1 IT Optimization – Reducing Costs without Diminishing Returns

IT today plays a major part in reaching business objectives. Many companies realize its importance when business processes don't run smoothly, or when IT projects run over budget or time. Difficulties like these often result from heterogeneous IT landscapes, characterized by different application systems in similar functional areas, several hardware platforms, decentralized IT departments without central coordination, or insufficient IT service levels. The consequences are severe: IT users are dissatisfied; top management perceives IT to incur high costs while delivering poor value.

To avoid this, CIOs need to install a process to permanently increase IT efficiency – just like any other corporate activity is regularly examined for its value contributions and cost savings potential. However, their degree of liberty is likely to depend on the current state of the business: In fat times they will be free to give high priority to the creation of a flexible IT landscape, even if it requires a great deal of time and investment, and to consider its costs in relation to the benefits expected; in thin times IT-driven cost savings will become a top priority, while the operational obstacles resulting from a lower IT service level will now rank second – the motto being 'So long as our IT is running, it serves the purpose.'

The objective of IT optimization is to ensure the best possible IT service for internal customers at lowest possible costs. Depending on the individual company, optimal IT support for business processes can either consist in flexibility and responsiveness to changing external conditions, or in superior efficiency leading to minimal unit costs in mass processes. In order to allow for IT to unfold its positive effects on business processes, a best possible IT performance also includes optimal support for end-users whenever problems occur in day-to-day operations. All that, of course, while keeping the life-cycle costs of IT systems as low as possible.

Optimizing IT, therefore, does not equal cost reduction. Reducing the costs of IT can only refer to a cost block which, depending on the industry, comprises one to seven percent of a company's total cost. IT cost reductions reach their limits when further efforts would curtail the benefits of IT for the company's business. This might best be illustrated by a simple thought experiment: Companies' IT cost would be lowest (namely, zero) if they simply switched off their IT and closed down their IT departments. Of course, the benefit of IT would be reduced to zero as well. This exact scenario threatened to become reality in the context of Y2K. To avoid that risk, many companies invested enormous sums to ensure the availability of their IT. Company managers do know about the benefits and value contribution of IT. Encouraging them to reduce IT costs, there-

fore, usually means asking them to make appropriate 'cuts' which will continue to ensure IT functionality while leading to a clear cost alleviation.

IT cost reduction requires a meticulous evaluation of current and targeted IT costs. In most cases, traditional analytical tools will be too coarse for this purpose – cost structure analyses and IT-cost benchmarking may serve as starting points for a cost reduction debate in IT, helping to roughly assess whether IT costs are on an appropriate level, and define a target corridor for future IT costs. Based on these findings a more profound discussion will be necessary, comparing IT benefits against IT costs and analyzing the existing IT landscape – including existing IT-related dependencies, as well as the opportunities resulting from new developments.

Strategic IT cost analysis: Finding the right leverage points

In order to avoid 'economizing' those IT applications and infrastructural components that are crucial to a value-added use of IT, the entire IT landscape – including infrastructure and applications – and its key components must be subject to a thorough value analysis. Three dimensions of value are examined (figure 3.1):

■ *Contribution to corporate value:* This dimension reflects the importance of the respective IT component to the company. For instance, a company wishing to develop new markets will find flexible infrastructures, expandable applications, and sales support more important than sophisticated HR applications. Consequently, this part of the analysis will derive company-specific criteria from corporate goals, requirements to business processes, and performance figures – such as support for strategic goals, coverage of business processes and functionalities, importance of business processes and functions to company performance, or the prevention of process disruptions by integration.

■ *Technological suitability of IT components:* This dimension of the analysis is included to avoid further upgrading of technologically outdated IT components, and to ensure that companies invest in the right IT applications and infrastructural components. Available capacities, utilization, life-cycle and age of the application or hardware component, its conformity with the state-of-the-art and its complexity are only some of the criteria that may enter into the technological evaluation.

■ *Overall costs for the company:* This part of the analysis covers the costs of an application system or a hardware platform over its entire life cycle. Should these data not be present in the company, at least the annual costs of operation, licensing, and maintenance will be analyzed.
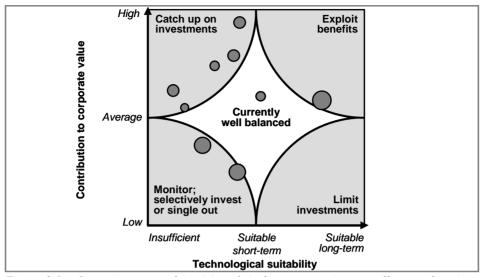
Figure 3.1:   Strategic cost analysis (size of circles representing overall cost volume)

Positions in the matrix indicate where IT cost reduction efforts would be appropriate and where they should better be avoided for the sake of a sustainable, future-oriented IT support.

◼ *Catch up on investments:* IT components in the upper left corner are highly important to the company, yet current IT support is inadequate. It will therefore be advisable to intensify investments in order to diminish or eliminate existing shortcomings, so that the potential benefits of IT can be better exploited for the company. In the energy industry, for example, distribution systems rapidly gained importance once the liberalization of the market had set in. Existing systems for the 'administration' of 'purchasers' no longer represented a suitable technology. Huge investments were overdue and, in part, still are.

◼ *Exploit benefits:* The upper right-hand field contains IT components that are well positioned from both, an entrepreneurial and a technological perspective. Instead of cutting costs here, companies should look for ways to use these applications and infrastructural components in more business areas in order to fully exploit their benefits. In addition, these IT components should continually be developed further, as their performance, utilization, or the requirements of business processes change over time. A highly diversified group in the construction and plant engineering business used a sophisticated project management system for its made-to-order plant production, while its construction business lacked a functional IT system for managing complex construction projects. As both divisions worked on similar business principles – such as made-to-order production – the company adapted the IT system from plant engi-

neering and introduced it in construction. This way, the benefits of an existing application could be exploited much more effectively.

■ *Limit investments:* Companies should invest very selectively, if at all, in IT components which are state-of-the-art yet contribute little to corporate value. It is often due to changed business processes – or simply over-investment – that IT applications or infrastructural components have 'slipped' into this state. For instance, if customer orders were formerly accepted and recorded by a central department, whereas they are now largely entered locally via the Internet, a central order entry system will have lost all significance to the company, even if its technological platform is state-of-the-art.

■ *Currently well-balanced, continue:* The center field comprises IT components delivering an adequate contribution to corporate value. There is a sound balance between investments and IT benefits. This is often the case with IT systems for corporate support processes. For example, the financial accounting system of a manufacturer must work quickly and reliably but will not necessarily have to be top-notch. In such cases, standard business software will usually serve the purpose.

■ *Monitor; selectively invest or single out:* This refers to IT components which contribute only little to corporate value and are in a poor technological condition, which may, for instance, be reflected by poor reliability. Possible examples include IT components which have reached the end of their life-cycles, are no longer required, and might just as well be shut off, or IT components which must better be aligned with business unit requirements. Should the latter be the case, the company will need to check how focused investments could be used to improve the technological condition and increase the value contribution to the business. One example: Even today, some 10 years after the launch of SAP R/3, remainders of the precursor system SAP R/2 can still be found on companies' premises. In most cases the system is no longer in active use; rather, it sort of 'runs along' for information reasons, due to the fact that old data were not incorporated during the previous system integration. SAP R/2 is frequently the last mainframe application left in the company, with corresponding serious cost implications. The question here will be whether to completely terminate these applications – are the data really still needed? – or whether to invest in a suitable archiving system to replace the outdated one.

This systematic analysis and evaluation of the IT landscape provides a sound basis for IT cost reduction measures. We will take a closer look at two areas – IT applications and IT infrastructure – as these IT components are the main drivers of IT costs and any cost reduction efforts will have to start here.

Reducing costs in IT applications

Prior to cost reduction efforts in IT applications, most companies are in the same kind of situation: Their software landscape is a mix of proprietary developments and standard solutions which have proliferated over time. In the course of the years, business focuses have shifted, business units have been restructured, added, or sold, and business processes have changed. New applications have continually been added to meet changing requirements, and previous applications have become obsolete. If standard software is used at all, the different subsidiaries or divisions often use different systems tailored to their needs, and licensing and maintenance fees for these systems are a heavy burden on the budget.

This fragmented application landscape curtails the benefits of IT for the company – for example, because the logistics data required for supply chain optimization are 'hidden' in many different systems using incompatible definitions. In situations like these, the need for system harmonization is obvious. If the organization comprises several divisions, country operations, or subsidiaries, a systematic process to reduce IT application costs should begin with harmonizing business processes, thus preventing unnecessary IT expenses from the outset. Harmonizing the IT application portfolio will be the second step.

Harmonizing business processes

Companies with a history of M&A-driven growth often face a very heterogeneous business process landscape, even if business models are in part very similar. One example: A manufacturer had acquired several regional sales organizations which were managed as independent entities. All of them essentially had the same business model and were selling the same product to end-consumers. Each regional organization, however, had its own business processes for functions like procurement, payroll accounting, or controlling. This resulted in different requirements to IT support, covered by different ERP systems – which, however, served the same functions due to the similarities in business models. This is not a rare case: Many large companies simultaneously work with systems by SAP, Baan, JDEdwards, Oracle, proprietary developments, or several different systems by the same provider, resulting in multiplying costs for system launch, operation, maintenance, and licensing.

Moreover, different business processes for identical activities make it difficult to compare performance figures, as they are based on different data sources and calculated in different structures and methods. The same is true for logistics and financial data. Interfaces are often managed manually – or specifically programmed at great expense – and

the business units keep to themselves, rather than working closely together. These situations call for a harmonization first of business processes, then of IT applications.

Tips for harmonizing business processes:

■ *Involve business departments:* In harmonizing business processes, business departments and IT need to cooperate very closely – departments bringing in their knowledge regarding the business functions of the respective division or unit, IT contributing cross-functional know-how on the informational linkage between them, as well as on new IT design options.

■ *Facilitate change through change management:* In the context of harmonizing business processes, traditional liberties of business units or subsidiaries will be curtailed to obtain a better cost or performance position for the overall company. Roles and responsibilities change. Top management support will help to facilitate this change.

Harmonizing business processes is much more than a means to reduce IT costs: Many corporate strategies virtually depend on the availability of company-wide data and harmonized – in the case of service providers, even standardized – business processes. Purchasing, for instance, needs clear information on what materials or products have been purchased from what suppliers at what price, in order to determine for each material category whether the bundling of purchase volumes would be helpful to negotiate better prices with suppliers. By the same token, sales and marketing need comprehensive information on all customer interactions to design a consistent customer interaction strategy and build brand awareness. In an equipment-intensive manufacturing business, production scheduling and production controlling need up-to-date information from all sites, for instance on plant utilization and inventories, in order to permit the integrated optimization of production scheduling procedures.

Savings potentials from harmonizing business processes are enormous in both, IT and the business itself. Case examples suggest procurement cost savings in the order of over one hundred million Euros for a total procurement volume of approximately one billion Euros, achieved by bundling purchasing volumes across several business units, in addition to 50 to 70 percent cost reductions in IT systems, achieved by transferring the new, harmonized procurement process to one single system and switching off the previously used, redundant purchasing systems.

On the other hand, harmonizing business processes requires enormous effort and expense, justifiable only through sufficient savings potentials in IT and business units. The necessary changes in IT (such as the introduction of a company-wide supplier portal to facilitate a harmonized purchasing process) usually trigger further changes in other units (such as tighter supply chain linkages with suppliers to reduce inventories).

One thing is certain: Reducing IT costs by replacing the existing heterogeneous IT land-scape with a new one, based on harmonized business processes, initially costs money – sometimes enormous sums. However, as the economic benefit potential is usually much higher, it can easily 'pay' the required IT investments in new system introduction, data migration, and change management. And while the original motivation behind all these changes is to reduce IT costs, at the end of the day the overall economic benefit achieved by harmonizing business processes will include much more.

Optimization of business processes in a chemical company

A chemical products supplier had achieved domestic growth by acquiring several subsidiaries. Each of the new business units enjoyed great degrees of freedom with regard to the design and IT implementation of business processes. A harmonization of controlling and financial processes was initiated, starting with a search for cost reduction potentials.

Originally, the controlling and financial departments had comprised more than 500 people and used almost eight different IT systems. A thorough analysis of controlling and financial processes revealed that, while all of them were aligned towards the same process targets, they used very different working tools (such as account charts or costing sheets) and different processes (for example, for data entry).

Since process targets were identical and corporate guidelines called for identical procedures particularly in costing, business processes were harmonized: Account charts were adapted, costing sheets largely standardized, costing procedures coordinated, evaluation methods aligned, and the detailed processes within the controlling and finance departments, as well as the interfaces with up- and downstream IT systems were largely standardized.

Once this had been completed, an integrated IT landscape could be designed and implemented for all subsidiaries, based on the most up-to-date system among those already used. As a result, the number of IT systems – including those for controlling, general ledger, accounts receivable, accounts payable, and asset accounting – was reduced from eight to one. A new central organization unit entitled 'Shared Financial Services Center' was established and the staff of the previous units transferred.

These measures enabled the chemical company to achieve substantial savings in IT and process costs for controlling and finance. At the same time, the improved data transparency and higher speed of controlling and finance processes helped to reduce the total volume of receivables. The payback period for related IT implementation costs was less than two years.

Standardizing and consolidating IT applications

Standardize first, and then consolidate – this approach will help exploit the greatest savings potential. In many cases, the existing IT portfolio has very heterogeneous over time. This is true for both, shared applications for logistics and financial management (frequently referred to as 'commercial IT') and special IT systems for particular business requirements (such as CAD/CAx systems in engineering companies, bioinformatics systems in pharmaceutical companies, or process control systems in conventional and nuclear power plants). Even on users' PCs and workstations (as well as PDAs and other devices) we often find quite complex application landscapes: Microsoft worlds coexist with Macintosh worlds; in addition, Linux is currently making an entry into companies and government agencies and, needless to say, many users keep a regular potpourri of specialized applications on their PCs.

This diversity drives up the costs of applications in many ways:

- It there are several different IT applications for a given application purpose, costs for their implementation, operation, licenses and maintenance multiply

- Different IT applications usually require people with different qualifications and only limited possibilities of substituting for one another. If staffing levels are low this also results in a great degree of dependency on the know-how of individual persons.

- Different applications often lead to inconsistent and frequently intransparent data files which, in turn, require a variety of interfaces

The data from different applications remain uncoordinated. While it is basically possible for a data warehouse to solve resulting problems by making the data comparable in retrospect, this will further increase IT costs.

Multiple applications usually cause multiple interruptions to business processes, mostly involving media breaks and, on the users' part, a lack of information with resulting uncertainties in decision-making.

Different application landscapes on PCs require broader qualifications and more staff for user support at the call center; in addition, they raise the cost and complexity of data protection and data security.

Effective IT management in the applications area therefore calls for reducing complexity, as well as standardizing and consolidating the application landscape wherever possible. For large business applications (in particular those used in logistics and finance) this involves two major steps: One is to look for identical application areas across divisions or subsidiaries; the other is to identify cross-functional, integrated systems along the value chain. As far as PC applications are concerned, strict standards must be set for admissible applications. At times when budgets are tight, measures like these will help to make room for necessary IT investments.

Implementation begins with the step-by-step migration of data, after which applications that have become obsolete are switched off. PC workstations need to be cleared in the context of the next upgrade, or as a special action carried out company-wide. For central business applications it should also be examined whether, on the occasion of this renewal initiative, outdated or 'exotic' hardware components should be 'cleared out' and switched off as well, which would help to further increase the effects of the IT cost reduction. For instance, once the last application has been migrated from the mainframe computer to the client/sever environment, switching off the main-

Tip for standardizing IT applications:

Make sure your business case accounts for possible monopoly positions of software suppliers: Standardizing IT applications will intensify you dependency on one or few software suppliers. They will obtain a monopoly position vis-à-vis your company – and, changes of suppliers are always costly, this monopoly situation is often exploited via excessive licensing fees or poor service. Make sure to take account of these negative effects in your business case for the standardization of applications**.**

frame will enable the company to save on operating expenses, as well as licensing and maintenance fees.

Standardization of application systems at a manufacturing company

At a large group operating in the manufacturing sector, the number of application systems had grown to over 3,000 in the course of the years. In production alone, more than 1,000 applications were in use, as well as almost 100 in accounting, and nearly 200 in HR. Most applications were no longer up-to-date, their average age being around 10 years. These outdated applications caused enormous costs: IT expenses for their operation were 50 percent higher than those of comparable companies, the complexity of the application landscape was hardly manageable.

By standardizing applications, the company managed to reduce the number of applications systems by more than 40 percent. IT costs were reduced by an even higher percentage, as one hardware platform became obsolete and the number of different database types could be reduced.

Such 'cleaning-up efforts' offer the most potential when performed in the context of a post-merger integration: In the case of a merger between two companies operating at the same stage of the value chain, over 60 percent of existing IT applications and almost 60 percent of the related costs could be saved (figure 3.2). Before, the companies had used different systems for virtually identical tasks – one of which was now simply dispensable.

The limit of all standardization and clearing efforts has been reached once IT-related changes clearly start affecting the business. Therefore close cooperation between IT and the business departments is indispensable, not only in harmonizing business processes but also in standardizing and consolidating IT applications. If, for instance, the IT department demands controlling systems to be 'cleared out', this change – and the resulting savings in IT costs – can be accepted or rejected by the business departments. By this we do not mean to say, however, that changes to IT systems should be the responsibility of the business departments. Rather, IT departments tend to be much too hesitant in using their right to suggestions: In many cases, they could have much more influence than they actually do.
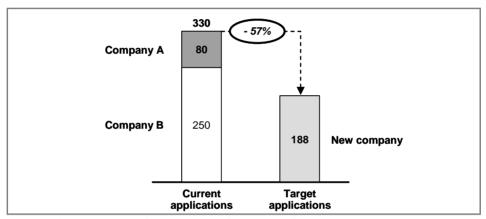

Figure 3.2:   Strategic 'Cleaning up' in the context of a post-merger integration;
Source: A.T. Kearney

Another limit for the standardization and consolidation of IT application systems has been reached once any further action would start having negative effects on individual divisions or subsidiaries. Standardization is not an end in itself – its purpose must always be an improvement of costs and benefits to the company. In large groups we often find that headquarters, for many good reasons, wish to introduce one integrated ERP software which, however, would simply be over dimensioned for a medium-sized subsidiary. In this case a possible solution could be to equip the subsidiary with a suitable IT system for medium-sized organizations, and link it to the group's IT solution via standardized interfaces. Alternatively, if an integrated solution offers substantial benefits to the group – for instance, by enabling it to build an integrated supply chain – this might justify granting financial support to the subsidiary for implementing the group's standard system.

In short, standardizing application systems offers considerable potential for IT cost reductions and increases the benefits of IT by using fewer, better coordinated data files.

Chances for a successful implementation are best if business processes have been harmonized beforehand. The standardization of IT applications can be immediately followed by a standardization of the IT infrastructure.

Reducing costs for IT infrastructure

When we talk about IT infrastructure we refer to all those IT components which, contrary to IT applications, are not visible to the user – such as database systems, operating systems, mainframe and client/server systems, LAN/WAN communication systems. To simplify matters, we are also including PCs, notebooks, and printers, as well as email systems and other systems of structural importance for the communication flow in an organization.

An analysis of companies' IT costs often reveals situations like this: All in all, more than 20 different types of PCs and printers from over 10 different suppliers are in use, as well as several database systems, development environments, and programming languages. Operating systems include several versions of Windows, as well as UNIX, AS/400, sometimes still OS/360, and more recently also Linux. Not surprisingly, large groups – especially those with a history of M&A-driven growth – are particularly prone to heterogeneous IT landscapes.

Uncontrolled growth of this kind costs time and money; during projects it also ties up scarce development resources in the IT department. Moreover, it is not advisable from a strategic point of view to maintain, for example, several different email systems in a company or group, as this will obstruct communication flows between the individual divisions and entities, and slow down the organization's speed of reaction.

Standardizing the IT infrastructure

There is one key principle for IT infrastructure: comprehensive standardization. It enables companies to reduce IT costs for all those IT components which users are not even aware of (such as client/server systems) and/or which, due to their overriding structural importance to corporate communications, must be standardized at any rate (such as email). In the case of PCs, notebooks, and printers, standardization leads to better replaceability, better service, and lower cost, which is why it usually makes sense to standardize these components as well. In exceptional cases, the business case will have to compare the costs of complexity against the benefits expected.

Among other things, standardization best practice calls for one single email system for the entire organization, standardized PC and printer configurations for all users – limiting the number of suppliers to between one and three, depending on the current pro-

curement situation – and the elimination of old systems with specific programming languages and special, expensive runtime environments (hardware, operating systems, networks). The rule of thumb is: The more standardized the better. Rather than trying to cover each and every IT requirement of each individual IT user or user group, the overriding goal must be to determine adequate, overall reasonable workplace equipment which will be standard for the majority of all IT users.

Category	Original situation (2000)				Target architecture (2002)		
	Examples			No. of variants	Examples		No. of variants
Hardware	Terminals PCs: IBM, Compaq, Siemens	Midrange: IBM, Sun Compaq	IBM 9272 R45 Siemens	9	IBM PCs RS/6000 IBM G6	IBM 9672 AS400	3
Network	Novell 5.1 X.25, X.400 X.21, G703	Ethernet Token-Ring CISCO	PCM ISDN FDDI	21	Novell Ethernet	X.25, X.400 X.21 PCM	12
System software	Windows 3.1, NT 4.0 Solaris, AIX OS/390,OS/ D1	ADABAS DB/2 Small-world	TIVOLI Manage Wise Openview	24	Windows 2000 AIX OS/390	TIVOLI Oracle DB/2	16
Standard software	SAP R/2 SAP R/3 PAISY PT-Com	GIS Smallw. Valex MS Office M/Mail	ABB-EMAD BKK GroupWise Visio, ABC	144	SAP R/3 Edifax Valex FAME	CCR DWH MS Office Outlook	39
Operating costs of IT infrastructure (p.a.):	**35 mil. Euro**			**-23%**			**33 mil. Euro**

Figure 3.3:   Areas of standardization and potentials

Standardizing the IT infrastructure enables companies to reduce the number of variants by 50 percent on average, and to reduce IT costs by 20 to 30 percent within a year or two (figure 3.3). In addition, it is a prerequisite for reducing IT costs by establishing Shared Services centers, or by centralizing or outsourcing computing centers. Companies with a high degree of external growth, or striving for internationalization, should standardize their IT infrastructure.

In addition to cost reductions, standardization offers plenty more advantages – such as a more consistent IT infrastructure: It enables employees on business travel to link themselves into the corporate network with their notebooks from any of the company's offices, and exchange documents with colleagues worldwide, based on a standard IT appli-

cation package and email system. In this case, standardization will greatly improve the benefits of IT for both, individual users and the company as a whole, at limited extra cost.

Standardization and consolidation of IT application systems at a manufacturing company

A manufacturer of heat and air conditioning equipment operates several production sites across Europe, as well as sales organizations in every European country. In 1997, the company's IT – like that of many large group – was highly fragmented: Decentralized IT responsibilities over the years had resulted in a heterogeneous infrastructure at all levels – from workplace systems to server and even mainframe platforms.

In the course of a company-wide efficiency program, the IT infrastructure was examined for cost reduction potential and radically standardized. This effort placed particular emphasis on workplace systems: While users had formerly worked with PCs configured to their preferences, the company now introduced three types of standard workplaces: One type, which was entitled 'Common', comprised Office components for text, graphics, and spreadsheet analysis, as well as the SAP front-end SAP GUI and the standard mailing system. It was introduced for almost 90 percent of users. Another workplace type, entitled 'Advanced', was additionally equipped with organizer software. The third type, which could be configured quite flexibly, contained special components such as development tools for IT personnel.

Centralizing IT infrastructure and consolidating computing centers

Standardization efforts in companies' IT landscapes are often a first step towards centralizing the IT infrastructure and additional IT services. Once hardware and network components, applications, and IT services in the different locations have been standardized, a logical next step will be to centralize selected topics, thus ensuring a better use of underutilized resources, the bundling of know-how, and an increase in service quality.

Typical candidates for IT centralization are companies with numerous small locations worldwide or numerous remote users. In these companies, individual IT infrastructures and internal support organizations cause considerable costs for each location, as well as skill deficits in the local IT staff – for example, if each location has its own email and file/print server(s) and each server houses additional capacities for individual data backups. Local and regional application servers are usually not coordinated, housing only few applications which are only centralized locally. Many application servers are not archi-

ved; frequently there is only marginal protection against unauthorized access and viruses. These are just a few examples.

In addition to an increased service level, resulting from a more efficient IT infrastructure and IT support organization, standardizing and centralizing the IT landscape will also lead to considerable cost reductions. Resources maintained to cover utilization peaks can be bundled, thus better tailored to existing capacity needs, and used more effectively. This applies to server, back-up, and network capacity, as well as IT expert know-how. A decentralized IT unit usually cannot afford to employ IT experts for everything, from the entire spectrum of security issues to data warehouse concepts. If this know-how is bundled centrally, employees at local organizations can dedicate their capacity to value-added IT tasks. This bundling of know-how does not necessarily have to imply physical centralization – rather, the concept of the virtual organization provides local entities with the flexibility to assign both, central and local projects to their IT staff.

Centralization, however, first of all means investments – for it will include the relocation of hardware and computing centers, as well as the restructuring of the entire IT architecture. New requirements will result with regard to hardware di-

Tips for the centralization of computing centers:

- *Retain control rights:* Business units giving up their computing center will probably fear a deterioration of service quality; they should therefore be given certain control rights over the corporate computing center.

- *Avoid loss of 'customer proximity':* At the previous computing center locations, 'internal customers' will no longer find local contact persons to approach with their concerns. To close this gap, a centralized support structure with long service hours and agreed service levels should be established.

- *Prevent staff fluctuation:* To avoid a know-how loss caused by IT staff leaving the company, relocation plans should be communicated proactively and employees should be involved at an early stage of the decision process.

- *Ensure system stability:* Concentrating IT computing in one place will result in higher demands to server and network reliability. Hardware and network architectures with redundant systems and varied back-up solutions are usually helpful.

mensioning, network capacity, performance, and system stability. Savings achieved through centralization must therefore be offset against potentially increased communication costs.

To quote an example from practice: The decentralized infrastructure of a large service provider, which had comprised 125 servers worldwide in 1999, was restructured to a total of 12 centralized servers within three years. Results were impressive: Due to im-

proved server availability, employees now had much better access to central data files and applications; in addition, network performance – which was crucial for field service staff – was greatly improved; systems were equipped with much better back-up functions and highly redundant structures. In IT operations, many processes could be simplified, and the reduction in complexity was reflected in substantial cost savings.

There can be two types of limits to the centralization of IT infrastructures: One lies in the existing geographic conditions (for instance, if a country's communication infrastructure is inadequate); the other follows from the overriding corporate strategy: If, for instance, a company plans to spin off a certain division, it would be a mistake to centralize the IT infrastructure of that division, as this would lead to unfavorable dependencies which would later have to be eliminated in the context of an IT disintegration.

One type of IT centralization practiced quite frequently is the consolidation of computing centers. In one case, integrating four computing centers, who had previously been in different locations within the same country, led to cost savings of over 30 percent. In our experience, savings potentials for ongoing computing center operations will amount to between 15 and 40 percent, depending on the number, size infrastructure, and existing capacities. Additional advantages result from the creation of one single platform, as well as improved support and shorter project launch periods.

Centralization of computing centers at four financial service providers

Four companies from the financial services industry decided in 2000 to cooperate in the IT area. At the time, the companies were using different banking systems, as well as expensive customized solutions for sales, integrated bank management, and other purposes; they also operated four independent computing centers.

The companies started their cooperation by focusing on the computing centers – on the one hand because they seemed to offer enormous potentials to be quickly exploited, on the other hand because business processes would remain untouched and therefore the risk involved would remain calculable. In parallel with the computing center consolidation, several comprehensive optimization measures were taken:

- System architectures were strictly standardized to create a basis for efficient production.
- Redundant tasks, such as infrastructure stability, system and network design, network operation and management were consolidated.
- Licensing and maintenance costs for hardware and software were optimized promptly.
- Previously separate tasks such as release management, change management, system and network stability were selectively merged.

■ The working hours required for servicing the standardized hardware – including hardware and software support, communication software, back-up/disaster management – were reduced.

Within a year, these measures enabled the banks to save around 15 percent on their computing center costs. Benefits consisted in a consistent and high service level, a broader know-how base for the systems used and, as a result, noticeable quality improvements in production. New requirements could be met faster, due to the effective management of interfaces with the units in charge of new applications. Both, the release and change management were optimized through consistent project control.

Exploiting cost savings potential through strategic IT sourcing

Information technology – hardware, software, services – is an asset like any other, in that its procurement can be optimized. However, this opportunity is often neglected. In many cases, the IT department does not involve purchasing when making new acquisitions; subsidiaries buy whatever they feel like buying, without bundling purchasing volumes to negotiate better prices; often purchasing is simply not qualified and therefore unwilling to take responsibility for the procurement of a complex and heterogeneous asset like IT. In contrast to the mostly sophisticated procurement procedures in other categories, cost savings potentials resulting from strategic IT sourcing are, in our experience, seldom exploited.

At a European service provider which had enjoyed considerable external growth, the formerly separate business units procured IT services from numerous suppliers and manufacturers. An analysis of procurement and supplier portfolios revealed large overlaps in the types of systems and services purchased. Consolidating the supplier portfolio helped reduce procurement costs by more than 20 percent. Savings potentials in this order of magnitude – between 15 and 20 percent – are possible for companies in almost any industry.

In parallel with the optimization of procurement procedures, every company should regularly verify whether certain goods and services should really be produced in-house or, for good strategic reasons, rather be outsourced to external suppliers. These same make-or-buy questions are also relevant for IT managers: What are strategic core areas of IT, to be provided internally and exclusively by the IT department – and what other services are not critical to the company's competitiveness and can therefore be outsourced? Finding clear answers to these questions should be part of any IT strategy.

IT category	Savings potential – percent –	Sourcing approach
PCs, notebooks, printers	Reduction of remaining licensing costs; up to 70% if number of variants is reduced	Standardization, bundling, e-auction, leasing
Midrange servers, routers, etc.		Standardization, bundling, bid invitation, leasing
Application software (ERP, CRM, PDM, etc.)		Standardization and consolidation, negotiation with supplier
Workplace software		Standardization, bundling, negotiation
Development and system software		Reducing number of variants, negotiation
ÌT consulting and software development		Preferred supplier, competitive bidding, fixed price/total cost approach, quality management
Software development		Offshoring
Desktop management and computing center operation		Competitive outsourcing
Outsourcing contracts		Renegotiation

Figure 3.4:   Effective approaches to IT sourcing

In most cases, however, the optimization of IT sourcing is triggered by high cost-saving expectations, rather than strategic considerations. Experience shows that projects to optimize IT sourcing, just like projects to optimize other procurement categories, quickly take effect. Interestingly, the percentage value of procurement cost reductions is almost unrelated to the absolute procurement volume. In individual IT categories, up to 40 percent cost savings can be achieved; usually 15 to 20 percent are possible across the entire IT procurement portfolio (figure 3.4).

Prior to IT sourcing, a consistent demand management must be established to ensure coordinated activities. The first question here will be, what needs to be outsourced and what needs to be produced in-house. Rule number one is: Less is more. Rather than trying to negotiate lower licensing fees with the different ERP suppliers, it will often be preferable to change to one single ERP platform and prevent multiple licensing fees. Corresponding strategies begin with the harmonization of business processes, continue with the standardization and sorting out of IT applications, and end in the standardization of the company's IT infrastructure (see previous subchapters). Based on these measures, the key questions of strategic IT sourcing can be tackled:

■ *Make or buy:* Which IT services – both, critical to competitiveness and on a competitive level – should the IT department focus on?

■ *Bundling:* What IT services should be bundled for either the 'make' or the 'buy' case?

Both questions can only be solved in conjunction with the corporate strategy. As any other strategic decision, the answers cannot be determined once and for all, but need to be revised at regular intervals in the context of the company's medium- and long-term planning.

Examining the degree of vertical integration in IT

Experience has shown that the key question is not whether all IT services should be provided internally or externally, or whether they should always be sourced centrally or individually. While the coordinated sourcing of computing center services usually makes sense due to their homogeneity and economies of scale, in other cases – such as the maintenance of company-specific aged applications – the coordination effort often exceeds possible synergies. It is therefore preferable to determine for each of the company's key IT services which approach will be more suitable.

On the other hand, IT resources are scarce and expensive. The general rule should therefore be to focus in-house development capacities on those areas where proprietary developments can help achieve major competitive advantages. Above all, this applies to IT services through which companies differentiate themselves from competitors, and which therefore increase corporate value. A possible example would be an energy supplier's decision support systems used in energy trade, which are based on company-specific algorithms and therefore provide a competitive edge. This company would be best advised to bundle its internal IT resources in order to maintain and expand its competitive advantage, an approach often facilitated by the outsourcing of standard IT services.

It will depend on the industry and company-specific situation which IT services need to be categorized as 'Make'. Some examples from our consulting practice:

■ In *telecommunications,* low-cost systems and CRM systems are often specialized applications. They are frequently developed in-house or tailored to the specific needs of the organization or product (customized) based on packages. In the wireless sector, for example, new topics emerge in GPRS/UMTS data communication (including i-mode as a special form) – such as data driven service products, event-based billing, etc. – for which no standard solutions are available as yet.

■ In the *energy sector*, specialized systems that are frequently developed in-house include industry-specific control systems for optimizing capacity utilization at the different stages of the value chain.

- *Large trade groups* usually operate proprietary systems in enterprise resource planning and sales because so far, there is no standard software available for these key areas.

- *Service providers in tourism and logistics* (such as airlines, hotels, railway, car rentals; logistic providers for land/air/sea freight) tend to focus on reservation, tracking and tracing systems.

In *all industries*, the following standard services are suited for outsourcing or strategic sourcing, since they are either uncritical to competitiveness, or cannot be provided in-house at competitive terms:

- Standard business functions including finance and account, purchasing, logistics, HR

- Workplace software

- Operation of PCs/desktop computers, and LAN/WAN (= end-user computing)

- Operation of computing centers.

Only in very exceptional cases will companies have an IT procurement volume large enough to justify the in-house production of these services.

Bundling IT services

The harmonization of business processes, the consolidation of IT applications, and the standardization of the IT infrastructure all result in a clear need to bundle the sourcing of services. In this context, even IT services outsourced for only one division or subsidiary should be checked for possibilities to have them covered by one of the company's existing providers, possibly at lower costs. In the end there will be only few specific, 'exotic' IT services which must be outsourced separately. According to our experience, more than 90 percent of any IT procurement portfolio will be suited for the bundling of purchasing volumes.

What distinguishes strategic sourcing projects in IT from those in other areas is the composition of the project team, since users need to be closely involved. Individual persons, business units, or subsidiaries usually have very diverse interests, as well as different preferences with regard to workplace systems, application software, and service providers –which, in turn, often prevents companies from making use of the most important and effective IT sourcing lever: standardization. This is why demand management plays such an important part in such projects: If the organization can be committed to only one standard software or one type of terminal, bundling purchasing volumes and achieving sustainable major savings in procurement costs will be a breeze. Likewise, if these efforts are not successful, all sourcing approaches based on extensive bid procedures and

supplier selection will be doomed to fail, due to small volumes and a fragmented supplier portfolio.

Introduction of strategic sourcing at a global IT service provider

At a large, globalized group with an IT procurement volume of 1,300 million Euros, the sourcing process for hardware, software and IT services was quite intransparent, due to a high degree of complexity and a very international business. Hardware was procured from a number of different suppliers which were frequently changed. The company's application landscape was very heterogeneous as a result of several acquisitions and a large share of customer-specific projects. What complicated matter was that the company had to make high demands on quality and delivery times to avoid competitive disadvantages. Last but not least, it had to meet specific requirements in many countries, for instance with regard to accounting systems.

The company started its improvement efforts by establishing clarity on the different divisions' requirements, capacities needed, supplier relationships, and other cost drivers of IT sourcing. On this basis the IT infrastructure and workplace software were standardized. Next, a target portfolio for business software was determined and a migration plan set up; in addition, a standardized award procedure for IT projects was defined and agreed upon. For the IT infrastructure, competitive bids were invited using e-auctions; for workplace and standard business software the company conducted supplier negotiations which turned out to be very effective thanks to the larger volumes. Together these measures enabled the company to reduce its IT procurement volume by 15 percent.

To ensure that this success would be sustained long-term, processes and responsibilities for IT sourcing were clearly defined. This included the centralization of responsibilities where IT procurement categories would in future be bundled across the organization.

Checklist: Should your company optimize its IT?

Yes

- ■ Does your software comprise numerous proprietary developments and redundant standard solutions? ❑

- ■ Does the heterogeneity of IT constrain business processes, rather than supporting them optimally? ❑

- ■ Has your company recently undergone a period of considerable external growth, without integrating the newly added IT applications and infrastructures? ❑

- ■ Do your employees use several database and/or email systems, or numerous PCs and notebooks in different configurations? ❑

- ■ Are hardware and network components distributed over several locations? ❑

- ■ Do individual departments or divisions purchase IT services at their discretion and from different suppliers? ❑