



White Paper Unified Communications.

Communication can be so simple.

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1. Introduction.

People today receive large quantities of daily information at their jobs through various means and use countless communication resources that have been isolated from one another until now. The spectrum ranges from telephone and fax to email, audio and video conferencing, to team workspaces including calendar functions. PCs and mobile terminals are also utilized. A nearly uncontrollable flood of information must be managed. Added to this are increased demands on flexibility, accessibility, mobility, and know-how of the individual employee. As a result, the time required to assimilate the received messages in a concentrated manner is often missing. Texts are only superficially skimmed. The distinction between “important” and “unimportant” becomes more and more difficult; feelings of excessive demands increasingly arise.

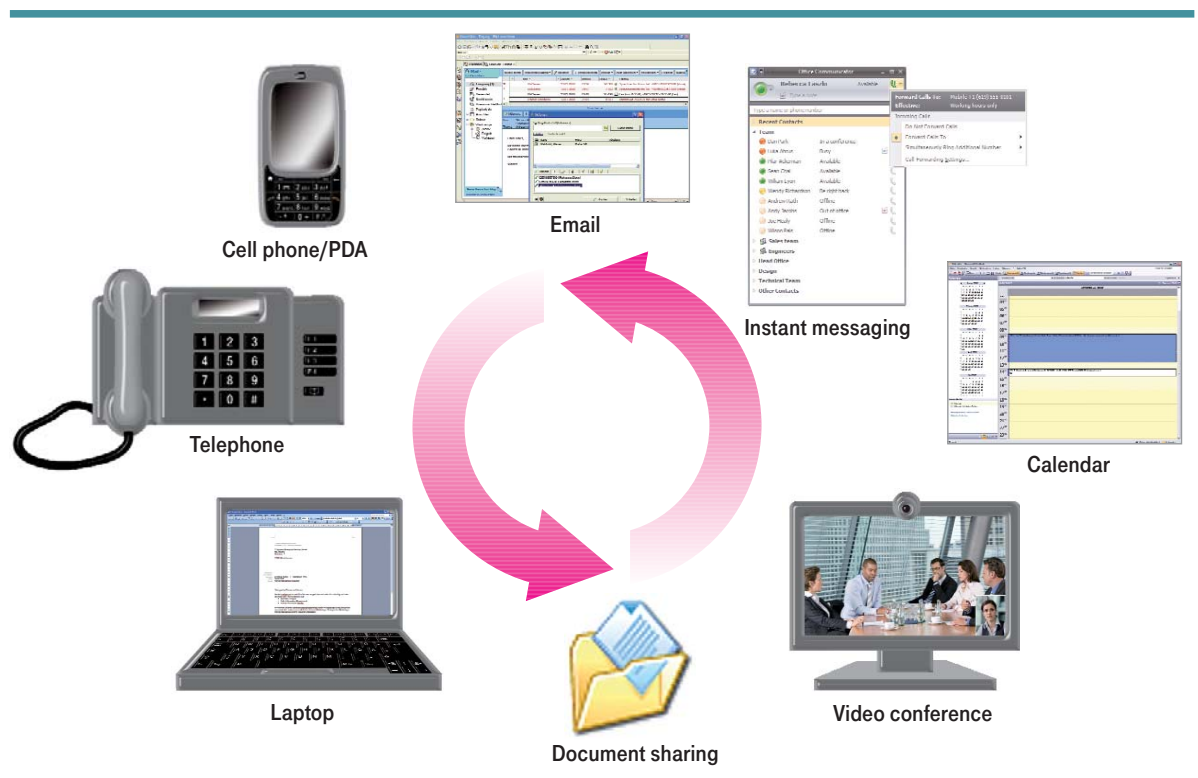


Illustration 1: Overview of unified communications. (Screenshots: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.)

The demands on companies have also changed. Today they operate in complex, partially global networks and are dependent upon collaboration with a growing number of internal and external partners in changing roles. In addition, more and more business areas and processes are being relocated or outsourced. Increasing offering transparency increases competitive and cost pressure; products and services are to be brought to market in increasingly shorter periods of time.

With it, companies and employees must be supported through increased communication efficiency in order to cope with these new demands. This can be done through unified communications – the buzzword in the ICT industry for some time when it comes to the convergence of voice, video, and data communication and the integration of production software and process applications.

Unified communications not only enables communication at every location at all times with every terminal and over every network, but also creates measurable cost and time savings for the company and employees. Thus, for example, travel and conference costs can be reduced and production time can be accelerated. The technical requirements have already been established and implemented in most companies.

2. Definition and scope.

With unified communications, all company communications are processed via one universal platform. This enables the integration of:

- the most varied networks (fixed, mobile, voice, data) via one standard (IP)
- terminals (PC, telephone, cell phone, fax, etc.)
- all message information (telephone, email, video conferences, instant messaging, SMS, etc.)
- organization and production software (calendar, email programs, collaboration software, text processing, etc.), and
- process applications (e.g., enterprise resource planning software, customer relationship management software).

Communication is therefore ensured:

- worldwide at every location
- with every desired terminal
- simultaneously or at different times, and
- with supported utilization of company applications.

Meaningful convergence developments have already taken place in the past, whose beneficial effects are currently becoming visible through corresponding product offers in the telecommunications market.

With voice over IP (VoIP), a unification of voice and data networks on the basis of a convergent IP network occurs. Seamless communication / fixed mobile convergence (FMC) signifies the convergence of the fixed and mobile network and the corresponding terminals. With the implementation of unified messaging, the user is given the possibility of receiving and accessing various types of communication – voice messages, emails, fax transmissions – over a single access point. A standardized mailbox is thus provided.

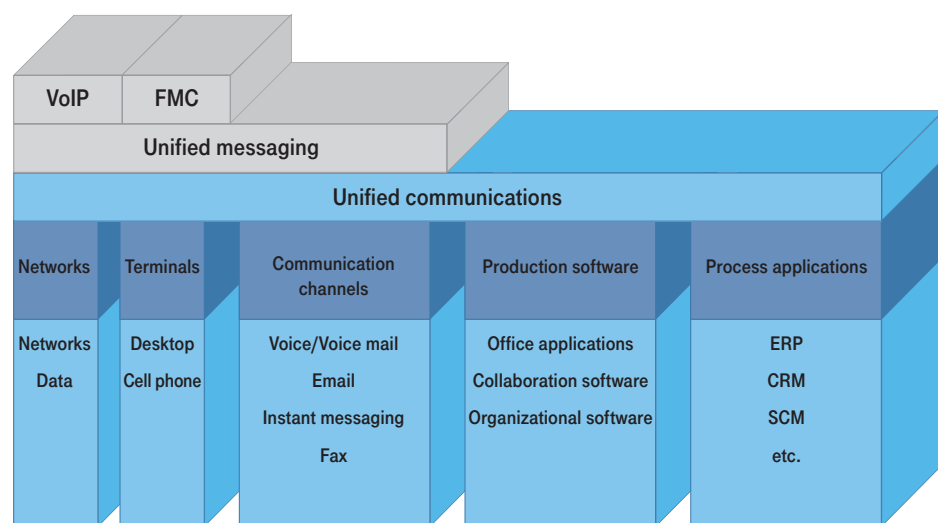


Illustration 2: Development levels of the convergence

Source: Berlecon Research; Unified Communications in Germany, Potential, Strategies, Suppliers; September, 2007.

Now the decisive final convergence step with unified communications is on the agenda. In addition to the integration of networks, terminals, and communication channels, the integration of organization software, production software, and process applications occurs. Messages can be managed centrally and independent of devices.



The personal mailbox as a communication center.

Incoming and outgoing messages of any kind are delivered in standardized form and can be centrally stored, opened, edited, and sent. The personal mailbox forms the “communication center,” for example, in Microsoft Outlook or Lotus Notes. Thus the employee can see all received messages in one view. He can decide how the messages will be answered: With merely a click of the mouse, voice mail can be answered with an email, or an incoming fax can be provided with comments on the screen and sent back in a matter of seconds. In the process, information that is stored about the communication partner in CRM systems or databases, for example, is automatically accessed.

Unified communications thus signifies and enables:

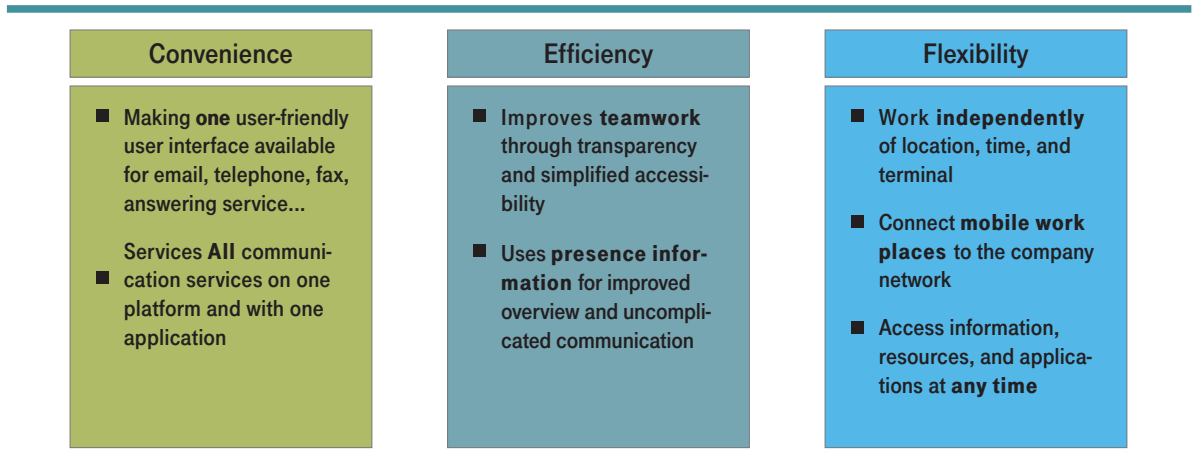


Illustration 3: added value through unified communications

Unified communications offers diverse benefits and added value for various target groups. There are basically three different groups:

- The end user who tangibly works with the solutions and expects improvement in the workflow
- Company management, whose expectations with regard to cost, productivity, and efficiency improvement must be fulfilled
- The IT department, which must administer and manage the solutions and therefore places high demands on security, flexibility, and interoperability.



Differentiated added value for users, company management, and the IT department.

Corresponding to the different requirements, the added value for a user consists primarily in the standardization of the software for all communication needs. Instant messaging (IM), voice and video conferencing, or collaboration systems are thus available to him from one user interface. The standardized user interface substantially simplifies access to the communication media. The convenience is additionally increased through the integration of the communication in other applications. The employee is furthermore in the position to control his own accessibility through presence information according to his needs. Thus, for example, he can be systematically and immediately reachable. In addition, all convenience functions from email and the telephone that he already trusts and that are on all media (including mobile devices), irrespective of access method, are available to him.

Company management experiences the benefits primarily through the relief of the employees from routine tasks and the control of presence status. Communication with external partners, customers, or employees can be standardized through unified communications. Even the total cost of ownership (TCO) is decreased through unified communications. Rollout, operation, and changes are thus simplified. In addition, travel costs are reduced to a significant degree.

It's precisely the flexibility of unified communications that also accommodates the IT department. The complexity and for this reason also the costs of administration decrease through the use of standard tools. Unified communications solutions are easy to integrate into the existing ICT infrastructure by means of their interoperability and open interfaces. The integration of mobile employees and home offices, which will probably become increasingly important in the future, can be simplified through unified communications. Simultaneously, a high degree of security and very good voice quality with minimal resources and bandwidth demand remain guaranteed.

2.1 Facilitation in communication.

Who has not seen the work place crowded with the most varied communication resources? The telephone is next to the computer, the cell phone is in a pocket, the briefcase not only contains a notebook but also a PDA or Blackberry.



Illustration 4: user-centered communication

Unified communications contributes to the clearing up of this communication jungle. All information – whether voice or data – is centrally managed and made available on the needed terminals and/or in the desired application.



User-centered communication.

Thus the employee has central access to all required information and communication channels from one point, irrespective of terminal and application. The integration occurs in existing software and applications (e.g., Microsoft Outlook, Lotus Notes, ERP, CRM) trusted by the user and in the given infrastructure.

However, unified communications enables numerous practical communication variants not only at the desk. For example, travel appointments can be postponed in the Outlook calendar even without Internet access by means of voice commands on the telephone. The employees involved are notified about the change via email. One

can be notified of the receipt of email and voice messages via SMS while in transit and retrieve them by means of a cell phone. Employees are thus always kept up to date no matter where they are.



Efficient communication.

Who isn't familiar with a similar scenario: A project leader must be reached immediately. Telephone attempts (cell phone or in the office) are unsuccessful; after that, a written email remains unanswered. Finally a colleague says that the contact is in a meeting and is reachable only via voice mail and that a response can unfortunately only occur the next day.

The use of presence information systems improves the accessibility of the employee and minimizes the number of unsuccessful connection attempts. One sees which colleague is currently present and via which communication-channel he can be best reached (email, instant messaging, telephone, video, etc.). As desired, the presence-information system synchronizes itself with the calendar and automatically selects a status (available, absent, in a meeting, etc.) by means of the appointment entry, displays the reason and duration of an absence if applicable, and informs colleagues about the preferred method of contact. The number of unsuccessful contact attempts thereby decreases significantly. The user can establish additional forwarding standards as to how he would like to be reached at a particular time or at a particular location. A caller will then be routed over the desired communication channel. Thus during a meeting, for example, it can be indicated that email is currently the most promising method of communication. Or a call will be displayed as a voice mail and automatically delivered.

The screenshot shows the Office Communicator interface for Rebecca Laszlo. The interface includes a status bar at the top, a search bar, and a list of contacts categorized into Team, Sales team, Engineers, and Head Office. A context menu is open over the 'Design' team, showing various communication options like 'Send an Instant Message', 'Call', 'Start a Video Call', etc. Annotations highlight the following features:

- Automatic information about current:** Points to the status bar and contact list.
- Access to all communication channels from one application:** Points to the context menu.
- Easy creation of connected teams:** Points to the 'Design' team in the contact list.
- Extent of visibility controllable by own:** Points to the 'Change Level of Access' option in the context menu.

The context menu also includes options for 'Properties', 'View Contact Card', 'Find Previous Conversations', 'Copy', 'Tag for Status Change Alerts', 'Add to Contact List', 'Move Contact To', 'Remove from Group', and 'Remove from Contact List'.

Illustration 5: Possible functions of the office communicator. Screenshot: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

In addition, individual employees or entire teams can have different priorities and rules assigned to them. Depending on the presence status, only callers with the appropriate priority will be put through. “Unimportant” calls within an established period of time can be forwarded to voice mail or a team colleague. Consequently one maintains the possibility of limiting one’s direct accessibility for heightened deadline pressure to selected persons.

The flexible integration of databases in unified communications solutions enables the receipt of required information about the caller directly with the acceptance of a telephone call. The employee is spared additional invocation of customer or contact data; all relevant information is available at first glance. Additionally required discussion participants can be integrated without problems by means of voice or video conference.

2.2 Cost reduction.

Already due to the convergence developments described above, significant savings potentials arise with the communications infrastructure. This effect can be additionally intensified with unified communications. The ICT infrastructure is loaded with significantly less data volume through targeted communication.

In addition to pure infrastructure savings, the complexity and cost of administration are also lowered. For example, this is possible by means of the utilization of standard tools for solution management, the central administration of work places, as well as simple integration in existing ICT infrastructures.

Even greater indirect savings effects arise through the impact on internal and external corporate operating procedures. Efficiency is seriously improved through optimized personal use, faster response opportunities, the use of virtual teams, and the reduction of administrative duties.

Travel and conference costs as well as the number of meetings can be drastically reduced. Through a functioning unified communications solution, teams work efficiently together without being bound to a location. Audio and video conferences can be initiated via drag and drop, documents can be jointly processed, and ideas can be exchanged via a virtual whiteboard.

2.3 Strategic significance.

More flexible and efficient use of employees, accelerated business processes, and shorter decision-making processes give rise to strategic benefits for companies. Individual teams and employees bound to a single location lose their relevance through the utilization of unified communications. Virtual teams and local networking become more efficient, for example, through video conferencing and data sharing.

The possibility of external access to internal company information systems such as intranet and ERP systems is already standard. Unified communications expands this model through the connection of all ICT functionality that exists in the work place. Thus the employee has the existing telecommunications infrastructure available to him in its entirety when traveling or – a significant future topic – from the home office.

The omnipresence of information arising from this forms a considerable knowledge headstart. Employees and companies can respond quickly and flexibly to changing situations and thereby generate significant competitive advantages for the company.

A not insubstantial added value both for the company and for the user is produced by the work-life balance of the employee. With unified communications, the hitherto valid maxim “accessible anytime, anywhere, and for everyone” becomes “the right information, the right contact at the right time in the right location” in the future.

Unified communications signifies a considerable gain in flexibility for employees. They can work problemfree everywhere without restrictions in a familiar work environment and without inefficient travel expenditures – and create new freedom for themselves in this manner.

Comprehensive work-life balance measures are profitable for companies at various levels. An improved working atmosphere is achieved through the newly won flexibility, which in turn leads to increased operational readiness and identification with the company. The employees also display this feeling outwardly, which favorably influences the company's image.

With increasing environmental awareness of the public, many companies have also discovered this topic for themselves. Through optimized IT utilization, the ecological footprint is greatly reduced. Unified communications improves the collaboration of teams spanning various locations through which a significant reduction of meetings and above all the business trips associated with that are possible. This not only positively affects cost, but also reduces the environmental impact and the discharge of CO₂. For this reason, companies can make a valuable contribution towards climate protection.

3. Application examples.

>> Unified communications in the office.

After a sales discussion, Mr. Meier composes an email to the customer in which he gives special thanks and forwards further information. For this, he opens Outlook from the telephony window. The email address and salutation are automatically entered in a form. He prepares another note for the follow-up discussion and creates a call reminder that will automatically be provided to him again the next day at the requested time.

Since Mr. Meier cannot reach the customer with his first attempt the next day, the action now appears in the overview of all calls that have not yet been concluded, and he makes up for it during the course of the day. The next contact attempt is successful and the customer conveys interest.

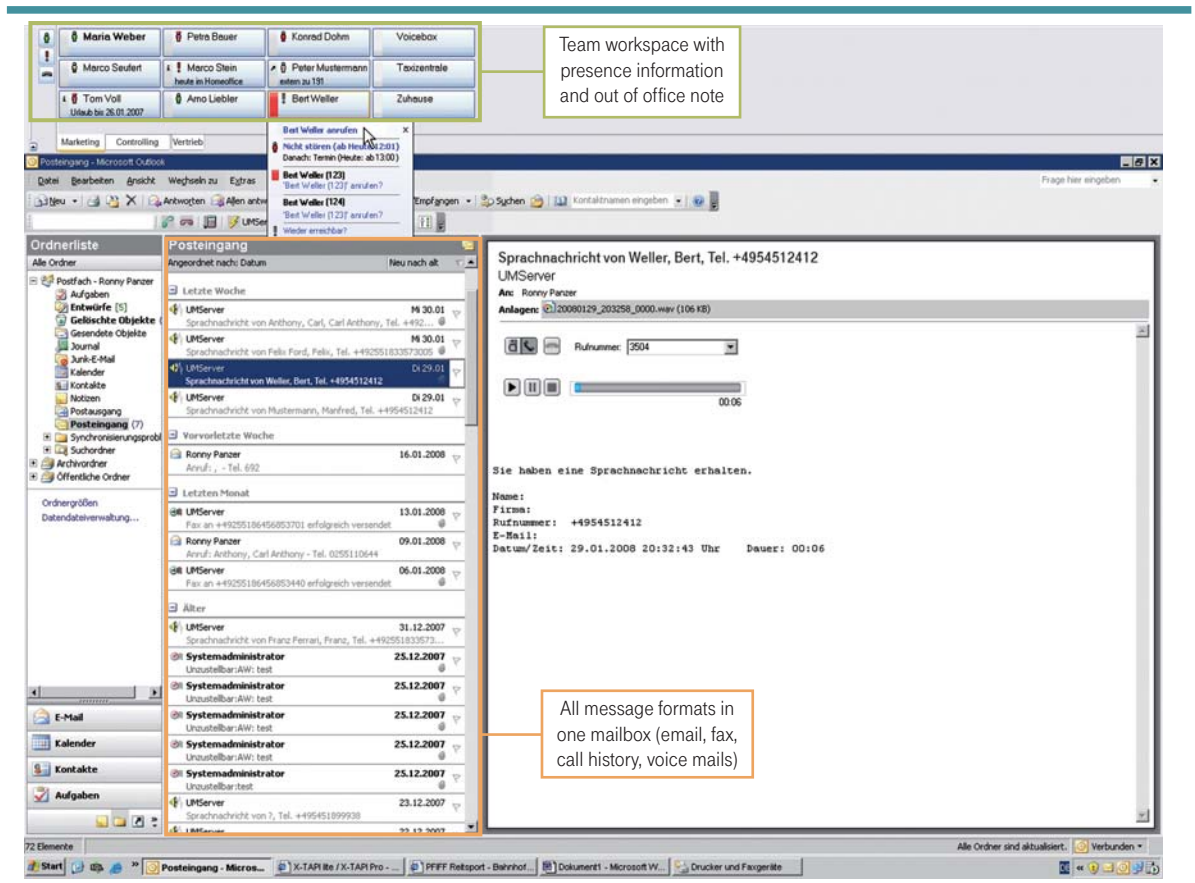


Illustration 6: MS Outlook and Octopus Desk

Since Mr. Meier has only been managing the customer for a short while due to a reorganization, not all necessary details for an offer calculation are known to him yet. In order to familiarize himself with this, Mr. Meier accesses his CRM system and displays the customer's history as well as previous account manager. Mr. Meier is still unclear about a few items so he decides to contact the previous account manager, Mr. Wagner. In addition to the contact information, his presence information is simultaneously displayed. Mr. Meier immediately sees that Mr. Wagner is currently "busy" and is best reached via instant messaging.

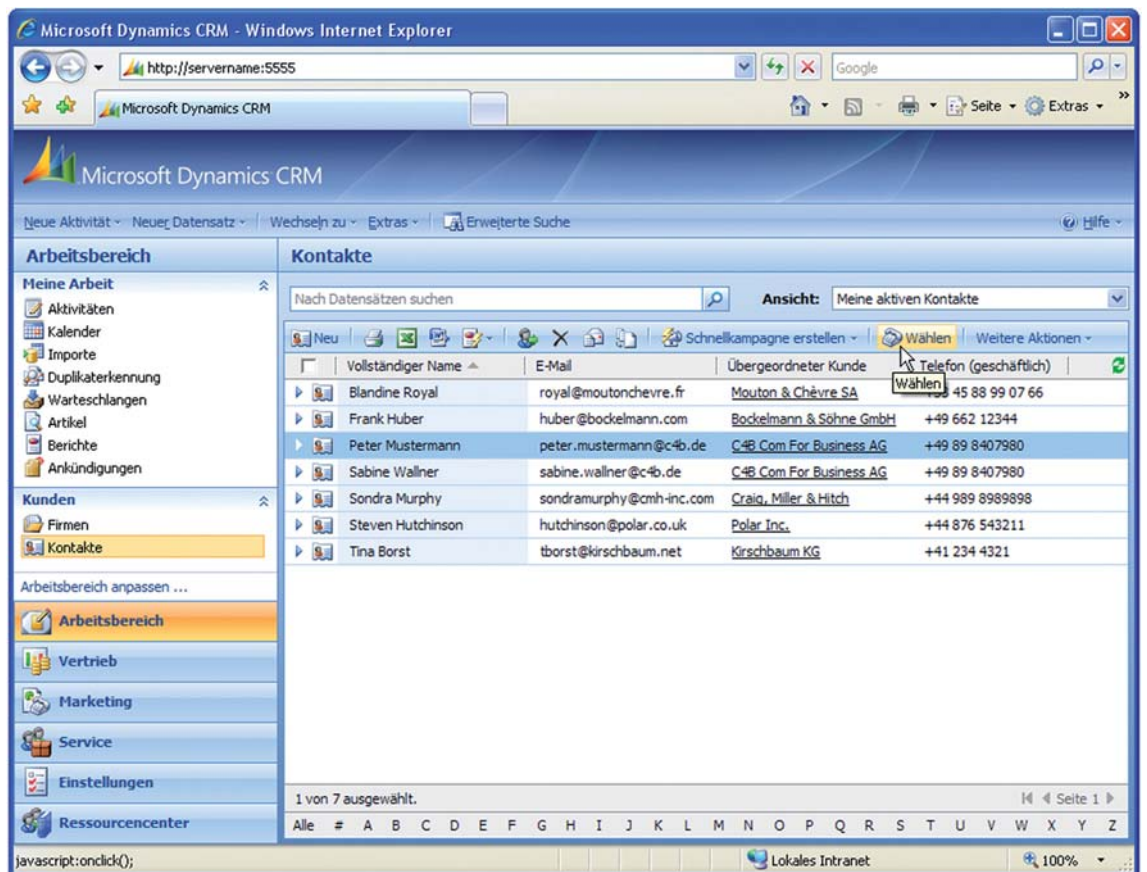


Illustration 7: example of an integration of unified communications in CRM systems.

Screenshot: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

By clicking on the respective button, Mr. Meier starts an instant messaging session with the colleague directly from the CRM application and asks him for support. Mr. Wagner says he would be happy to help. After a brief dialog, they agree to continue the discussion as a video conference. This can be initiated without difficulty from the instant messaging application with one click.

In order to familiarize Mr. Wagner with the current status of the offer, Mr. Meier transmits the related file to him. For this, the file is simply dragged to the discussion window with the mouse and thus automatically transmitted to the other discussion participant – without having to open another application, without formatting errors. A virtual whiteboard is available in parallel for the mutual exchange of ideas.

During the course of further discussion, it comes to light that another decision from Controlling is still necessary for the completion of the offer. Mr. Wagner sees that Ms. Huber is “available” there and would therefore like to include her in the discussion immediately. This occurs again by means of drag and drop – Mr. Wagner simply drags the corresponding contact to the discussion window with the mouse and the connection to Ms. Huber is established and integrated into the present video conference. Since Ms. Huber is currently in an automobile, a connection is automatically established with her cell phone.

After the final details have been resolved, Ms. Huber requests that the finished offer be sent to her. Since it still is to be sent to the customer today, she will give a final review and approve it as soon as she arrives in the hotel.

>> Unified communications “on the Road“.

After the telephone call, Ms. Huber decides to call her “inbox” in order to read her emails and subsequent appointments for the day.

She gets an overview of the newest emails, allows the most important ones to be read to her by means of voice response, and responds to these via a voice message that is sent as an audio file.

Subsequently, the day’s appointments are read to her. Since Ms. Huber must still approve Mr. Meier’s offer, she decides to postpone the team meeting scheduled for today by one hour. This occurs very easily by means of voice command. The participants are automatically notified about the change via email.

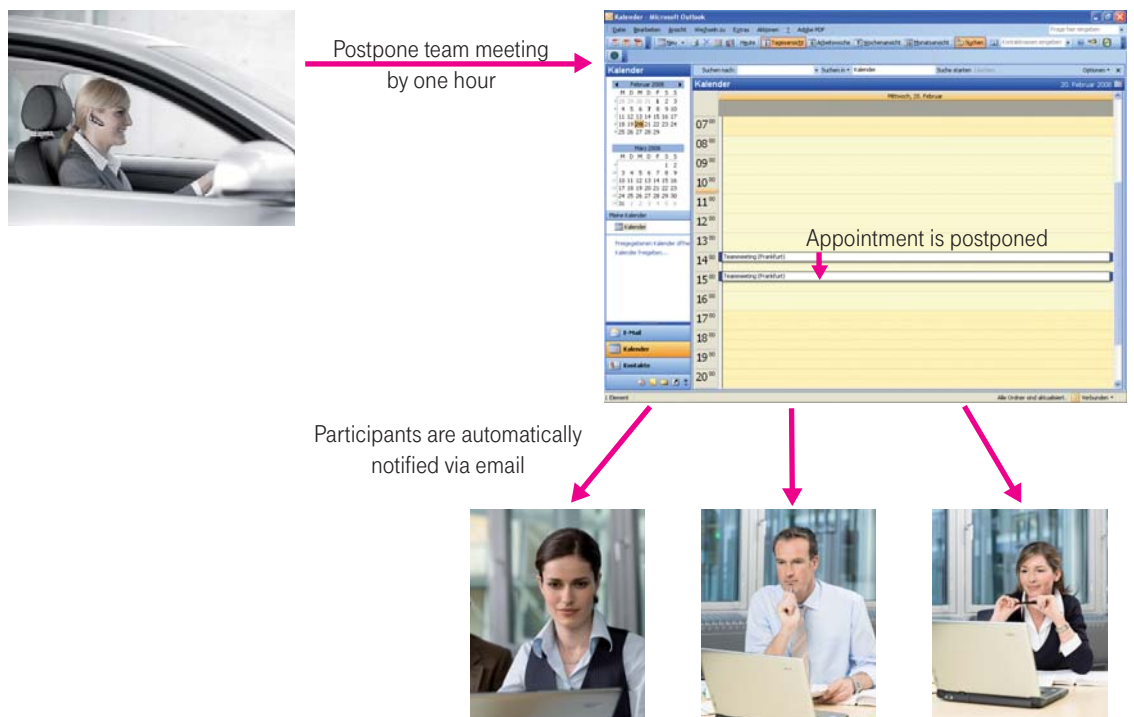


Illustration 8: Unified communications on the road. Screenshot: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

Ms. Huber changes over to her address book with another voice command and connects to her colleague in Beijing, Mr. Zhang, also by means of voice control in order to discuss the progress of a mutual project.

>> Unified communications in the hotel.

Having arrived in the hotel, Ms. Huber starts her notebook and checks the messages that arrived during her drive. Two new emails and a fax arrived; in addition, a colleague left a voice mail. Ms. Huber listens to the message and decides to respond with an email. One click on the caller displayed in the list suffices to show his email address and open the email program. She subsequently displays the digitalized fax and inserts several comments on the screen. After that, Ms. Huber saves the document in her archive and sends it together with the changes to the colleague.

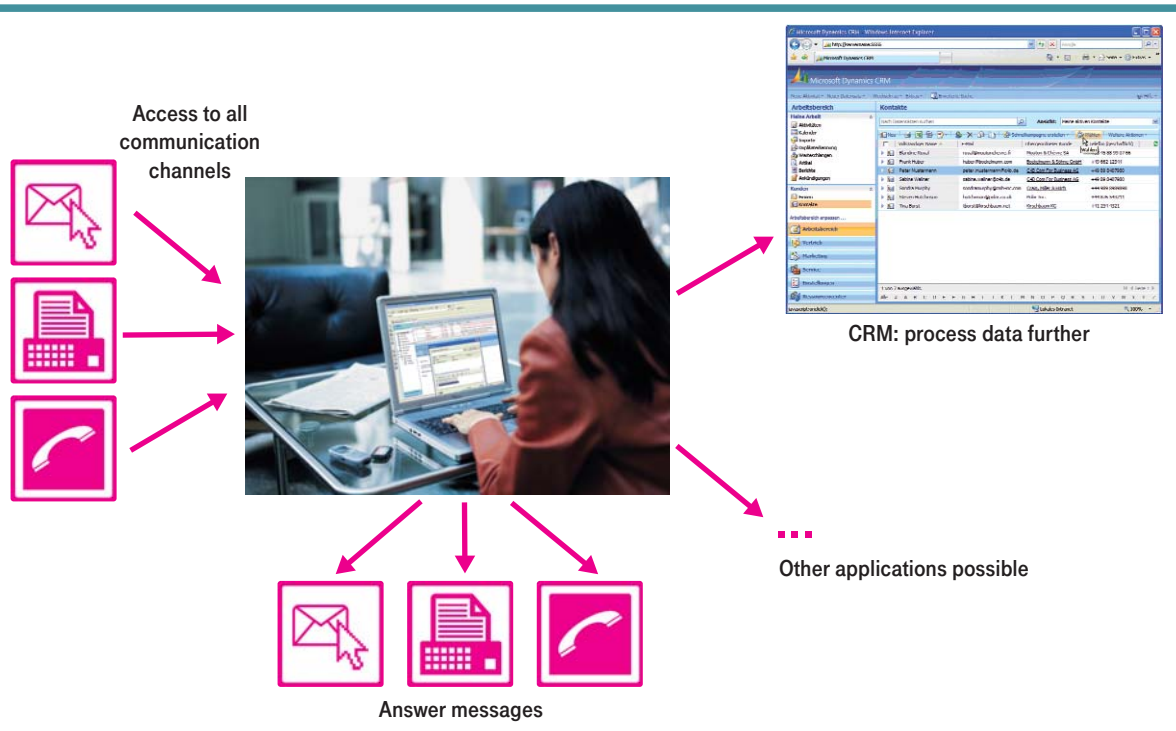


Illustration 9: A standardized inbox. Screenshot: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

After she approves Mr. Meier's offer, she goes to the hotel's café. In order to prepare herself for the subsequent team meeting while having a cappuccino, Ms. Huber logs in to the W-LAN available in the café and logs in to her company network. She can thus access the ERP system without difficulty and still check outstanding entries. In the meanwhile, she receives an email from Mr. Meier thanking her for the prompt work.

4. Drivers.

A strong incentive for implementing unified communications in companies arises from the users themselves. While some companies still hesitate to implement new technologies, their employees often use them privately (e.g., VoIP, instant messaging, video telephony, presence information) and are aware of their advantages. Another factor is the preference of users to communicate via electronic media (particularly email) rather than voice services such as telephony. Ultimately employee demand for the implementation of unified communications in the company is strengthened through the increased work-life balance. Because a flexible organization of work processes, supported through technologies such as instant messaging, and presence data plays a decisive role in productivity and employee motivation.

The providers of unified communications are clear that very high importance is attached to quality and security in the business field and that no compromises are to be made. In contrast, these might be tolerated in private use.

The fact that suppliers and users currently have a high opinion of unified communications is last but not least indicated by the numerous congresses, trade shows, and symposiums that are engaged with the subject. While unified communications was mostly a side issue at VoIP events at the beginning of 2007, it was moved to the forefront at all significant trade shows by the end of the year. A considerable portion of exhibitors at Systems 2007 in Munich were thus engaged, among other things, in various unified communications solutions, also independent of the topic of VoIP.



System integrators combine the competencies of hardware and software manufacturers.

The largest driver in this market is currently Microsoft, the priorities being Exchange Server 2007, Office Communications Server, and Office Live Meeting. Other software and hardware manufacturers come after it. Hardware manufacturers in particular hope for new incentives for their VoIP solutions through the implementation of unified communications.

System integrators such as T-Systems are primarily in demand with comprehensive unified communications solutions. They combine the perspectives of hardware and software manufacturers and can remain productneutral. An optimal solution for the customer is created only through the appropriate composition of the components.



Illustration 10: drivers for unified communications.

5. Implementation of unified communications in companies.

The necessity of reducing costs, the pursuit of efficient support of business procedures, and the technological trend towards IP-based systems are essential reasons for the increased development of heterogeneous telecommunications infrastructures to integrated ICT solutions. Unified communications leads to one further crucial step.

With the setup of a unified communications infrastructure, users customarily first build on the already existing individual solutions that are expanded step by step in collaboration with a competent partner and are converted to an integrated, total system.

5.1 Customer's initial situation.

The ICT infrastructure in mid-size companies is shaped today by extremely heterogeneous infrastructures, systems, and terminals. The most diverse communication terminals and message channels are used. In-house networks and broadband Internet access exist virtually everywhere. The possibility of external access to the company network – be it from home or via the Internet (hotspots) from a cell phone while en route or a cellular radio – is in the meantime business communication equipment for many companies. In principle, every company already has an infrastructure capable of unified communications.

Furthermore, solutions in the IP telephony field are so fully developed today that a rapid dissemination is occurring. Typically, IP telephony applications are initially utilized as needed, e.g., if particular telephone systems have reached the ends of their life cycles and are to be replaced. The increasing dissemination of mobile terminals such as PDAs and smartphones expands the use to mobile devices.

Corporate applications can be seamlessly integrated thanks to the advanced technological infrastructure and corresponding existent solutions. In particular, the potential advantages of a location-independent CRM under use of mobile terminals such as smartphones, notebooks, PDAs, cell phones, etc., convince more and more companies.

5.2 Implementation decision.

Two basic perspectives are to be taken into consideration in a company. The end users have high hopes for added values and increased user-friendliness through unified communications functionalities and an increase in user-friendliness and last but not least, increased mobility and flexibility. In addition, there is the IT view, which concerns itself mainly with the implementation costs and basic maintenance and support opportunities as well as aspects of security and reliability. Management must take both views into consideration with its investment decisions.

5.2.1 Expert support.

The topic of unified communications is technically complex. Both IT and telecommunications suppliers position themselves in this market segment - as partners but also as rivals. Different suppliers pursue different technological approaches.

User companies need an ICT partner that they can trust in every regard and that is in a position to cover the entire solution with his service competence. At the same time, the flexibility required to adapt the solution to changing individual customer requirements at any time must be guaranteed. A clear and convincing message based on business cases with a roadmap for the future is an essential factor for success.

5.2.2 Migration steps.

A thorough migration design presides over the actual migration. In the process, communication productivity and relevance play an important role in connection with first-class business processes and applications. In other words, the business processes that argue for the utilization of unified communications and improved mobile access must be identified.

A migration scenario is to take the following items into account:

- The existing techniques that are suitable for convergence must be identified.
- New techniques that appear in the market are to be investigated as to whether they fit into the scenario. Convergence management and monitoring belong in the company.
- By means of a pilot project, one can anticipate how and when the investments could pay off.



Open standards are preferred, both with the architecture and technology.

Normally it does not make sense to set up everything from scratch – unless specific company requirements are in favor of this. It is better to begin with individual areas in which a technology exchange is necessary. For example, this could be obsolete telephone systems or voice mail systems whose product life cycle is nearing an end. Much is to be said here in favor of the migration to a system capable of unified communications since support from the respective provider will expire.

A logical and simple first step in the direction of unified communications would be to replace the obsolete voice mail system by a unified communications system.

Another approach consists of not introducing unified communications capabilities across the board, but only providing it to those users who actually use the functionalities. Unified communications “migration“ does not necessarily mean that all communication possibilities will be replaced by unified communications for everyone. It concerns itself much more with selectively implementing unified communications there where operative demand exists. For example, one could initially provide sales, technical support personnel, or management with unified communications.

The question is: Who profits the most from it? One answer is supplied by investigating the communication behavior of individual user groups. It enables putting the value of the business processes associated with them in relation to the necessity of improved communication possibilities. For this reason, priority groups and the potential added value of a faster and more efficient approach or information supply for the business processes crystallize from that.

In the same manner, overriding individual applications and business processes for which the greatest added value is expected can be migrated to unified communications after precise analysis. For example, this could be voice-capable applications for the sales force and also presence management or instant messaging for an improvement in accessibility within teams.

5.3 References.

T-Systems has already proven that we have excellent expertise in the planning, implementation, and operation of ICT projects at our disposal. The following references provide a summary of our current project; others will gladly be made available upon request.

5.3.1 Ludwig Meister.

The customer.

Ludwig Meister, the machine construction supplier in Dachau, has seven of its own branch offices with approximately 150 employees as well as an extensive 45,000-part inventory. Ludwig Meister earns a total revenue of approximately 50 million euros per year.

Requirements.

The customer's requirements include the planning, development, and implementation of a standardized, virtual communication system. Since communication is a business-critical process, the desired solution must guarantee 100% availability. Further requirements were a reduction of the service costs by a double-digit percentage as well as simple internal management of the communications infrastructure. The conclusive integration of hardware and applications was to be completely undertaken by one provider.

Advantages/benefits.

Changes, updates, or the integration of other users are possible from central headquarters with a few clicks of the mouse; the dispatching of customer service to the respective location is unnecessary.

Additional functions that significantly facilitate the workflow of the employees and thus lead to economical use of work time are already integrated (CTI, contact management, mobility functions and the integration of GSM, unified communications, voice mail with personal announcement). With it, sales force employees are reachable under one number when stationary and mobile and have the identical functionality of a normal office work place available to them.

“Through the use of VoIP alone we save the total cost of internal communication between locations and do not need other applications due to the comprehensive features that are already included,” says IT manager Stephan Geg.

Realization/technology.

The complete package is based on an Octopus EP telephone system with central communication server, integrated UC applications and TDN Intraselect Classic as well as gateways to the individual branch offices. An ISDN system is available as a backup solution that also guarantees unobstructed communication in the event of a failure.

All services (configuration, management, or billing) are made available and operated from the central communication server. This reduces service costs by about 50 percent.

5.3.2 Peter Kölln KGaA.

The customer.

Peter Kölln KGaA has been run as a traditional family business since 1820. The food maker with approximately 300 employees produces other cereals and Müsli products in addition to its famous “Kölln Flakes“ at its headquarters.

Requirements.

Through the steady growth of the company, demands on the company-internal technical infrastructure also grew. The obsolete, conventional telephone system was to be removed since it no longer satisfied the increased demand.

The goal was to conduct both data and voice traffic over the already existing network in the future.

Advantages/benefits.

The broad function scope and the high degree of flexibility of the new solution convince Winfried Rostock, member of the executive board and the person responsible for the areas of finance, accounting, controlling, and IT at Peter Kölln KGaA. "The employees are available practically at all times, even if they are often en route within the company. The possibility of logging in, telephoning, and simultaneously having access to one's data at every workplace is a big plus as far as efficiency and reachability are concerned."

All activities can also be controlled directly from a PC through the already integrated CTI function (computer telephony integration). As soon as the telephone or handset is connected, the same archive and sorting functions, such as those used in Outlook, and contact histories can be created in this manner.

"We made a forward-looking decision and one that is a safe investment," summed up Winfried Rostock. "The system is expandable and simultaneously signifies considerable cost savings since we can administer it straightforwardly through our own IT department. A solution that is tailored to us all around."

Realization/technology.

The company was ultimately convinced by a software-based VoIP solution with an Octopus NetPhone system from T-Systems. Management, administration, and production and logistics groups are thus now bundled with one another over a structured company network including VoIP. Expandability for presence indications, conferencing, and instant messaging exist and are already being used to some extent.

5.4 Conclusion.

Communication is a business-critical process for companies. The selection of the correct communication medium is therefore given high significance today and in the future since it can provide decisive competitive advantages.

Hardware and software providers currently drive the market with their own unified communications products, which are associated with specific advantages and disadvantages. The various solution strategies and architectures impede the selection of a solution appropriate for one's own company requirements.



Neutral instance: system integrators.

As independent advisors, system integrators help recognize individual needs, assess various unified communications products, and decide on the one best suited for the company. In addition to help in the selection process, they offer support with the development and execution of suitable migration scenarios, taking into account the existing ICT infrastructure. In contrast to the manufacturers, they make available not only UC functionality, but also take over the complete handling of the solution if desired. This can include all services from support to maintenance to employee training.

As the system integrator, T-Systems possess broad know-how that affects customer processes and overall communication and it also possesses sound industry expertise for companies operating at a small, mid-sized, and multinational level. By being independent of manufacturers, the products of various providers can be combined into an optimal solution. The complete solution or individual parts thereof (e.g., the TK systems functionality) are offered as a network-based service if desired. T-Systems thus enables the successive entry into unified communications with planable costs and without the setup of capital assets. By means of longterm experience in the IT and TK market, T-Systems is in the position to provide reliable and failsafe solutions – protected by reliable and transparent service level agreements (SLAs).

6. Outlook.

Fast communication, efficient collaboration, flexible work groups, and intelligent information control are also future central success factors for companies. They therefore give the greatest importance to adapting their ICT technologies to the increasing communication and cooperation requirements of global, dynamic markets. The more companies – even those of small and medium size – that are confronted with this transformation, the more their enthusiasm grows and with it the demand for supported technologies such as unified communications.

More flexible company work forms will shape the future picture. The fixed 1:1 mapping of desk and employee is being increasingly abolished. Besides additional savings opportunities (rent, heating, equipment), employee satisfaction grows since career and family are better in tune. Not without reason, experts say that convergent networks will fundamentally change our entire lifestyle and work world.

The basis technologies of IT and telecommunications (such as IP and seamless communication) already exist and are already in use in many companies – primarily in parallel to one another. Unified communications unites these previously separate worlds and, through the interlocking of today's technologies, creates increased efficiency and productivity and allows costs to be reduced and customer satisfaction to be increased.

Added to this in the future are a seamless integration of mobile terminals in the company infrastructure and an improved connection with the existing workflow. Keywords for this are advanced seamless communications and single number reach. But even technologies that are still scarcely used today will become standard through unified communications. Among these are possibly integrated audio and video conferences as well as work with services, documents, and applications that are available at all times and that can be used in the office as well as when working from home.



Illustration 11: unified communications – communication can be so simple.

7. List of abbreviations.

CRM	Customer Relationship Management
CTI	Computer Telephony Integration
ERP	Enterprise Resource Planning
FMC	Fixed-Mobile-Convergence
GSM	Global Systems for Mobile Telecommunication
ICT	Information and Communications Technologies
IM	Instant Messaging
IP	Internet Protocol
ISDN	Integrated Services Digital Network
IT	Information Technology
PDA	Personal Digital Assistant
SLA	Service Level Agreement
SMS	Short Message Service
TCO	Total costs of ownership
TK	Telecommunication
UC	Unified Communications
VoIP	Voice over IP
WLAN	Wireless Local Area Network

8. List of illustrations.

Illustration 1:	Overview of unified communications
Illustration 2:	Development levels of the convergence
Illustration 3:	Added value through unified communications
Illustration 4:	User-centered communication
Illustration 5:	Possible functions of the office communicator.
Illustration 6:	MS Outlook and Octopus Desk
Illustration 7:	Example of an integration of unified communications in CRM systems
Illustration 8:	Unified communications on the road
Illustration 9:	A standardized inbox
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Illustration 11:	Unified communications – communication can be so simple.

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