



# White Paper. Dynamic Services.

Flexible ICT resources  
implemented based on need.

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# 1. Introduction.

In a world with ever-shorter market cycles and constantly changing technologies, the flexibility and vitality of business processes are the deciding factors for the sustainable success of a company. The Information and Communication Technology (ICT) infrastructures required for this are subject to the same demands and naturally, therefore, they must also fulfill the corresponding requirements, like an increase in quality and reduction of costs.

New concepts and solutions are required to meet these demands. One example is "Dynamic Services". This term was coined by T-Systems. It describes a comprehensive service in the form of an operating model, which combines, among other things, more flexible IT services, reduced operating costs and short-term preparation of SAP applications, as well as a high standard of quality. These services range from a comprehensive offering of SAP solutions to messaging and archiving applications and even to mainframe services.

Because of the high sensitivity in this area, the selection of the correct provider for companies interested in dynamic ICT services is extremely critical for success. The expertise and the capacity of an IT service provider have a direct effect on the quality of the SLAs, which is then reflected in the effectiveness of the chosen services.

Consistently stronger cost pressures, particularly in the areas that are not part of the core capabilities of a company (e.g. the IT department), allow costs to be more variably and transparently allocated in order to make them scalable or, ultimately, to reduce them. Thus, according to a user survey commissioned by T-Systems and carried out by Pierre Audoin Consultants (PAC), more than 50% of all those asked plan to introduce a flexible ICT concept in the near future. This shows that many companies have recognized the necessity of ICT restructuring in order not to lose the connection and, in doing so, jeopardize their competitive position.

## 2. Dynamic Business Requirements, Rigid ICT Landscape.

The increasingly rapid changing of markets is one of the central challenges that companies are faced with today. Available competitive advantages are much more short-lived than before: Yesterday's success no longer counts when dealing with the tomorrow's chances. This also increases the pressure on companies to rapidly adapt to new situations – also globally. Successful companies quickly recognize when market windows are temporarily open and react quickly and accordingly.

In successful companies, the organization and the business processes are tailored for agility and flexibility. For example, innovative sourcing concepts optimize the added value inasmuch as the steps that are not differentiating or competitive can be removed, for instance, with a service provider that can achieve economies of scale by specializing. The challenge lies in a more open collaboration model. This shows that successful companies seldom still work as closed monolithic systems, rather in the form of dynamic, adaptive and networked systems.

The ICT in many companies cannot keep up with the tempo and agility that the business requires. Rather than supporting the business processes optimally with modern information and communication technologies, the ICT represents a bottleneck in critical phases.



**ICT systems frequently do not have sufficient reserves or additional resources cannot be procured fast enough for the business. In this situation speed is a deciding factor for a company's success.**

The processes and production systems of a company are already equipped for the requirements of tomorrow, in many cases – but methods are often still used in ICT that are based on the state of industrialization via processor technology.

Often the head of ICT at a company is faced with a dilemma. The business demands of higher quality at lower costs appear to be two opposing goals: With the rigid ICT structures, mobility and vitality are extremely limited. The personnel can often only maintain this state of emergency because he or she is more than overworked with maintenance and support. With this, there is no room for change or innovation. Trapped in this “ICT cage”, cost reductions and quality improvements cannot be achieved simultaneously.

In this regard, innovative concepts and new solutions are necessary, which break out of the limitations of the “ICT cage” so that the ICT can optimally support the business processes at all times. Particularly, a suitable sourcing strategy is essential, which decides on the ICT vertical integration of a company and therefore the question “make or buy”. The company has various options available for this, with the individual value of each depending on the structure and strategy of each company. A very common concept, for example, is the so-called virtualization, which can, however, approach its natural limits of flexibility and efficiency in actual operation. Accordingly, it requires an operating model that is not tied to physical limits like local mainframe capacity, and can therefore be adapted in every direction (via upgrading and downgrading) to the current performance requirements of the running business processes dynamically and, above all, simultaneously.

### 3. Be More Flexible with Dynamic Services.

To be able to economically and effectively map and support business models and processes, ICT services that following the vitality of business processes are necessary. Their implementation should also be so flexible that they are quickly and easily available when establishing new business processes. Only ICT services that are available as individual services and can also be settled as such, fulfill the demands stated above and aid the required maximum cost efficiency. Such ICT services are referred to as “Dynamic Services”.

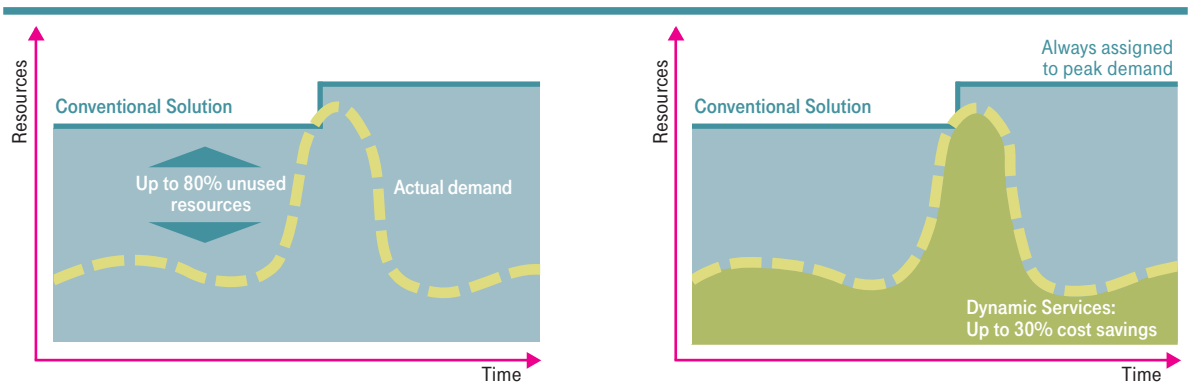


Figure 1: Flexible Resources with Dynamic Services. Source: T-Systems.

Dynamic Services represents an established comprehensive operating and service model, which supports the primary processes of a company flexibly and according to need. For this, Dynamic Services offers standardized and automated ICT services.

These ICT services include both traditional telecommunication resources, like network and data transfer capacity, as well as IT resources, like storage capacity and processor performance, and even the complete end-to-end provisioning of application solutions.

The resources and applications are provided using telecommunication and data networks. Consequently, the company can largely avoid creating its own telecommunication and IT infrastructure for the operation of these resources.

The operating model contains all of the activities necessary for the stable and secure provisioning of the service, so that the company is freed from this. The use of Dynamic Services shifts and reduces the company's ICT responsibilities away from the creation, and back to the management of the required ICT services.

## Differentiating Characteristics of Dynamic Services:

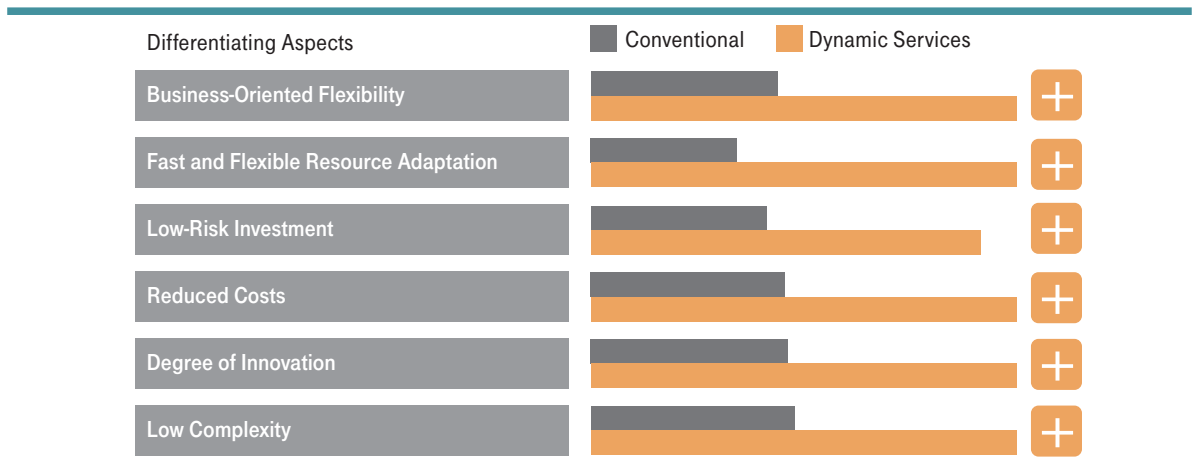


Figure 2: Chances offered by Dynamic Services. Source: T-Systems.

Since companies with Dynamic Services can adapt and base their IT resources on need, an allowance or stockpile of unused (reserve) capacity is no longer necessary. This eliminates the investment in idle capacity and the routine costs for upkeep. Dynamic Services reduces the necessary investment and operating costs. It also eliminates the tie-up of capital, since Dynamic Services are based on demand and therefore no up-front investments are necessary. It should be noted that the services procured can be adapted in both directions. That means that not only can an IT service be increased, but it can also be decreased. Otherwise, there would still be unused idle capacity with a lasting low demand.

The dynamic ICT resources are integrated into the current structures and support them. With this service, the complexity decreases significantly and the transparency increases. Furthermore, regular monitoring and reporting contribute to the cost transparency and planning reliability of the individual "usage" and also lead to optimization options. The transparency is especially necessary with existing compliance regulations (source: Bitkom-Leitfaden „Compliance in IT-Outsourcing- Projekten“; English: Bitkom Guidelines "Compliance in IT Outsourcing Projects") in order to adequately evaluate any risks and liabilities and to be able to minimize them if necessary.

The routine costs for the administration of ICT landscapes in companies today are difficult to plan and to control. Their high portion of manual tasks is often resource intensive, prone to error and inefficient. This approach is less transparent and does not form a good basis for the creation of proprietary ICT services and their alignment with the company processes. Dynamic Services are largely standardized and automated and provide ICT services of the quality required by successful companies.



**The use of Dynamic Services in a company reduces the total complexity and simultaneously increases transparency and service quality – compared to a dedicated ICT environment.**

With this, the IT department, with the help of Dynamic Services, can support the business processes comprehensively and systematically as well as reaching decisions that are closer oriented to the goal of the company. In this way, Dynamic Services contributes directly to an increase in competitiveness.

With the flexibility and versatility achieved by switching the ICT to Dynamic Services, companies open up many new opportunities. Along with the faster reaction to changes inside of existing business processes, the IT department inside a company can increase advisory functions. This enables the company to develop new possibilities and enter new business fields that were not previously possible, either because of high investment and migration costs or insufficient flexibility and possible application in the current IT landscape.



**Dynamic Services contribute to an increase in profitability, on the one hand with the lowering of costs, and on the other hand with an increase in the added value.**

Dynamic Services allows companies to quickly and efficiently break new ground in the operation of their workplaces. In this way, for example, the so-called “Dynamic Desktop” can theoretically replace intelligent desktops. This is possible, because the operating system and applications do not run on the office PC, rather they come from a reliable central data center according to demand. What first appears to be a thin-client concept is actually much more. There is a new line of thought here that combines many technological threads together.

The product “Dynamic Desktop” therefore offers considerably more flexibility. For example, everything can be used as an end device, from thin-clients to classic desktop PCs, notebooks or even MDAs. There is also a wide variety of options with regard to applications. The classics can be used, like Microsoft Office, Exchange and SAP, in addition to services such as VoIP, archiving, etc. The Dynamic Desktop principle functions at every location, regardless of whether the end device is used in the office, at home, in a hotel or at the airport. It can even be used from a public computer, since all applications are completely isolated and no trace remains on the computer.

In summary, the flexible and scalable implementation of Dynamic Services adds a great deal of value:

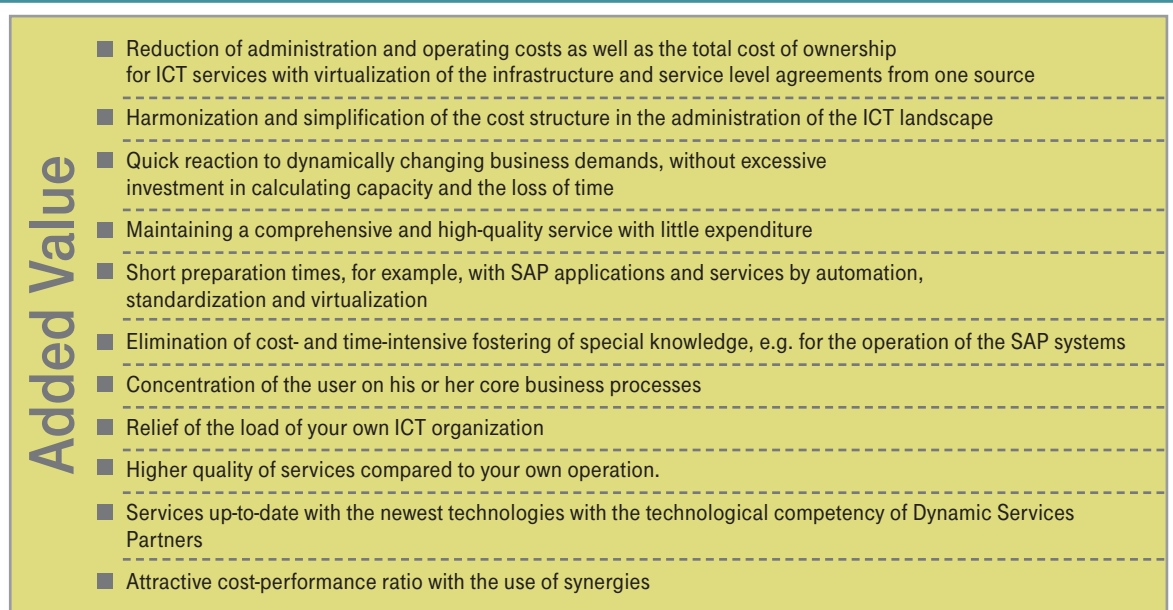


Figure 3: Value Added by Dynamic Services.

## 4. Dynamic Services in Action.

Dynamic Services are produced in the T-Systems data centers. Companies procure these ICT resources, as already described, according to seasonal demand, for example, and dynamically adapt them to their business processes. The following are supported:

- Resource planning processes (Section 4.1: Dynamic Services for SAP® Applications),
- Communication and collaboration processes (Section 4.2 Dynamic Services for Lotus® Domino® and Microsoft® Exchange),
- Fundamental ICT processes, e.g. to map compliance requirements (Section 4.3: Dynamic Services for Archiving) as well as
- Business-critical applications that, for example, are handled by a mainframe (Section 4.4: Dynamic Mainframe Services).

In the following sections, these four fields of application are introduced from the view of the provider with the help of short practical examples.

### 4.1 Dynamic Services for SAP® Solutions.

The implementation of SAP solutions, like SAP Supplier Relationship Management, SAP Product Lifecycle Management or SAP Supply Chain Management paves the way to collaboration between customers, partners and employees. Furthermore, SAP solutions optimize those central business processes that can be decisive for the success of companies today.

Performance, availability and the associated costs of the SAP landscape are topics that companies must constantly deal with. At the same time, new business demands must be supported quickly and securely. Companies frequently struggle with limitations on the search for improvements. The outsourcing of the SAP landscape and the basic operation is one way to not only always remain technologically up-to-date and have access to specialists, but also to shape the costs flexibly.

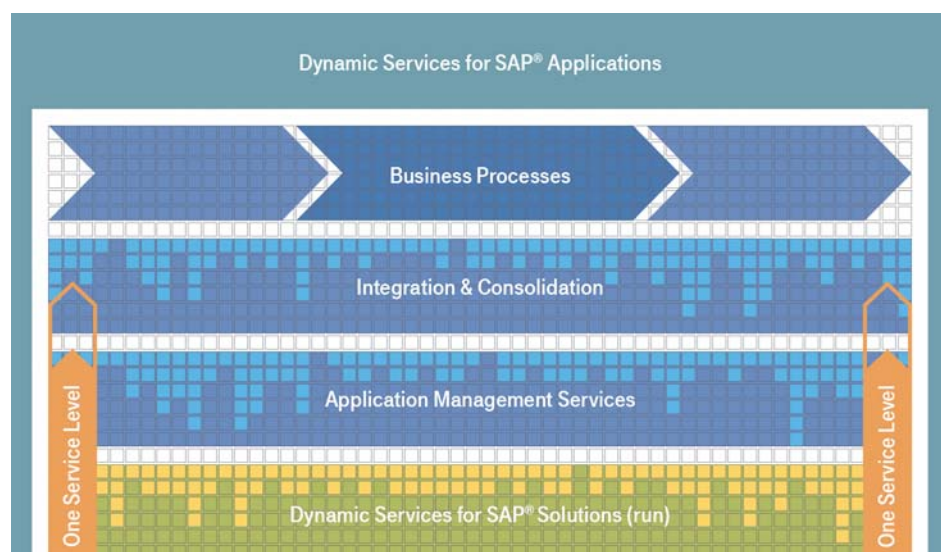


Figure 4: Dynamic Services for SAP® - Flexible on all Levels.

With “Dynamic Services for SAP® Solutions”, the virtualization of the SAP landscape on a platform open to all prevalent operating systems, which can be quickly and securely accessed using MPLS, Internet VPN or Point-to-Point connection, is in the forefront.

The usefulness for companies results from standardized and automated SAP services, which can be made dynamically available via international delivery models as a virtual application server. In this way, every company using this service is provided with its own virtual LANs, strictly separated from one another. If a running application needs more capacity, the system automatically turns on more servers. And with “Business as usual”, the capacities are very simply shut down again. The tool environment supports secure infrastructures and service-oriented architectures as well. Process integration procedures conforming to ITIL are also a significant part of “Dynamic Services for SAP® Solutions”. Furthermore, the manufacturer-independent platform enables economies of scale with the purchase of the necessary resources (e.g. for infrastructure, maintenance, support, etc.) from which companies also profit.

The ICT capacities can then be flexibly adapted to demand. The desired service is already available one day after ordering it. And the capacities can be dialed down just as effortlessly. With this, applications can both be distributed over multiple servers and multiple applications can be centralized on one server. Thus, the motto “any service, any time on any server” is efficiently realized.



**“Dynamic Services for SAP® Solutions” enables the optimal operation of the SAP landscape and provides companies with access to SAP services as well as the required ICT infrastructure.**

Technically, “Dynamic Services for SAP® Solutions” is supported by the adaptive computing controller. This provides a control center for the flexible allocation of calculating capacity, whereby all tasks can be executed on any arbitrary server at any time. It summarizes the four building blocks of the ICT landscape: Computing, network, data storage and administration and serves the following purposes:

- The problem-free expansion and reduction of calculating capacity with various operating systems and servers from the leading providers with minimal administrative effort.
- With the help of application services, instances of SAP applications are administered and the required storage is assigned to specific computers. All application data is saved to a central networked storage system.
- The connections between computer and storage units are constructed with virtual LANs and therefore the transport layer for the virtualization is secure.
- With the adaptive computing controller, ICT services are operated, monitored and administered centrally. The tool uses standard technologies to communicate with third-party software, like J2EE, XML and CIM and it is connected to the controller command interface of the SAP Solution Manager.

According to the “replace in place of repair” concept, in the event of server errors, the affected SAP services are simply relocated to other servers. With some operating systems, this even takes place without interrupting the current operation. Complicated and expensive cluster solutions are therefore not necessary.

Every company can monitor the current system load at any time via a customized web interface. With this, it can be seen that despite increasing flexibility, the SAP and ICT demand are managed more efficiently.

For maximum disaster security, the company’s systems are also completely mirrored in the provider’s own twin-core data centers. This disaster recovery concept also allows planned maintenance to be kept to a minimum.

Many companies use “Dynamic Services for SAP® Solutions”, for example, to distribute capacities between production, development and training systems optimally and based on demand. Furthermore, capacity adaptations between individual SAP applications are part of the daily routine. Additional services, like client and database copies, for example, extend the standardized and industrialized “Dynamic Services for SAP® Solutions” even further.

“Dynamic Services for SAP® Solutions” has established itself in the marketplace. T-Systems operates cross-sector SAP solutions for more than 1.1 million productive users. More than 130,000 from them already use “Dynamic Services for SAP® Solutions”. In just the last two years, the user base almost doubled from 74,000 to 134,000.

T-Systems offers “Dynamic Services for SAP® Solutions” worldwide and works closely with SAP AG. “T-Systems was one of the first companies to promote this innovative concept”, according to Henning Kagermann, SAP Chief Executive Officer. At the SAPPHIRE '07 international conference in Vienna, SAP awarded T-Systems with the Pinnacle Award 2007 for innovative hosting/outsourcing services.

#### **Practical Example, Vorwerk.**

“Our best for your family” – a slogan that can also be applied to the Vorwerk Group itself. The company gets all its SAP services from a T-Systems computer center, enabling it to cut its costs. One of the keys to its success at Vorwerk is the ICT support for global direct sales using a SAP®-R/3 solution. However, the ICT resources required by the subsidiaries varied considerably. With “Dynamic Services for SAP® Solutions”, the Wuppertal company can request more SAP services at only a day’s notice, or decrease the services required. Ralph Eger, CIO at Vorwerk, describes the high cost advantage: “With our own infrastructure continuously maintained for peak power, the operating costs would be at least 30 percent higher.”

#### **4.2 Dynamic Services for Lotus® Domino® and Microsoft® Exchange.**

Messaging solutions are a vital part of companies today. They build the backbone of communication and support the business processes that make up the company’s core business. Thus, the failure of the systems can have a huge economic impact. 24x7 operation, the integration of mobile users and audit-proofing are key requirements that need to be implemented.

Before, companies tried to traditionally fulfill these requirements by designing their capacities around the maximum demand. If less resources were needed from time to time, expensive vacancies resulted. If, on the other hand, there was an unexpected demand for additional capacity, this could often not be covered on short notice.

They attempted to fulfill the requirements of system stability and availability with the help of complex cluster solutions. However, these required a great deal of administration and all too frequently lead to human error, which prevented proper functioning in a time of need.

Flexibility, along with reliable service levels, is a deciding factor for a company’s success. With the purchase and sales of parts of the company, and the associated changes in the number of users, the demand for resources can change accordingly. This accounts for an IDC study from 2007 where messaging solutions and ERP systems are seen as the key fields of application for Dynamic Services. One of the main arguments is the flexibility with which companies can react to changes. With Dynamic Services, changes in capacity take place with virtually only the press of a button.

The provider makes the resources for every company available in a pool. With this, economies of scale can be used and, therefore, the costs can be reduced. In doing so, the resources of various companies are strictly separated from one another using appropriate safety mechanisms. With the simple call from a pool, tedious procurement processes are eliminated on the infrastructure side.

High availability is ensured with a completely different approach than in the classical operation. Instead of using complex, expensive and temperamental hardware clusters, the principle “replace instead of repair” is applied here as well (see Page 9).

In the process, it is secondary, which messaging system is currently implemented and which one is the choice for the future. Businesses can enter the world of Dynamic Services at any time, whatever their messaging system status. Whether upgrading to the current version of the same product or switching to the competing product, in any case, the migration should occur according to a standardized and ITIL-compliant procedure. To ensure a problem-free transition, using parallel operation with the existing system is recommended.

Whether with Lotus Domino or Microsoft Exchange, other services can also be integrated along with the classic messaging. An example of this is Lotus Domino applications or also mobile user and groupware tools. Security components are always included, e.g. firewall, anti-virus or anti-spam. However, so that the flexibility is not limited by the infrastructure alone, there is also a corresponding change in the price model. For each mailbox there is a fixed price so that the invoicing can be simple and transparent. Only the mailboxes that are actually used will be paid for, in strict accordance with the motto “pay for what you use”.

#### **4.3 Dynamic Services for Archiving.**

“Dynamic Services for Archiving” provides companies with archiving services for the (long-term) digital archiving of documents and data. The range of applications for this spans from the archiving of standard products, like SAP or Microsoft Exchange, to the archiving of documents, like Office documents, project files, CAD drawings, as well as their administration in a document management system.

The “Dynamic Services for Archiving” include, alongside the operation, system architecture (archive storage, server, storage, backup, as well as LAN and WAN resources), licenses for archive software (ImageMaster) and data center infrastructure and maintenance. Access to the archived data and documents is provided flexibly, based on the customer’s requirements, via a web interface or fat clients.

The customer connects to the provider’s dynamic data center via a secure VPN connection. If the applications, from which the archives are taken, are also trusted and are located in those computer centers, then the application and the archive are coupled directly via available interfaces. SAP and Microsoft Exchange are two of the applications that can directly transfer data between the “Dynamic Services for Archiving”.

The “Dynamic Services for Archiving” are based on industry standards and are open to a number of formats. Image standards like TIFF, JPEG and PDF are supported along with the SAP R/3 formats OTF and ALF. Optional services (scan and OCR services), training, project services and an integration into the company’s SAP workflow extend the dynamic archive services.

The invoicing depends on usage, depending on either the archive storage used or the currently archived documents. The services are determined monthly on a set day, and the invoice is provided to the company.

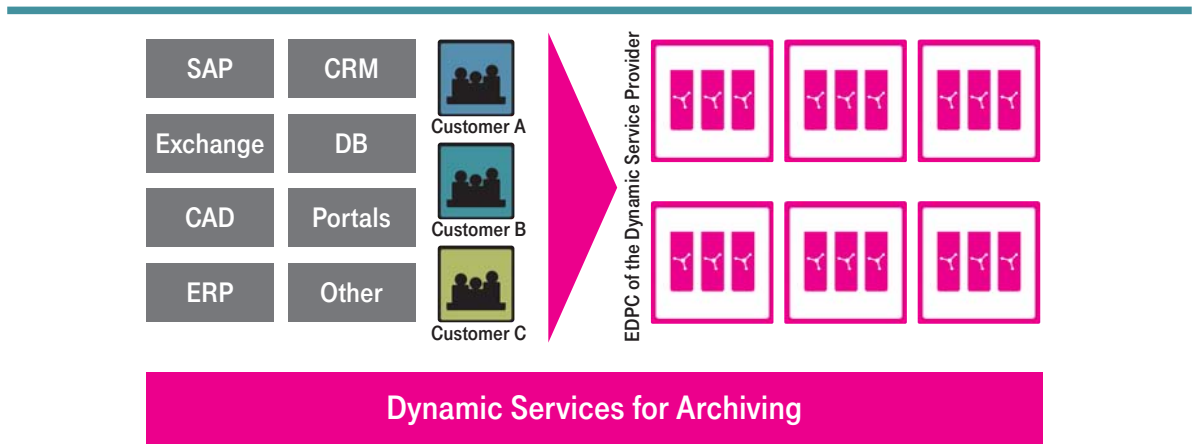


Figure 5: Dynamic Services for Archiving. Source: T-Systems.

#### Practical Example, Axima.

Axima, an international provider of building services engineering, systems engineering and process technology and services in the areas of facility management and energy management, is one of the first customers to use “Dynamic Services for Archiving”. Axima GmbH is part of the French Suez Group and has 14 branches in Germany. As a part of the French Suez Group, traded on the New York Stock Exchange, Axima must fulfill the US compliance requirements, like the Sarbanes-Oxley Act, for example.

With regard to “Dynamic Services for Archiving”, T-Systems scans and archives receipts, generates posting records and integrates these seamlessly into the SAP operating process. Axima outsourced these archiving services to T-Systems and uses these services as needed. In doing so, Axima pays, according to the pay-per-use model, only for transactions that actually take place.

“Pay-per-use provides us with a long-term decoupling from the technical market development. The service provider deals with keeping the technology up-to-date”, says Peter Bickel, IT Director at Axima Germany. Availability, quality, quantity, access times and service level agreements are firmly stipulated. Thanks to Shared Services, T-Systems can offer one price, which would not be possible with the individual operation of dedicated systems. And fail-safe system environments, 24-hour support and the like are included in the rental model. Last, but not least, the demand-oriented payment offers the opportunity to avoid a formidable up-front investment and to take advantage of a “small start”.

#### 4.4 Dynamic Mainframe Services.

The performance and stability of mainframe systems remains nearly unrivaled – and they still form the perfect platform for business-critical applications with a high data throughput. Many years of experience and know-how are contained in these core applications, which add a significant value to the company.

- 1 With “Dynamic Mainframe Services”, many years of investments can be secured in the mainframe environment, and stored on a sustainable platform.
- 2 Companies have around-the-clock access to the newest technology and qualified know-how.
- 3 In place of risks and fixed costs, significant savings are achieved with more benefits.
- 4 Mainframe capacities can be booked according to need and commensurate with the business demand:
  - Processing Power (MIPS)
  - Storage and Data Backup
  - Network Connection
  - System Operation

#### Practical Example, Alcatel-Lucent.

After Alcatel and Lucent merged at the end of 2006, the IT team of the new company inspected their mainframes. The team compared the requirements of the global telecommunication manufacturer with the available capacities. The result: With the consolidation and outsourcing of the mainframes and parts of the data traffic, the costs could be reduced dramatically and the operation could be more efficient. Alcatel-Lucent therefore outsourced the applications from two existing mainframes and the operation to the T-Systems data center.



**“We were able to complete the movement of hardware and the migration of data two months earlier than originally expected”,**

**Elizabeth Hackenson, former CIO at Alcatel-Lucent.**

The international concern saves, above all, because they now only pay for exactly the processing power that they actually order. With “Dynamic Mainframe Services”, Alcatel-Lucent also profited from an additional agreement, whereby the price per unit accessed decreases proportionately with the increase in capacities used. “The model lowers our operating costs significantly and helps to realize our synergy plans after the merger”, according to Elizabeth Hackenson.

## 5. Conclusion.

More and more often companies require integrated offerings. They don't want to buy technology, but a solution to their problems – regardless of whether they are related to IT or TC, the fixed network or mobile telephony. And for this, they need ICT service providers that can provide everything from one source. Surveys by consultancies such as McKinsey already indicate a paradigm shift in the market: CIOs want integrated end-to-end services for IT and TC. As a result, ICT service providers are currently repositioning themselves to the new market requirements.

For the future, this will be seen in a clear tendency toward virtualization and/or more flexible price models in connection with higher-performance services. According to a PAC study, 87% of all European management-level IT employees asked already use virtualization concepts and more than 50% plan additional corresponding measures in the next twelve months. This trend will continue to grow in the future. Admittedly, according to the PAC study, more than 60% of all those asked still operate the virtualization of their own total ICT architecture. However, in times with progressively increasing globalization and market consolidation, new requirements, regulations and other conditions result; these make it necessary for many companies to switch to more flexible ICT services from third parties. With the combination of technology and branch know-how, these provide not only economies of scale on the technical level, and therefore also the desired costs, but they also offer improved and sometimes completely new ICT services. Their added value, like providing flexibility and reducing the investment risks, was already expressed (see Figures 2 and 3). The proposed “Dynamic Services for SAP® Solutions” represent one of these new, improved ICT services, for example. At the same time, aside from the business processes mapped in the SAP applications, there are other multilayered ICT services as well as a complex, well functioning and flexible ICT landscape.

The Real Time Monitoring, which should be a central component of every chosen solution, monitors all of the ICT elements that take part in the business process. The dependence of the individual technical components on the business processes of the company should be represented in full and the technical functionality of the applications in relation to the business processes of the company should be monitored in real time. A neutral benchmarking can point out optimization potential for ICT services and the ICT landscape and provide a comparison with industry-specific values or similar business processes as they relate to quality and cost.

The advantages of Real Time Monitoring and Dynamic Services for companies lie in the SLA, oriented with the business process, and in the security that the ICT landscape can be dynamically adapted. Technical and functional error messages can be recognized early and repaired proactively, before a problem occurs.

With this, operating models like Dynamic Services achieve a reduction in the total complexity and increase transparency and service quality. The frequently purely administrative duties of IT departments are thus transformed into advisory and support functions.



### **Integrated, flexible ICT services capable of meeting the new ICT requirements of companies.**

Once companies have recognized the necessity and the added value of such operating models and decided on them, the only other step is to find the proper partner. In the field of ICT services, there will never be a universal answer to a company's needs and therefore an individual solution must be constructed for every company – using the most granular building blocks available. Because of the long-term and deep-reaching nature of this cooperation, the selection of the correct partner is extremely important for success. It should be demonstrated that sufficient capacities are available and that the provider can exhibit the necessary expertise with long-term experience. Only with this can companies tap the full potential of operating models like Dynamic Services and reach maximum efficiency.

## 6. Glossary.

Cluster	Broad allocation of personnel or companies (e.g. clients) in groups with similar demographical data.
CIM	Common Information Model is a standard for the management of IT systems.
CIO	The Chief Information Officer is the one responsible for a company's information and communication management.
Compliance	Describes the adherence to regulations, guidelines and laws.
Collaboration	Multiple people or programs working together.
Disaster Recovery	Recovering from an error or malfunction.
End to End	Entire product or solution-based processes of a user are administered centrally from the beginning to the end.
ERP	The term Enterprise Resource Planning denotes the corporate task of efficiently allocating the resources available in a company, like capital, equipment and personnel, for the operational workflow.
ICT	Information and Communication Technology
IDC	The International Data Corporation (IDC) is an international consultant and event service provider in the IT and telecommunications field.
ITIL	IT Infrastructure Library is a documentation of guidelines for the IT services management.
IT Outsourcing	Transferring the full responsibility for IT functions or business processes with a high level of IT to legally independent, i.e. external service providers, over a defined period of time.
ISO 27001	Requirements for the production, introduction, operation, monitoring, maintenance and enhancement of a documented information security management system in line with the risks applicable within an organization.
J2EE	Specification of a software architecture for the transaction-based execution of applications programmed in Java.
Mainframe	Mainframes are powerful computers to which several terminals are connected.
MIPS	Million instructions per second.
MDA	Mobile Digital Assistant. Mobile telephone with a multitude of "office" functions.

<b>MPLS</b>	Multi Protocol Label Switching is a network technology in which every application can be assigned a particular service quality; telephone calls, images and sound, as well as important application information pass through the network with priority.
<b>Sarbanes-Oxley Act</b>	The Sarbanes-Oxley Act (SOX) is a US capital market law passed in 2002, according to which all companies traded on the US-American stock markets must be inspected, documented and allow their internal control system to be tested by certified public accountants.
<b>Service Level Agreement (SLA)</b>	Contractual clause regarding the level of service to be provided.
<b>Total Cost of Ownership (TCO)</b>	All costs of goods, not only the start-up costs, but all aspects of the later usage, e.g. energy costs, repair, maintenance, of the respective components.
<b>Virtualization</b>	Provisioning of ICT resources not physically available.
<b>Virtual Private Network (VPN)</b>	Computer network that transports private data over an open network, e.g. the Internet. The connection via the public network is usually encrypted.
<b>VoIP (Voice over IP)</b>	Refers to telephony via the Internet protocol (IP). Calls are made using IP-based networks. Users can use a PC, special terminals or even standard telephones connected to the network by means of adapters.
<b>Workflow</b>	Predefined sequence of activities, also called work cycle.
<b>XML</b>	Extensible Markup Language is a markup language to represent hierarchically structured data in the form of text files.

Source: According to the studies, articles, etc. documented in the references.

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- [T-Systems] Customer Success Stories with Dynamic Services, 2006
- [T-Systems] Utility Computing – Market Overview and Competitor Analysis, 2006
- [T-Systems] Real ICT – Flexibility with fully integrated IT and telecommunication services, 2007
- [Yankee Group] European IT Infrastructure Survey, 2007

## 9. Manufacturers and Brands.

IBM: Lotus Domino, Lotus Notes

Microsoft: Exchange Server, Navision

SAP: including R/3

