Wiki, Blogs, Social Networks)*
3. *Portal Components (e.g. Web Mail, Document Services, Process Portal, SOA Front-Ends, presence services)*
4. *Content Management & Data Aggregation (e.g. Content Syndication and RSS feeds, staged Content Management Systems, data federation)*
5. *Provisioning Components (e.g. factory concepts, configuration and asset management, user self-service, Streaming Environments)*
6. *Virtualization Techniques (e.g. centralized and distributed SW & HW virtualization. Server-Based Computing approaches)*

The good news here is that the emerging technologies are supporting the instantiation of an appropriate Workplace Platform. The challenge remains to adopt the correct methods to navigate through those choices reflecting the supply and demand side with the correct focus.

3.3.1 Componentry Map of the Workplace Platform

The following picture shows a structured componential map for the new Workplace Platform.

Please take particular note of the precise location of each candidate component in the overall Workplace Platform chart. For example, portal technology may extend flexibility and value-added services, however combined with process integration technology it will increase efficiency too.



Given subsequent implications derived from the requirements discussed above, the platform needs to be a comprehensive and open set of integrated technologies with both functional and technical reach.

This paragraph gives examples of concrete technology components which, in themselves, address different types of realization alternatives. Most obviously, this cannot be a limited list of technologies.

Starting with the business side and their demand in value-added services, one can – to one extreme – suggest leveraging of Web2.0 technologies, an overarching term for collaborative, peer-to-peer-oriented tools – some of them being available as non-profit tools, as well as technologies to run rich applications on connected devices.

To another extreme, corporations could leverage commercially available enterprise solutions and frameworks in order to define a more integrated and manageable application stack (local or remote, centralized or decentralized) for workplaces.

However, limiting the discussion to Web2.0-like technologies is a short-falling approach, as only part of the business is addressed.

Improving employee efficiency in transformational and transactional tasks requires effective integration with enterprise value chains – a comprehensive Business Portal is the solution at hand. As such, the Business Portal is the face of SOA and process integration. Moreover integration with corporate applications, information and data not only makes a Business Portal the primary landing page but ultimately builds the personalized Workplace.

The Business Portal also addresses aspects of IT-efficiency as it implements centralized management with regard to security, role-based administration, and personalization.

The underlying technology also enables the consolidation of efforts made by the client/on behalf of the client through offloading application functionality to the Business Portal, which eventually results in increased IT efficiency and a more stable front-line device.

In recognition of hidden costs for supporting the process of provisioning end-users with value-added services, enterprises may incorporate the Managed Client concept into their strategy.

Managed Clients are removing the burden of missing client-side runtime and deployment frameworks, which are intrinsically role-based and server-managed.

Fundamental capabilities of Rich Clients are delivered, for example, with the open Eclipse Rich-Client-Platform, while commercially available products are offering enhanced support for software deployment services, offline-mode capabilities and secure and safe business data handling, thus helping Rich Clients to become Server-Managed Clients.

In addition to the Managed Client concept, IT-efficiency initiatives may be backed by a factory concept, built on a Configuration Management Database (CMDB), which is the cornerstone for driving rapid response in support efforts and business flexibility.

Organizations can use process management products to consistently execute, automate and improve management processes.

The CMDB can also be linked to provisioning tools (for updating native parts of the Workplace, such as the Operating System, Browser etc.) and User-Self-Service components, such as a Web shop in order to productize demand management.

Fully fledged asset management is more than just a by-product of this approach.

Data and Content-related aspects of users‘ requirements are generally overlooked in desktop strategy approaches. They are however having a clear impact on user efficiency. Depending on the precise requirements, functionality can either be implemented by full Content Management solutions and Web Content Management packages or by more specialized solutions addressing the need for tacit workers, such as Corporate Dashboards and Enterprise Analytics.

Above all, applying virtualization technologies to desktop environments can centralize the instantiation of workplaces back to the central office in a terminal server approach. We will come back to this thought later as one lever to get the provider efficiency we are looking for here. But let us first discuss concrete implementation variants solving the need for collaborative value-added services and the need for improved management of rich clients.

3.3.2 Realization Scenario: value-added collaboration services for corporate workplaces

Customers emphasizing value-added collaboration across the enterprise are likely to focus on aspects such as:

- *real time collaboration & planning styles*
- *knowledge management in social networks*
- *Web conferencing styles with integrated technologies*
- *ad hoc sharing of team content and projects*

This type of workplace realization scenario is productized in IBM's Web 2.0-type collaboration solution that consists of three core components:

IBM Lotus Sametime, IBM Lotus Connections and IBM Lotus Quickr. Lotus Sametime is IBM's real-time collaboration component. It can either be used via the instant messaging client included or via the web. In addition to text chat, the client is increasing the number of features to include voice chat (VoIP) and voice calling through integration with third party telephony providers. Lotus Sametime enables an entirely new Web conferencing user experience, with easy, fast and reliable entry to Web conferences. It supports high-volume Web meetings, with seamless clustering and failover.

Customers can extend real-time collaboration to clients and other businesses by means of federation of instant messaging with most established public instant messaging networks through a gateway server. Networking and telecommunication companies are providing solutions for extending Lotus Sametime to a unified communication client. Lotus Connections is a new Web 2.0 product that will help companies and communities to unlock latent expertise and collaborative capability. The aims with this product are to promote collaboration and innovation and to increase employees' ability to cooperate on a larger scale, both internally and externally.

Lotus Connections is designed to enable the adding of new applications over time. Initially, it features a set of loosely coupled services:

- *Personal profile pages*
  Think of this as "Facebook" for the enterprise. The application manages basic profile information including names, pictures, name pronunciation, reporting structure and time zones. It enables searching for people by name, expertise or keyword to locate someone with the experience and knowledge you need.
- *Blogging*
  Blogs are a popular way to share information and create connections. Companies who want to improve their own innovation could benefit from deploying a blog server internally. An individual's blog would be linked to one's profile page.
- *Social bookmarking*
  Users manage their bookmarks via the Web, organizing them with "tags". Others can see and share the bookmarks, enabling the discovery of people and resources based on similar interests. This is a powerful tool for building informal social networks, for discovering experts and for recording tacit knowledge.
- *Online communities*
  These are tools for finding, joining and watching communities of interest.
- *Activities*
  Activities use Web 2.0 technologies (syndication, REST, and light-weight linking) to organize the people, work and collaborations associated with a business activity. Users can access the Web-based activity dashboard from anywhere, or use plug-ins to extend existing collaboration tools. They can share files and Web links, post messages, track to-dos, and manage deadlines.

IBM Lotus Quickr

Lotus Quickr provides services for organizing and sharing everyday content within the context of personal and team workspaces. Lotus Quickr includes familiar constructions, such as content libraries, team workspaces, and folder hierarchies, which makes it easy to learn. It provides innovative new „Quickr connectors“ right into the applications that people use all day, everyday.

Lotus Quickr will also include out-of-the-box business application templates. IBM is building templates to address some common business problems where fast and easy sharing of team content or simple management of team projects can make a difference.

Innovation Place is one example - an application for submitting, enhancing, reviewing, and approving new ideas. Other upcoming templates are things like project management and meeting management.

3.3.3 Realization Scenario: the Managed Client concept

Efficiency- and integration-focused customers are evolving their application stack in two directions:

1. *centralizing business functions by pushing portalization and*
2. *optimizing the distributed world by implementing server managed clients with rich user experience*

and they are solving at least three integration aspects:

1. *people*
2. *processes and*
3. *information.*

IBM WebSphere Portal – the market leader in Business Portal technology – in conjunction with IBM WebSphere SOA technology and IBM Lotus collaboration products (such as Sametime, Notes/Domino, Connections, Quickr) are forming the central backbone for these aspects while IBM Lotus Expeditor is implementing underlying technology for the Managed Client.

By combining portalization and process integration in a SOA-type fashion, customers can build integrated front-ends, which dramatically improve employee efficiency. The investments into a process portal easily pay-off. Moreover, as these components are running on centralized portal middleware, they are also removing the burden of caring about desk-side code.

In addition, fundamental communication services such as mail, calendar and simple text chat can be made available via a browser. This approach specifically addresses Data Entry and to some degree Structured Task workers.

In this concept, enhanced IT support for Structured Task workers is delivered via Managed Clients.

IBM Lotus Expeditor is IBM‘s version of a Managed Client - built on the open standard of Eclipse‘s Rich Client Platform (RCP), a commonly accepted environment for building rich user interfaces primarily for the developer community.

In order to allow RCP to be the basis for an enterprise, IBM Workplace Platform has extended RCP with support for transactions, a safe and secure local datastore, data synchronization and deployment techniques. IBM Lotus Expeditor also comes with more sophisticated programming interfaces and enhanced development tooling.

The value-added services offered on the Managed Client are more sophisticated functions such as rich user interfaces for local applications and local data and local tools (e.g. editors).

Technology-wise, the value-added services are plugins to the Expeditor Client.

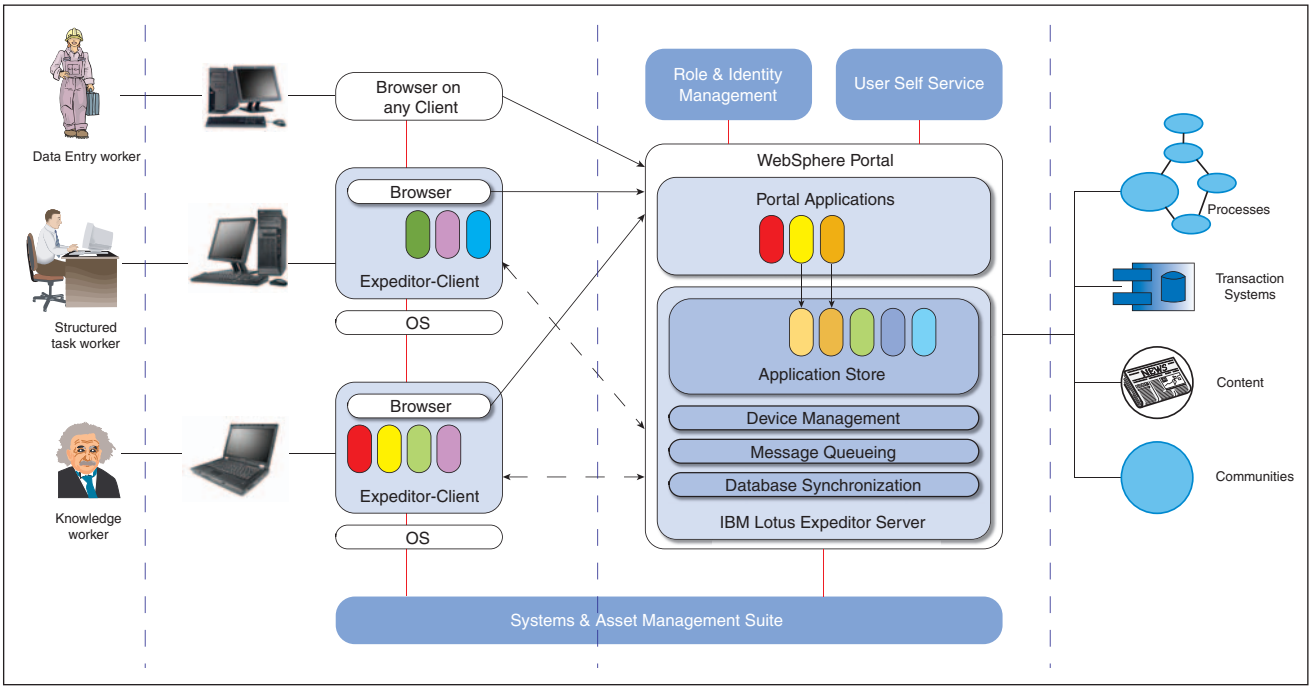
Even a complete mail and calendar solution can be delivered into the Expeditor Client.

As an integral part of these products, IBM also delivers the server-side components for role-based management of plugins, which results in predictive deployment costs and improved time-to-market.

With the Managed Client technology, the concrete requirements of Knowledge workers and other complex roles are implemented as additional value-added plugins to the Expeditor Client. The IT mission here is to administer the relationship between users‘ roles and available plugins, rather than to undertake changes to underlying technology.

IBM Lotus Expeditor also offers Offline-content and data synchronization to the server, thus enabling the on-off and mobile working mode of today’s high-end IT commuters.

The Managed Client scenario implemented on IBM Lotus Expeditor and WebSphere Portal typically looks like this:



Conclusion:

The Workplace-related software portfolio represents a new open architecture for the office, building on the idea of using the portal as a people, process and information integration point, yet adding to that the flexibility and reach of a managed client experience that is richer than a browser, but requires fewer supporting resources than a traditional PC-based application. Although new, it is introducing enterprise-scale Web2.0-like value-added services, based on an architecture built on widely accepted standards, allowing enterprises and business partners to easily adopt their applications.

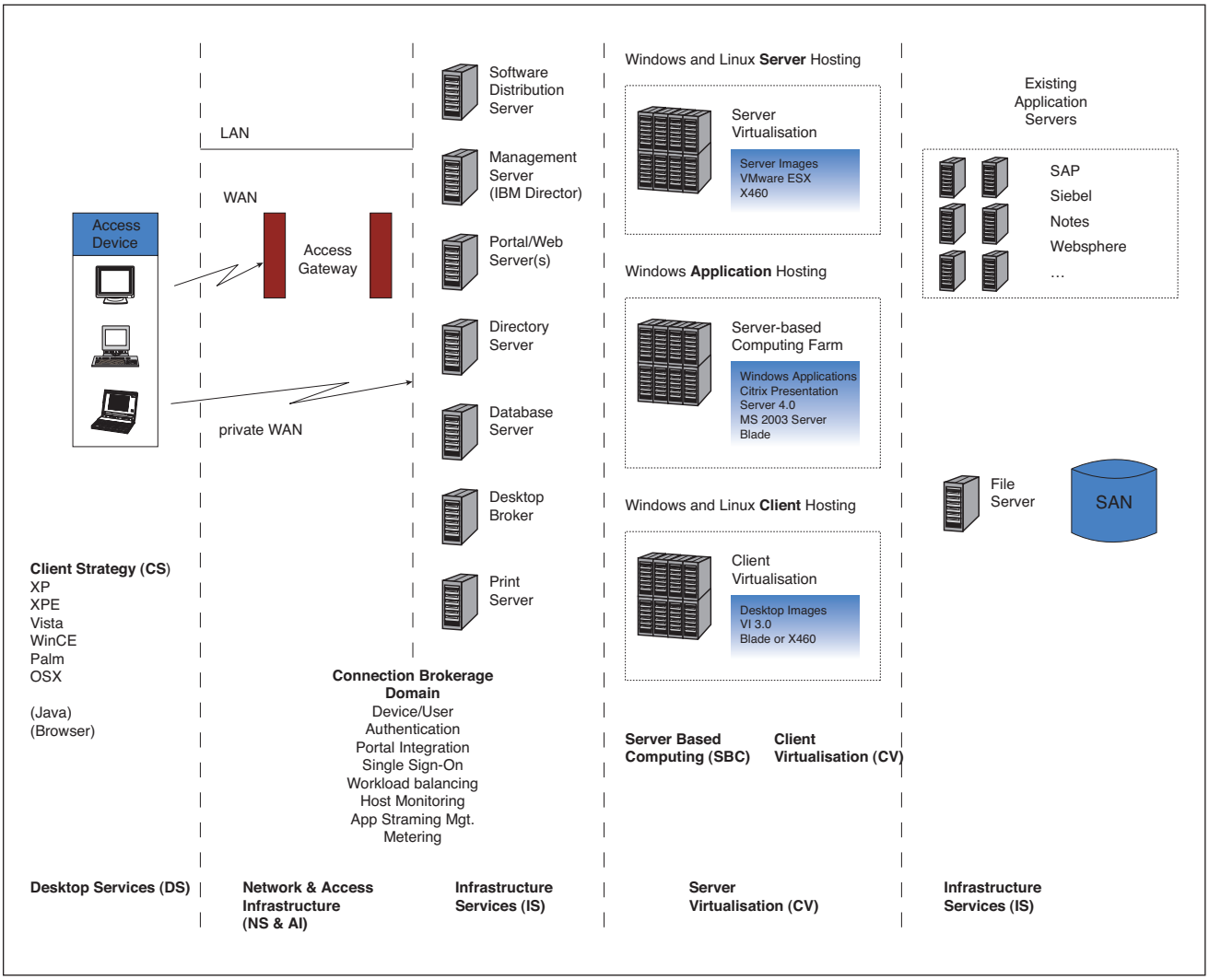
3.3.4 Realization Scenario: the Client Consolidation approach

As already discussed by enumerating significant components and technologies, the IT provider could significantly improve the workplace efficiency by applying virtualization technologies. This allows the addressing of demand-driven superior capabilities to the end user, whilst at the same time improving the efficiency of the supply side of the workplace platform. Today there are new technologies available, which enable client server centralization without touching the existing application stack.

For that reason, IBM has productized virtualization technologies (e.g. VMWARE, XenSource, Citrix, Terminal Server solutions etc.) with decoupling techniques of application from operating systems and end-user devices. These techniques are now available as standardized service products, referred to as „IBM Virtual Infrastructure Access Services". There are specific white papers available that delve deep into the details of those specific solutions. Here we will follow up with a brief overview of the main concepts.

The Client Consolidation technology approach is a concept used to virtualize client platforms by transferring client systems (limited to applications or completely) onto central servers, i.e. Blade Servers as one option. With this approach, the overall CC technology combines existing and new server-based computing concepts due to the fact that there are no specific prerequisites needed for application enablement. Thus the CC technology tries to combine the best of two worlds - server consolidation with well-known terminal server solutions and desktop virtualization techniques for resilient infrastructure and more powerful operating systems enabling sharing and isolation.

As illustrated in the diagram below, the employees are able to use a rich set of client environments. On the other hand, integrated load-leveling mechanisms and centralized infrastructure components offer a readily available client- yet server-based environment.



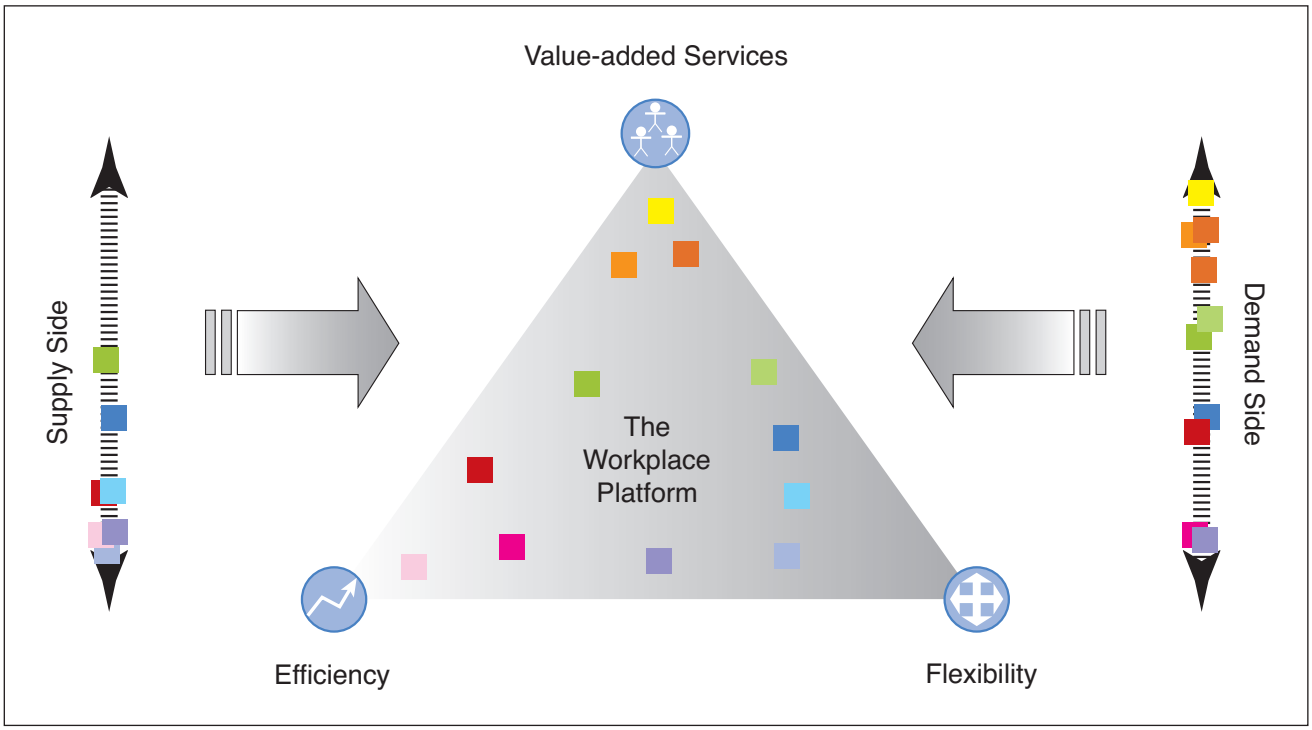
In summary, IBM's „Virtual Infrastructure Access Services" is a superior reference implementation of a Client Consolidation technology, running Clients on VMware, for example, or XenSource images, which are implemented on blade servers in the data center, for example, which in turn run host operating systems such as LINUX.

Supported front-line hardware may be either locked thick clients or hardware-based thin clients such as, for example, Neoware, Wyse, Igel, ChipPC and others.

The set of supplemental technologies envisioned needs to be positioned with regard to the specific requirements for any given business opportunity. Because of the broader approach, the Workplace Platform enforces new concepts in managing diversity.

4 Managing Diversity – The Other Dimension of a Balanced Workplace Strategy

As pointed out in the last chapter, efficiency and standardization are valid elements of workplace management. However, in the light of new technology elements and platform- based approaches, it needs more focus on balancing the dynamics of "get-what-you-need" profiles as well as new levels of integrated device management and virtualization.



Considering the functional evolution of users' demand, it was also noted that IT departments have to understand the workplace variations in order to find the right management concept for the demand side as well as the supply side of the IT equation.

As a consequence, workplace management is not just a task for handling a mass of single entities, but it also needs to be understood as managing an environment that demands a clear vision, strategy, design and governance approach, which balance end-user flexibility, efficiency and new demands of collaborative work in the business environment. To put it in a nutshell: managing diversity will become the basic pattern for addressing the "proactive user integration" requirements. To make the right decision on future workplace management architecture, it is important to assess the business requirements at hand and the IT that is currently available, and to find ways to increase the business support to close the future requirements gap.

New levels of user integration, however, will increasingly extend the definition of a workplace beyond the traditional desktop. Conceptually, this means that the workplace provides a user context, which combines the variety of people with their associated roles, places and activities that this individual needs in order to manage and run processes and solve business problems. Platform management concepts will evolve utilizing virtualization technologies and IT process automation techniques. It is very likely that we will see the following patterns in the near future:

- *Static profiling approaches to end-user devices, such as PCs, mobile phones, PDAs and peripherals that are required to create, access and share information, are evolving into dynamic subscriptions of enterprise IT-components, which can be used as building blocks of the workplace at any time and in any location, be it the office, home or the road.*
- *The presentation layer must be considered for the full technology stack that makes up the workplace, including applications and integration. In addition to this, the device hardware and operating system virtualization techniques will be included in the design. This, as an option, requires a different level of virtualization at the server for typical device hardware levels instead of application levels. As a consequence, these virtualization capabilities potentially allow the balancing of distributed and central workplace components.*
- *Innovative IT management processes around the workplace will evolve. Conceptually analyzing the current and target process maturity for all relevant support processes will provide the relevant design criteria for improved configuration- and change-management disciplines. Thus the findings can provide the right focus on the relevant key performance indicators and improve the administrative tasks, e.g. by virtualization or remote publishing techniques.*
- *Starting with a sound foundation will become the leading principle, which means getting complexity under control first, before adding new capabilities to foster tacit work in an uncontrolled manner. This is not about slowing down innovation, but about ensuring flexibility, collaboration and efficiency in the medium- and long-term.*

4.1 New ways to balance distributed and central workplace components

When the user integrated platform management will dominate the management pattern in the future, new demands to manage both central and distributed workplace components must be handled efficiently.

It is evident that portalization and process integration in a SOA type fashion are valid concepts for applications to be reengineered or built from scratch. In reality, however, many existing desktop implementations are more or less fat clients with a tremendous software stack installed on each device. One reason is the high integration of multiple applications required to operate; another reason for fat client installations is the legacy operating systems and associated application systems.

Many of the existing approaches to consolidate application on central servers struggle with this very problem, based on the technical design and level of virtualization. However, automated provisioning of application environments and devices have matured in the marketplace. This allows the provisioning of systems services and systems technologies that address the integration goals to manage aggregated pools of resources from a single, logical view.

Basically, there are management concepts which allow the management of both extremes - the Managed Client approach building on the portal technology, on the other hand the Virtual Client technology through offloading fat client application functionality to readily available, virtual desktops in server farms.

4.1.1 Management Techniques for value-added collaboration services

When the realization scenario of value-added services opens up new levels of user freedom and interaction, there are specific aspects of management techniques to consider, such as

1. *management of rich application models with personalized content*
2. *new management requirements of system properties of visibility, reliability, and scalability*
3. *handling of stateful Web clients*
4. *new levels of cache and proxy management*
5. *new requirements for federated security*

The new type of collaborative Web applications are aimed to be highly immersive, providing personalized content and rich application models. As users interact with these Web applications, complex customized pages and dynamic mesh-ups are created, browsing history is analyzed and context models in the social network are displayed.

These new types of applications aim to provide a great deal of personalization to a single user, so they must choose between two designs. The first is to send a massive amount of state information with each client request, so that each request is context-complete and the server can remain stateless. A second solution approach favored by some application developers and middleware vendors alike is to send a simple user identity token and associate this token with a „user session" object on the server side. Each approach implies different disciplines for ensuring the appropriate reliability and scalability on the IT supply side.

Additionally, rich client experience can be achieved by "Ajax applications", which are different in that the majority of their UI and application logic resides within the browser. The browser-based application code fetches new server data as necessary and weaves this data into the current page. The fact that Ajax lets you interact with a server without a full refresh of the user interface puts the option of a stateful client back on the table. This has profound implications for the architectural possibilities for dynamic immersive Web applications. The reason is that application resource and data resource binding is shifted to the client side.

The location of presentation and data binding might seem like an implementation detail, but this difference leads to completely different architectural styles, which in turn leads to specific management considerations.

The good story is that the fundamental IT management disciplines for decentralized component and central platform management still work, however the dynamic function placement in collaborative environments has to be managed accordingly.

As introduced in the Workplace Platform Components section, the collaborative environment also requires effective integration with enterprise value chains. In this context, new technologies of "federated identity" come in place because of the increasing need to open company information and Web sites to those outside the company.

This fact brings up new security management disciplines, which has to focus on identity management across enterprises. Federated identity is a way to establish someone's identity across companies, domains and applications. The idea is that once that identity is established in one place, it can be carried across to other Web services. So complex transactions and applications can be used, without the person having to log into separate applications or services and information about that person can be carried across as well.

To date, the enumerated management disciplines for dynamic collaborative workplace platforms are not fully productized yet. However, the underlying disciplines and standards are increasingly emerging which will drive a standardization in the near future.

4.1.2 Management Techniques for the "Managed Client Concept" scenario

An important feature of the Managed Client technology is the ability to centrally manage IT through a server. This includes policy-based management, provisioning, and troubleshooting. It also includes features that allow you to automatically deploy updates to the Managed Client.

When the IBM Lotus Expeditor Client is installed and configured, it requests the configuration files from the server, downloads and parses them, then downloads appropriate plugins specified in the configuration file and builds the Managed Client application. In simple terms, the process goes like this:

1. *A user gets the Expeditor Client, which can either be an install from a pre-configured portal site or a pre-install with the desktop roll-out. Both ways may provide the core platform with some default applications.*
2. *The user runs the Lotus Expeditor and logs into the Portal server that serves as the managing server for the client.*
3. *The server pushes the appropriate configuration files to the Expeditor Client. The files that get downloaded are determined by specific server settings.*
4. *The client then parses the configuration files and uses this information to locate the update page and determine which updates to download. For the first login, these updates may include applications, such as Sametime or Editors.*

5. *Every time the user subsequently logs onto the server, the client gets the new configuration file from the server and checks for any available updates. If there are any, the user is asked if he would like to immediately install the updates or if he wants to delay the install for example because of low network bandwidth. If he accepts installation of the updates, steps 3ff are repeated.*

The important thing to keep in mind about this process is that it is entirely automatic as far as users are concerned. They never have to decide which updates to download and where to go to obtain them. Instead, this is controlled through the provisioning mechanism. Both the provisioning mechanism and update site are created and maintained by the administrator, providing central management of this process.

Therefore, setting up the process for automatically deploying Managed Client updates and applications involves two basic steps:

1. *There is a need to create an update site to upload the required plugins and features, where the users can download them and run them locally as specified by the configuration files.*
2. *There is a need to customize the provisioning mechanism on the Portal server to provide the configuration files to the Expeditor Client.*

In addition to that, the management environment for IBM Lotus Expeditor is controlled by user policies. These are configured by the IBM WebSphere Portal administrative console and by user preferences set up by the user. Policies can be selected and changed by simply creating and assigning properties to a policy.

The flexible operation concept is assisted by Expeditor functions in connected, intermittently connected and disconnected mode, enabled by IBM-provided bi-directional synchronization and replication mechanisms. These features neatly address the dynamic adapting working environment, a set of productivity tools as well as role-based value-added applications as introduced in the functional evolution of users' demand.

4.1.3 Management Techniques for "Client Consolidation" approaches

Whereas the Managed Client approach is built on the portal technology resulting in new programming models for the applications, the client consolidation technology is a set of virtualization techniques allowing the transfer of client systems onto central servers. This concept makes use of offloading fat client application functionality to highly available, virtual desktops in server farms. Thus the guiding management techniques of this solution are based on virtualization mechanisms and automated provisioning of virtual desktops.

Through this consolidation perspective, there are new leading performance indicators of managing this workplace environment:

1. *increasing utilization of system resources, thereby reducing IT proliferation*
2. *broadening access to resources, helping to facilitate users' access to the information and applications they need, whenever they need them*
3. *simplifying management of computing resources, enabling potential redeployment of IT staff*
4. *helping to increase application availability for operational speed and business responsiveness*
5. *leveraging flexible technologies that can meet the changing business needs and the efficiency metrics of the IT processes at the same time*

These benefits can be achieved by implementing automated provisioning of virtual clients and embedded management building blocks to ensure the requirements of highly available infrastructures. For instance, this allows administrators to connect to the virtual pool of client systems via a Web portal, where they act as the focal point for all administration tasks like authentication management, user profile management, integrated load balancing and provisioning workflow management. The provisioning function automates the placement of the virtual systems within the pool of servers and ensures the appropriate links to the corresponding user profiles.

Basically there are three distinctive management models for operating the client consolidation scenario:

1. *Hosting of physical one-to-one images*
2. *Application publishing mode with shared services*
3. *Server-based Virtual Machines*

Each of these models has characteristic features that are independent of the hardware and software tools used to implement them.

Hosting of physical one-to-one images means on one hand an excellent physical isolation (e.g. blade servers with dedicated images), but poor physical density and can have a relatively high cost per end user. In addition to that, all of the image support issues remain and there is a concentrated high facilities impact with power, cooling or network interconnections.

The application publishing mode with shared services has excellent density (e.g. terminal server with application virtualization getting a multi-user environment) and potential for low costs per user, but may not isolate user environments. Some applications don't work well on the same server or in multi-user environments.

The server-based Virtual Machine (VM) model (e.g. running end-user VMs multiple times/multiple end-user VMs can provide better isolation, performance and availability, but lower densities drive higher relative cost per end user. However, the virtualization enables load balancing and dynamic session management. Additionally, dynamic allocation of resources can provision users differently.

In summary, the management techniques of Client Concentration scenarios demonstrate the use of virtualization not only to consolidate and centralize a myriad of instances on dedicated or non-dedicated servers, and the use of Terminal Services not only to share and publish on the application layer - the new workplace management environment combines those two techniques and adds functional and financial benefits to workplace environments which cannot be migrated to other realization scenarios for a short term.

4.2 New levels of dynamic profiling by intelligent subscriber management

All scenario-based management techniques and concepts, as described above, are capable of exploiting user profiles for the various workplace environments. However, the upcoming variety of Knowledge Worker needs a more sophisticated approach to manage a dynamic and adapting working environment.

Many companies went through a process of workplace standardization several years ago: operating system and application landscapes were consolidated and as far as possible each user had to use the same or at least a similar workplace. However, it turned out that some of the users need to be more privileged or someone needs access to a special application. This way a lot of different standards evolved.

Currently, most companies who manage workplaces well, do this based on user profiles, i.e. bundles of different combinations of applications or even additional hardware components like printers and monitors. For example, it turns out that typically only 20% or less of the profiles already covers more than 80% of the desktops that are in use in the companies.

However, for many clients, the number of different user profiles increased again over the last couple of years, in order to address new requirements from the business side. Due to this increase, over the last couple of years, the administration of workplaces has also become more and more challenging.

Now new methods of dynamic profiling mechanisms are evolving, which can be categorized as publish and subscribe models.

On the one hand, there are application publishing techniques, which allow users access to remote applications, on the other hand, there are provisioning techniques, which get the associated components installed on one or more devices. In any case, new subscriber management disciplines are addressing the dynamics of these workplace environments. Publish and subscribe mechanisms are well known in messaging and workflow implementations. This might be the reason why the underlying management paradigm is increasingly applied in the automation of IT processes.

4.3 Workplace management beyond traditional ITIL processes

When considering efficient execution and automation of workplace management activities, one could argue that there are enough IT process frameworks as a reference. ITIL as the de-facto standard and foundational library of relevant support- and delivery-processes is a prominent example in that space.

Workplace management activities in the ITIL framework are addressed as the traditional IMAC (install-move-add-change) administrative activities.

To our understanding, managing workplaces as a platform for user integration enforces a holistic management strategy, which covers the full technology stack including productivity applications, integration and presentation layers, new demand management activities for the application development, not only the lifecycle management of workplace hardware and operating systems.

Today many companies automate and integrate key IT processes within their infrastructure management solution areas, and automatically share information across areas. Implementing the new features of infrastructure management solutions drives the efficiency and effectiveness of workplace environments by:

- *setting policies that align to business goals and will be followed consistently across the enterprise*
- *defining processes that implement the policies*
- *identifying workflows—codifying the activities that are used to run the process*
- *sharing data between processes to facilitate accurate, rapid execution*
- *automating the processes to enable the business to respond to continually changing needs in alignment with business priorities*

The overarching best practice is to address common IT processes, which are also valid for workplace management, such as:

1. *Availability management*
   Monitor the end-to-end IT infrastructure and achieve high availability of resources and applications to satisfy business objectives. For instance best of breed availability management solutions enable administrators to rapidly identify, prioritize and resolve problems before they actually happen, so that IT services are available when they are needed.
2. *Configuration management*
   Manage the configuration of resources in the IT environment and automate the provisioning of system software, patches, middleware and applications. Smart configuration management solutions offer a function-rich way to automate best practices for configuring hundreds of thousands of end points.

However, the new ways of deploying workplace environments are demanding solutions with integrated building blocks for the highly secure management of resources, transactions, processes and applications across the end-to-end infrastructure. Therefore new levels of IT service management are evolving that is far beyond traditional ITIL processes such as:

- *Application performance management*
  Optimize end-to-end application management and performance problem determination. With smart application management solutions, transaction slowdowns can be linked to the responsible system resources, including distributed and centralized platforms, as well as a wide range of subsystems.
- *Workload management*
  This includes the planning, scheduling, managing and automatically balancing of cross-enterprise workloads for optimal performance across a dynamically shifting, heterogeneous IT environment. In that space, best of breed workload management solutions orchestrate IT resources to deliver computing power when and where it is needed - across heterogeneous resources, high-performance computing (HPC) clusters and grid pools - in order to meet service level objectives and business policies.

The most successful approach turns out as a combination of both techniques – the implementation of traditional ITIL processes and the use of new technologies in the area of performance and workload management.

As a starting point, mature assessment and design methodologies should be used, which include both IT process maturity assessment techniques based on ITIL process standards and architecture assessment and modeling techniques.

In addition to that, adding financial figures based on best practices provide the design criteria for optimized function placement of IT services and components within the enterprise. Thus the next-generation management of a productized workplace platform needs to reflect the appropriate TCO-perspectives on the workplace environment including costs such as

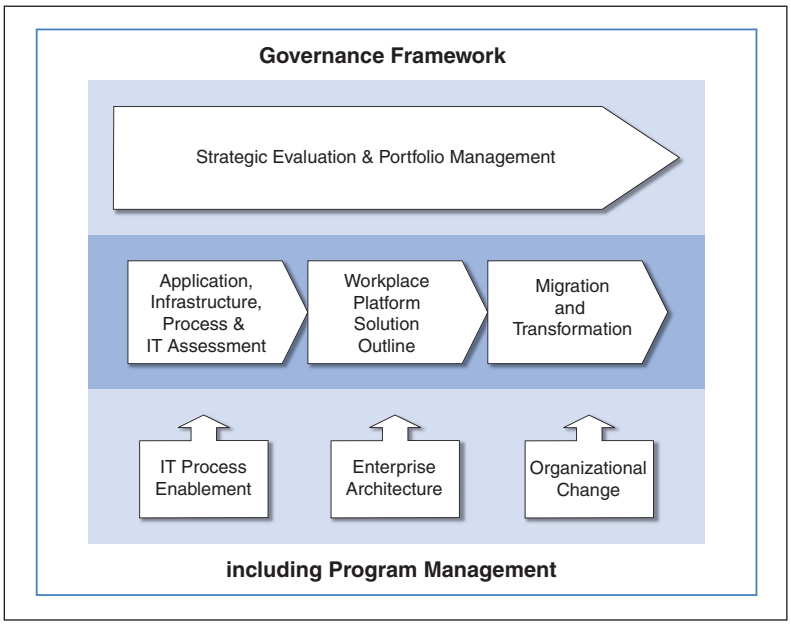
- *Install, Move, Add & Change (IMAC) services for technology components*
- *Application selection & reorganizing*
- *Deployment procedures & automation*
- *Configuration management tasks*
- *Maintenance & support*

In recognition of these building blocks and associated TCO views, workplace management will become a true "managing diversity" approach with a clear strategy, design and governance that balance end-user flexibility, efficiency and new demands of collaborative work in the business environment.

5 Roadmap to a Workplace Platform addressing the Next Level of Productivity

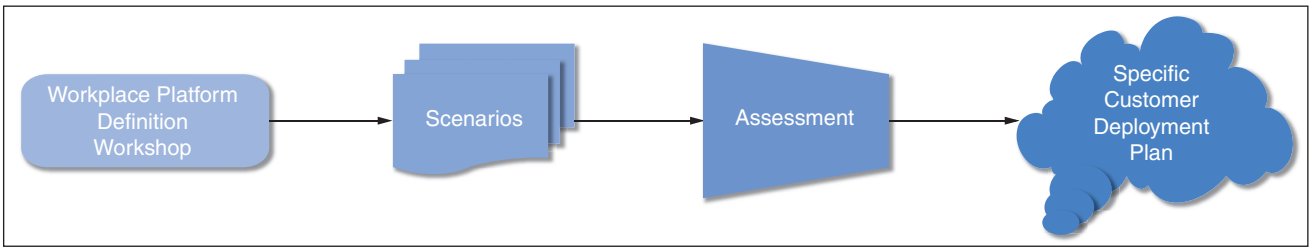
Considering the functional evolution of new roles of Knowledge Worker and the emerging technologies to support new levels of integrated workplace environments, as well as understanding the new dimensions in managing the diversity of these environments, the question is how to approach the new workplace strategy and how to make the next steps.

A key success factor of a winning roadmap towards a well-balanced workplace platform is the holistic approach to all aspects of application, IT processes and device integration within the enterprise.



In this context, it is crucial to introduce governance as introduced in the „Managing Diversity“ approach, and a program management structure where project management and portfolio management techniques with strategic evaluation criteria supervise the relevant activities.

If the assessment results in multiple scenarios, a business calculation can help to find the right direction. The picture below shows a workshop-based practical approach to support the generation of a specific customer deployment plan for a future End User environment.



These common methodologies should be guided by the involvement of key users and major stakeholders within the organization. IT process enablement, enterprise architecture guidelines and organizational change management are the winning foundational building blocks which guarantee the balance between productivity, standardization and end-user enablement.

In summary, the best practice roadmap to a next-generation Workplace Platform should be based on the following considerations:

1. *Consider strategic business process support of workplace environments by evaluating key metrics in the area of functionality and value-added services, use of technology-driving flexible options and IT service management, supporting efficient process execution. The best of breed solution is to have a well-balanced set of all features covering the required usage patterns of workplaces in the enterprise.*
2. *The usage of an architecture modeling technique guarantees a complete and consistent IT architecture assessment, as well as a solid solution design for the future workplace environment.*
3. *A robust ITIL Foundation Workbench providing high-quality IT Process views is the optimum mechanism to support necessary IT process maturity assessments and future activity flow design patterns.*

4. *Additional consolidation efforts should be considered, both in IT processes to increase efficiency and IT Infrastructure to increase flexibility. The best approach is to drive application consolidation considerations in two ways: first to evaluate the engineering of productivity tools towards a Web-based infrastructure, where workplaces will be segmented by usage types and based on a standardized footprint. Secondly, to evaluate deployment options to virtualized environments where application reengineering is not an option.*
5. *A target architecture should be drawn up to drive the redesign of centralized IT services including storage, network and systems management. Future operational models and performance management disciplines in particular should be aligned to the new workplace platform architecture.*
6. *Quality assurance should be done with a test & validation center approach, which will leverage the test-, change- and release-management procedures as an ongoing discipline.*
7. *Training and introduction of the new environment should be supported by professional education services as well as innovative e-learning concepts (e.g. blended learning concepts). Best practice is having education concepts being aware of the various Knowledge Worker styles.*
8. *Additionally high skill levels in project management, architecture management and IT process enablement are needed to ensure the successful implementation concepts.*
9. *Workplace environments evolve into strategic enablers for new levels of corporate productivity, thus demanding senior management sponsorship for these initiatives.*

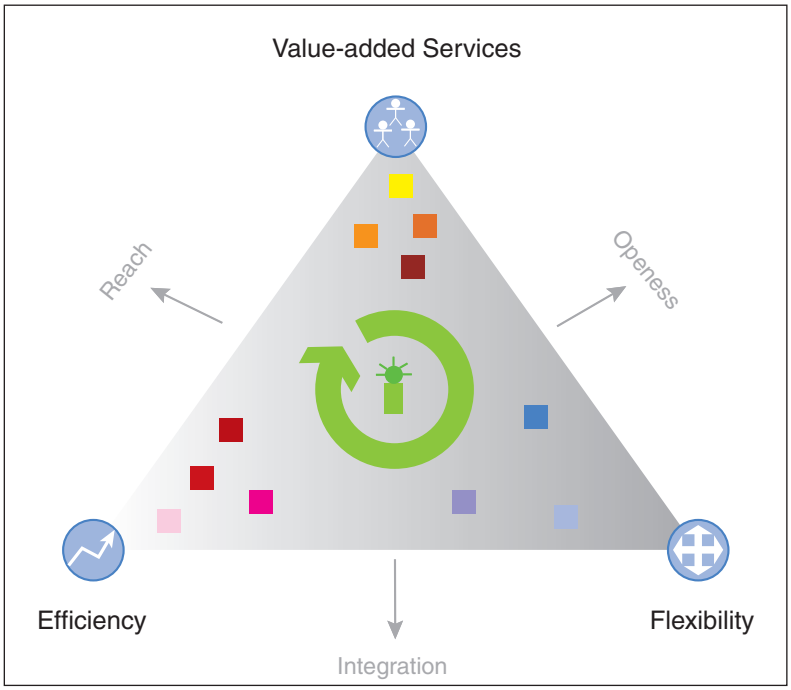
Having made these considerations, the foundational building blocks are in place covering the various disciplines: strategic evaluation and portfolio management techniques, organizational change management disciplines including education concepts, enterprise architecture management and IT process enablement. The guiding program management discipline ensures the consistent project delivery and guarantees the successful implementation of key performance indicators.

On top of the foundational building blocks there are assessment, design and implementation phases, which are:

- *Application, infrastructure & IT services assessment*
  During this phase, the current and target process maturity for all identified applications, infrastructure components and support processes should be analyzed. The basis for the process assessment is the IT process maturity assessment, which focuses on measuring key performance indicators of relevant IT-processes based on the ITIL standards. Also included are potential implications of service provider interfaces (SPI) and service level objectives (SLO).
- *Workplace platform solution outline*
  With innovative approaches combining process models and architecture models, the workplace platform with its application deployment units and services model can easily be designed. The future design principles are based on the functional distribution of components and their dependencies. A comprehensive client configuration concept with requirements for pooled and "on demand" resources on the workplace platform, as well as the automation and operations concept of the major workplace components with configuration guidelines according to security compliance and governance procedures, are key elements of the solution outline.
- *Migration & transformation planning*
  When it comes to the migration and transformation planning phase, the proof-of-concept technique in the area of application migration is among the key disciplines in demonstrating the technical feasibility. The most challenging part is usually the migration concept of templates and macros of existing workplace platforms to ensure ongoing productivity. Thus the migration planning concept should focus on conversion procedures, business-case-relevant proof of concepts and conceptual frameworks.

6 Conclusion

The emergence of a new area of enterprise differentiation based on the empowerment of people to do value work more and more, using a comprehensive yet convenient set of collaboration capabilities, creates a completely new view on today's enterprise workplace strategies. It opens up new opportunities for IT to make the difference in gaining sustainable market competitiveness.



A holistic, framework-based workplace platform approach is necessary to address a diverse set of evolving clustered requirements (i.e. diverse type of workers and scale) with the right efficiency, also on the supply side of the equation.

Being able to balance the key performance indicators Value-added Services, Flexibility and Efficiency will lead to a value versus cost discussion in the context of the workplace. This includes the ability to address an increasing number of end users from various groups (tacit and non-tacit) in an efficient way based on increased affordable ‚reach'.

Today we already see a number of entry points into this evolution. Each entry-point in itself has its own ROI model and service level objectives supporting it. The major ones as discussed above are:

- *Process Portal instantiations*
- *Introduction of new Collaboration Technologies*
- *Introduction of Virtual Client Technologies*
- *New ways for managing distributed content and documents*
- *Client Modernization in general*
  - *Redesign of the Application Stack and Managed Clients*
  - *Linux introduction*
  - *Hardware reconciliation*

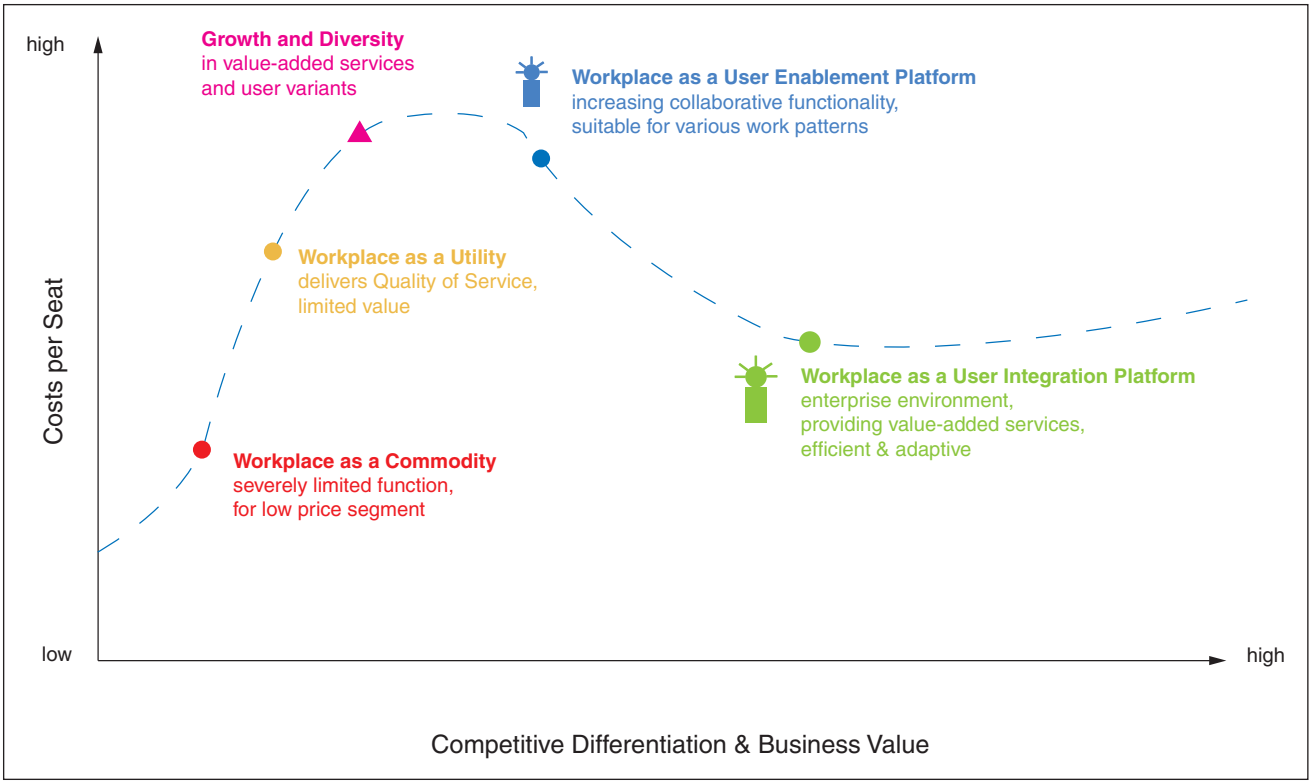
In addition to the co-existence of traditional and new function placement concepts such as client/server, peer-to-peer, and physical/logical, centralization versus distribution can be achieved by leveraging comprehensive virtualization technologies across the stack guided by a given Service Level Objective per end user group.

Sharing of a common enterprise workplace foundation in methods, processes as well as technology will increase flexibility with a controllable impact on cost structures. We have seen those approaches already been successfully applied in other IT areas (backend, etc.).

Above all, enterprises can expect pre-integrated and asset-based (frameworks, methods, strategic governance procedures) SW/HW/ Service packaging and tiered delivery approach from the provider/ vendor side, including IBM. This will lead to a faster implementation of a shared technology foundation as well as integration/deployment patterns avoiding process redundancies and making the application of best practices in the areas of end user productivity and supply productivity possible earlier.

Compared to traditional approaches, discussed concepts imply a new benefit/cost plateau perspective for the TCO&Value equation of a workplace environment.

If we combine rationalization as well as structural approaches in designing and implementing a future workplace platform, the enterprises can address scalability as well as value-added service needs at the turning point where traditional approaches cannot cope any longer with growth in the number of end users and their diversity (top of the curve).



Reaching a new plateau for the Cost-Per-Seat versus Competitive-Differentiation function means not treating the workplace as a commodity with limited functions, since it does not address all requirements. Also, Workplace as a Utility concepts will address variations in service level requirements but with the implication of an over-proportional cost increase.

The resolution to this challenge is to address workplace environments as platforms which are customizable according to actual collaboration needs first. Over time, this platform has to integrate itself into an end-to-end architecture scope to gain maximum productivity.

Service orientation on the supply as well as the demand side to abstract out proprietary implementation, will also be key elements to leverage emerging enterprise external collaboration capabilities (supply and demand).

Consequently, the Workplace as a balanced ‚User Integration Platform' is to be handled as an integral Enterprise Architecture element with governance and business-related KPIs building a value proposition on top of each other.

7. Appendix

7.1. References:

7.1.1. IBM Publications

More details on tacit worker support with IBM Lotus Connections can be found @
ibm.com/software/sw-lotus/products/product3.nsf/wdocs/connectionshome

Investigating Managed Clients?
Find more information on IBM Lotus Expeditor @
ibm.com/software/sw-lotus/products/product1.nsf/wdocs/expeditor

Looking under the hood of Web 2.0 @
ibm.com/software/swnews/swnews.nsf/n/nhan6x6j7x?OpenDocument&Site=lotus

More Details on IBM's innovative service products with the „Virtual Infrastructure Access" Service Product which provides secure access to applications and information anytime, anywhere are availabe @
ibm.com/press/us/en/pressrelease/20555.wss

See also IBM's Express Desktop Management Services, which are designed to gain greater control of critical desktop-management tasks and eliminate the manual processes, @
ibm.com/services/us/index.wss/detail/its/a1024416?cntxt=a1001540

IBM Tivoli IT Service Management solution is the most complete end-to-end middleware solution available, which delivers tight integration between people, processes and technology. Details @
ibm.com/software/info/middleware/management/index.jsp?S_CMP=linkback

IBM IT Infrastructure Planning and Design for On Demand Business includes a complete infrastructure services readiness engagement. Find out more @
ibm.com/services/us/index.wss/offering/its/a1004757

Obviously IBM itself provides a good example for the "OnDemand Workplace", IBM's internal solution for connecting employees to information and resources:
ibm.com/software/success/cssdb.nsf/CS/BEMY-5QV2HR?OpenDocument&Site=default

Beyond predictable workflows: Enhancing productivity in artful business processes in IBM Systems Journal Vol 45 @
ibm.com/journal/sj/454/hill.html

Return-on-Invest of a Process Portal and Collaboration @ Volkswagen is described in
ibm.com/software/success/cssdb.nsf/CS/MNEY-5XSNBF?OpenDocument&Site=corp

7.1.2 Further Reading

Forrester: The Information Workplace Becomes A Reality Inside IBM
Forrester: Verizon's Information Workplace @
www.forrester.com

Bossert, Brucker-Kley, Freking, Löffler, "The Workplace Platform of the Future", McKinsey, March 2007
McKinsey on IT – A New Way to Manage IT Demand @
http://www.mckinsey.com/clientservice/bto/pointofview/pdf/MoIT9_Demand_VF.pdf

James Kaplan, Markus Löffler, Roger Roberts "Managing next-generation IT infrastructure", McKinsey on IT, Issue 3, Winter 2004

McKinsey Quarterly -
‚The next revolution in interactions' @
www.mckinseyquarterly.com/links/21130

‚Competitive advantage from better interactions' @
www.mckinseyquarterly.com/links/21293

Mark Bower, Random thoughts on Office integration, Smart Clients and Collaborative Apps
http://blogs.msdn.com/bowerm/default.aspx

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7.3 Contributions

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