CASE STUDY 2

Business process redesign at CompuNet

Standardizing top-quality service through IT

The goal of our business process redesign effort is to provide top-quality service in system support as a standardized, industrialized product.

Jost Stollmann, Chief Executive Officer, CompuNet AG

Company overview

CompuNet, founded in 1984 by Jost Stollmann, is regarded as the leader in reselling, networking, maintaining and supporting PCs in Germany. In addition to selling computer hardware and software, CompuNet offers a full spectrum of services developed around 'the networked PC'. The company became a multi-vendor systems integrator in 1990 when it extended its original line of IBM products to include such brands as Compaq, Hewlett Packard, Toshiba and Siemens Nixdorf. In October 1993, CompuNet acquired 75% of the loss-making Electronic 2000 Distribution Corporation (Vertriebs AG), whose product focus, and in particular the SUN and DEC workstations, was considered to be a strategic complement to the group's existing range of products and services.

CompuNet consists of 19 companies at 18 German locations, operating under the roof of a holding company, the CompuNet Computer AG. About 75% of CompuNet's 1,256 employees work in service-related positions, including the technical customer service division where staff numbers are rising sharply to meet the strong increase in customer demand. (Table 1 the lists CompuNet's services).

Table 1 CompuNet services

Consulting
Consulting for strategic IT planning, design and implementation of customized corporate IT architectures (client/server, Lotus Notes).

System engineering
Concepts and architecture for local networks, support in connecting and networking mainframes.

Project management
Nationwide project management providing large co-operations with products and services supporting complex networks – from purchasing and configuration to delivery and warranty.

Software support
User support, standard software training, hotline support.

Customer service
System configuration, system implementation, installation, repair and recycling of hardware, replacement of parts and repair service, life cycle warranty.

UNIX/computer centre integration
System engineering and support in heterogeneous networks, system integration of UNIX workstations and UNIX servers, integration of UNIX platforms into the computer centre.

European-wide service
Co-ordination and handling of European-wide projects through CompuNet's joint-venture partner International Computer Group B.V.

Shift in business strategy

Originally, CompuNet's business strategy consisted of a focus on IBM products enhanced by peripheral

This case was developed by Claudia Loebbecke, University of Cologne, and Tawfik Jelassi, Professor of Information Systems at Theseus Institute and INSEAD. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

The contribution to this case provided by CompuNet AG, in particular by Mr Patrick Bischoff and Dr Bernd Wirsing, is greatly appreciated.

products from other suppliers. The aim was to provide quality hardware and services and to ensure compatibility with systems already in place. At that time, services in general were offered mainly by the suppliers or by third-party service maintenance companies. Since 1990, CompuNet has changed its competitive position in two respects: first, CompuNet has moved away from its narrow focus on IBM products and turned itself into a multivendor systems integrator (see Table 2); second, the company has increasingly shifted its business focus towards value-added services, as an essential complement to its reselling business. Andreas Münchow, Aachener und Münchener Informatik-Service AG, points out:

Table 2 Evolution of CompuNet's PC distribution (in units)

	1990–91	*1991–92*	*1992–93*	*1993–94*
IBM	34 959	36 278	43 666	49 667
Compaq	4988	8665	16 071	29 432
Toshiba	856	1222	1285	2374
Others (HP, SNI)	0	0	0	2215
Total	40 803	46 165	61 022	83 688

> The particular value which CompuNet has, as a multivendor service provider, is that its staff is familiar with all systems platforms. It is not easy to find consultants among CompuNet's competitors who can demonstrate a depth of knowledge covering the broad range of PCs, UNIX systems and large mainframes, who understand their clients' needs, and who can implement forward-looking solutions to those needs.

Financial data

For the financial year ending June 1994, CompuNet's turnover amounted to DM924.6 million, up from DM684 million in the previous year. The company attributes these impressive results partly to the resurgence of demand in the market for brand-name vendors such as Compaq and IBM, both of which are now key CompuNet suppliers. CompuNet shipped 83 688 units, which represents an increase of 37% over the 61 022 units shipped in the previous year. Trading revenue increased by almost 32% to DM766.8 million in 1994, up from DM582.6 million in 1993. Concurrently, service revenues increased by 55% from DM101.5 million in 1993 to DM157.8 million in 1994. Billings for services represented 17% of CompuNet's total group revenue in 1994, compared with 14.8% in 1993 and 10.8% in 1992 (see Table 3).

The balance-sheet sum increased by 5.8% from DM329.7 million to DM349.2 million. Between 1993 and 1994, current assets increased by approximately 2% to DM299.7 million. In 1994, inventories were reduced to DM101 million from DM126 million in 1993. To account for slow-moving items and depreciation, provisions of 5% against the value of inventories, and of 2% against spare parts, are made every 30 days. (Table 4 provides an overview of CompuNet's financial data.)

Table 3 Evolution of CompuNet's revenue mix (DM millions)

	1989–90	*1990–91*	*1991–92*	*1992–93*	*1993–94*
Total revenue	340.4	625.7	678.3	684.1	924.6
Distribution	326.9	568.6	604.4	582.6	766.8
Service	13.5	57.1	73.9	101.5	157.8
% Service	4.0	9.1	10.9	14.8	17.1

CompuNet in Europe

To leverage its experience in the European market, in 1989, in co-operation with Computacenter (UK) and Random (France), CompuNet founded the International Computer Group (ICG) B.V. Headquartered in Paris, France, ICG consists today of 25 companies with 350 locations and roughly 10 000 people covering all of Western Europe, the Americas and Asia/Pacific Rim. ICG members are typically the leading providers of high-value-added systems integration and the related services in their markets. The group's Paris headquarters is staffed by multilingual specialists who provide project management, sales co-ordination, support marketing and information services. In 1993, ICG's turnover increased by 25% to US$4 billion from US$3.2 billion in 1992. Major customers of ICG include such companies as Kimberly Clark, Bang & Olufson, Coca-Cola, General Electric and Honeywell.

CompuNet's IT infrastructure

CompuNet's IT- investment traditionally has been high, averaging about 2% of total turnover. In 1993–94,

Table 4 **CompuNet's financial data** (all amounts in DM million)

		Consolidation and internal-growth		*Acquisition*	*Expansion*	
	1993–94	*1992–93*	*1991–92*	*1990–91*	*1989–90*	*1988–89*
Sales	924.6	684.1	678.3	625.7	340.4	175.9
Income from normal operating activities in (% of sales)	41.7	22.8	21.6	2.3	11.3	2.8
	4.5%	3.3%	3.2%	0.4%	3.3%	1.6%
Income before taxes[a] (% of sales)	41.7	22.8	21.6	2.3	11.6	2.8
	4.5%	3.3%	3.2%	0.8%	3.4%	1.6%
Consolidated earnings (loss) (% of sales)	32.5	14.0	13.7	(11.7)[b]	3.0	0.6
	3.5%	2.0%	2.0%	(1.9%)	0.9%	0.3%
Employees	1,256	1,097	1,195	1,128	489	307
Personal expense	116.4	99.9	100.2	86.5	37.5	19.1
Shareholders's equity	79.1	52.3	48.0	60.3	10.0	5.2
Internal financing[c]	110.9%	86.5%	95.6%	106.4%	44.2%	17.9%
Internal financing (%of total liabilities)	31.8%	26.2%	37.4%	36.9%	31.4%	17.7%
Dividend per share (DM)[d]	90.77	62.67	66.39	25.50	35.60	9.80

a Before profit transfers to silent partners.
b Not comparable with 1991–92 since losses could not be offset against profits.
c Including equity, silent partnership investment, and subordinated shareholder loans.
d Not including corporation tax refund.

Source: CompuNet's annual report 1993–94.

it amounted to approximately DM15 million for the entire group. (See Table 5 for detailed IT costs.) The company employs 31 people in its central IT department: nine are assigned to mainframe management, 18 to SAP, and four to Lotus Notes. An additional one to two people are, among other tasks, responsible for the IT structure in each individual office.

SAP

In 1988, CompuNet first installed SAP,[1] soon after, the application package was turned into a company-wide IT platform for all business processes (accounting, inventory control, invoicing, purchasing, etc.). The system's ability to provide real-time information about all relevant business activities tremendously enhanced the transparency of corporate transactions. In 1994, SAP R/2 system supported in excess of 500 permanent CompuNet users with standardized business applications. Another 300 users have access to the system on a non-permanent basis.

SAP: R/2 *v* R/3

During 1995, the central warehouse administration system will be transferred to the new SAP R/3 system. For Jost Stollmann, 'R/3, running on a client–server architecture, will certainly be the IT backbone of the future.' The decision to switch to R/3 was not only motivated by the desire to build up expertise with the new system, but also was affected by the major cost differences involved. The choice was between an investment of DM2.58 million for R/2 and the necessary mainframe environment[2] or an investment of DM560 000 in SAP R/3 and its client–server environment.[3]

Leveraging the SAP experience

Control system

CompuNet managers are convinced that their five-year experience with SAP R/2 has provided the company with a competitive advantage regarding sophisticated business applications. For example, SAP has been used to establish an internal control system for business units and products. This system permits a comparative performance benchmarking of all operating units. Each kind of service (e.g. hardware sales,

1 SAP stands for systems, application and products in data processing.
2 DM2.5 million for CPU extension, DM20 000 for consulting and DM60 000 internal labour costs.
3 DM 270 000 for hardware and software, DM50 000 for consulting, and DM240 000 for internal labour costs.

Table 5 IT costs (DM thousands)

	1992–93	*1993–94*
Computer Center hardware cost	1596	2455
Computer Center operating system		
MVS	773	603
Tools	86	72
Carrier/network costs	646	651
SAP		3450
Lotus Notes Investment Cost (1992–94)		
Lotus Notes (switching cost from IBM PROFS to Lotus Notes, hardware, consulting, ...)	2500	2500
Personnel (# of people, cost)		
Computer Center	14 (including network)	9
	918	834
Network administration		4
		335
SAP		18
		1900
Central spare parts sourcing/procurement system (1993)		
Development cost for central sourcing of repair materials		67
CN-KISS (customer information system)		
Customer information system cost in 1993–94		291
CallAS		
Since April 1994: 230 per month		550 (fixed)
External software development cost		
Applications design for SAP		278

technical support, systems consulting, software consulting) is separately monitored and measured against special performance indicators. Such a control system allows review of CompuNet's entire value chain. The availability of a transparent picture about company operations allows for more focused and effective concentration on core business activities such as purchasing, installing and maintaining PC networks. Plans have been made to extend the use of this concept and tool to monitoring customers.

Total quality management

Over the past two years, CompuNet has invested approximately DM1 million into a 'total quality management' (TQM) project, with the goal of building an efficient quality management system. In 1992, as a first step, CompuNet standardized all major business processes on a 'best practice' basis. During 1993, all employees (including all partners) were trained in TQM practices and concepts. By 1994, a broad set of TQM projects, ranging from simple tasks to re-engineering entire business processes, was in operation.

By using standard measurements that are common to everyone in CompuNet, the quality of individual departments can be measured continuously, and proposals leading to an ongoing improvement in quality can be implemented by the employees involved. Among other things, the 20 group-wide quality-measurement issues include the number and value of returned units and the percentage of customer complaints, as well as the availability and response time of the SAP system. The key to the success of the TQM effort is the broad, grass-roots involvement of all employees. (Table 6 lists CompuNet's quality statements.)

Lotus Notes

Lotus Notes is a technology platform that supports a process called 'workflow computing'. It offers basic applications such as email and database capabilities,

Table 6 CompuNet's quality statements

Top quality within all our business processes is our prime objective
It is our prime objective to prioritize the quality of our processes to ensure continuous customer satisfaction

The expectations and demands of our customers are at the center of our work
Our doing is to ensure the competitive advantage of our customers. Therefore our performance must be better than that of our competitors. All our work has to at least fulfil if not exceed customer expectations.

The continuous striving for business improvement is the key issue for our corporate success.
We have to be outstanding in everything we do. This goes for our business performance, our relationships with the customers and, among ourselves, our social behaviour, our competitive style as well as our profitability

The customer and the supplier are our partners
CompuNet ensures a mutually beneficial relationship with suppliers and buyers

CompuNet's integrity does not allow for compromises
Our behaviour must be shaped by our honesty, fairness and social responsibility. Our company has to be respected for its integrity as well as its contributions to society. Nobody is to be discriminated against on the grounds of their race, nationality, religion, gender or views.

Source: CompuNet.

as well as advanced business modelling and simultaneous operations processing. Furthermore, Notes offers various sophisticated tools and an integrated macro language, which allow for the further development and customization of applications.

As a result of CompuNet's extensive use of Lotus Notes, it has become something of a pioneer in this technology in Germany. All employees use the package as the basis for their inter-office communication (data transfer volume: 12–14 gigabytes per month in 1993–94). Lotus Notes has replaced the previously used Office Vision, which was mainframe-based, thus avoiding the cost of an additional mainframe installation to assist the existing ES 9000/9121 computer.

However, Franz T. Mueller, Head of the CompuNet Computer Distribution GmbH in Kerpen, admits: 'Implementing Lotus Notes only for office communication would not make sense unless the company intends to use it to develop other applications.'

Crucial for CompuNet's decision to implement Lotus Notes was its ability to support integrated work processes. Says Ludwig Schlösser, Head of CompuNet Consult:

> We develop complex IT projects for our customers. Often, several of our [CompuNet] companies are involved in one project, and the expertise of the whole group is required. Lotus Notes seems to be the best product to support such projects with a state-of-the-art workflow based project management.

Lotus Notes helps a company to focus more on groups and processes than on individuals and functions. It supports document management and process monitoring, for example by enforcing 'workgroup computing', which reduces the importance of geographical distance. The issue is no longer where a task is carried out, or in which location the information is held, since departments are turned into logical units. Every employee can access all relevant facts through common Notes-based forums and databases, information can be read, and documents can be attached and then passed on to other employees.[4] Lotus Notes is also used for exchanging up-to-date data such as price lists or product information with CompuNet's external partners. Contrary to Office Vision, Lotus Notes supports a client/server distributed, decentralized data environment that fits well with CompuNet's corporate structure. Moreover, Lotus' implementation was facilitated by the company's extensive IT infrastructure. Each employee is equipped with a PC[5] that is part of a local area network (LAN) within each location as well as part of a corporate-wide area network (WAN). Thus, every employee can communicate with anyone within the organization at any time.

Compunet's business environment: the IT market

Overview

The IT industry is in the midst of a structural change. Manufacturers of mainframes and medium-sized computers are under pressure from worldwide overcapacity, while makers of PCs and workstations suffer from rapid technological changes and drastic price reductions. In 1992, the total turnover of the PC business declined by approximately 13%. While the producers of clones significantly increased their profits, brand-name manufacturers (including IBM and Compaq) lost market share due to their high prices and long delivery. In 1993, however, these manufacturers recovered lost market shares through rigorous pricing policies. Whereas the total PC market shrank by 4%, IBM and Compaq increased their PC sales by 25%. (See Table 7 and Exhibit 1 for an overview of recent developments in the German PC hardware market).

The German market for software and services in 1993 rose to US$13.27 billion, thus expanding by 11% from 1992. Desktop services are expected to

Table 7 German PC revenue (DM millions)

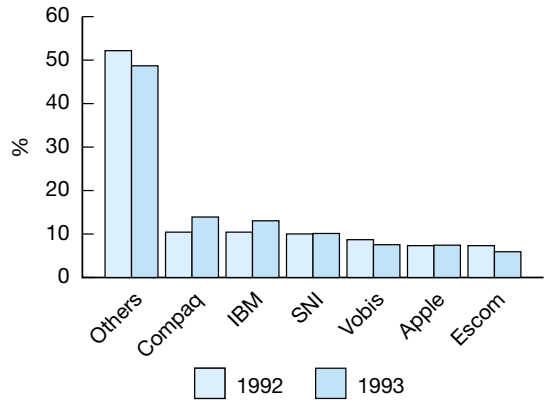
	1992	*1991*
Vobis	1096	793
IBM	910	1297
Escom	625	349
Compaq	585	606
SNI	456	517
Apple	445	426
Commodore	438	735
All manufacturers	8360	9619

Source: Info Corp Europe

4 While previously the corporate IT department controlled the Office Vision communication tool, each business unit is now in charge of its Lotus Notes applications.

5 OS/2.11 and MS-Dos/Windows.

Exhibit 1 German Professional PC market



Source: IDC.

Table 8 German market for IT (1992–97)

	1992		*1997*	
	Billion DM	*%*	*Billion DM*	*%*
Multi-user systems	9.4	18	9.9	14
Support services	6.8	13	7.8	11
Professional services	16.6	32	24.9	35
Packaged software	8.3	16	14.9	21
Data communications	1.0	2	1.4	2
Single user systems	9.9	19	12.1	17
Total	52.0	100	71.0	100

For large resellers like CompuNet, the industry trends are favourable. The US industry analyst Dillon Read has identified five positive trends:

- growing demand out of recession;
- trend to big-brand manufacturers;
- market-share gain by large resellers;
- more stable pricing environment;
- favourable terms and conditions for large resellers.

Source: IDC

grow by 10% per annum until 1997, which would make Germany by far the largest software and services market in Europe. (See Tables 8 and 9 for developments in the German service market and Table 10 for the US market of LAN system integration services.)

Although it is difficult to predict the end of the structural changes presently affecting the IT sector, the responsibility for corporate PC/workstation infrastructures is being increasingly transferred to external consultants (e.g. as CompuNet, M & S, ADA, debis Systemhaus, EDS, IBM, SNI, DEC, HP).

Customers' increasing interest in external service providers

In difficult economic times, companies often turn back their focus to their core competence. This change is accompanied by a detailed review of the IT value chain within the company, with the aim of reducing or eliminating the burden of some support activities, such as purchasing, installing, maintaining and upgrading PC Networks, as well as providing the necessary software infrastructure. With the growing complexity of software applications and the ever-

Table 9 Estimated market growth services/ networking per year (1993–97)

Segment	*Growth rate (%)*	*Source*
PC hardware sales	10.0	IDC
Traditional maintenance	3.0	Input
Network services		
LAN installation	18.5	Frost & Sullivan
LAN maintenance	30.0	Frost & Sullivan
Desktop services	30.0	Input

Table 10 US market for LAN systems integration services (1990–97)

Year	*Externally maintained LANs*	*Chargeable hours*	*Duration of maintenance (days)*	*Revenue per LAN (US$)*	*Sum (US$ millions)*
1990	3300	100	2.0	1600	5.3
1991	8500	110	2.7	2376	20.2
1992	15900	118	3.1	2926	46.5
1993	32 500	127	3.6	3658	118.9
1994	46 600	136	3.9	4243	197.7
1995	68 400	140	4.5	5040	344.8
1996	95 500	144	4.7	5414	517.1
1997	122 600	148	5.0	5920	725.8

Source: Frost & Sullivan.

increasing professional use of PCs, the effective management of a company's IT infrastructure has become prohibitively expensive.[6]

According to Gartner Group, the actual purchase value of PC hardware and software has been reduced to approximately 15% of the total PC life-cycle costs (approximately US$40 000 per PC). Another 15% covers technical support (e.g. help desks, application consulting, maintenance), while 14% is related to administrative tasks (e.g. purchasing, inventory management, audit). However, 56% of the PC life-cycle costs are devoted to end-user activities (including the operation, back-up, training and application development) and hence constitute the largest part of a company's IT cost. Due to the currently turbulent business environment, companies are seeking external assistance to manage their IT infrastructure and increasingly are opting for outsourcing solutions.

Business process re-engineering 1: towards lean 'guarantee management'

The guarantee dilemma of a multivendor service provider

In an era of falling hardware prices, guarantee conditions have emerged as a competitive weapon for manufacturers struggling to retain market share. They are being used by these manufacturers as a differentiating factor in their market positioning.

From a customer's perspective, the wide variety of guarantee conditions has made the management of a large PC infrastructure much more complex, and therefore much more expensive. More specifically, since most companies have a heterogeneous PC platform, they have to deal with different guarantee conditions, depending on the product type and purchase date. In case of hardware failure, extensive checks are necessary in order to determine the corresponding manufacturer, the contact person, and the extent of the guarantee.[7]

For CompuNet, developing into a multivendor company while focusing more on services has led to a dramatic increase in the volume and complexity of company operations. CompuNet had to pass to its customers the different guarantee conditions and prices imposed on it by its various suppliers. As a result of this situation, each customer had numerous valid guarantee claims towards CompuNet. CompuNet ended up managing 65 000 hardware guarantee calls per year.

In order to compete in this demanding business environment, CompuNet recognized the need to streamline its business processes not only internally but also in relation to its customers and suppliers.

SAP as an enabling technology for business process re-engineering

Faced with the new challenge of multivendor service logistics, Jost Stollmann was convinced that further exploitation of SAP could create a competitive advantage for CompuNet. He thought that the company's five-year experience with SAP and the existing set of SAP applications could be leveraged for the handling of products and spare parts. The approach consisted of redesigning business processes as to follow standardized SAP procedures for all business transactions. For Stollman, the PC serial number should be used to identify each customer's setting and relationships with CompuNet, thereby triggering all the necessary courses of action.

Re-engineering guarantee procedures leads to a new product

In late 1991, Rainer Borchardt recognized the difficulties resulting from CompuNet's increased focus on services. He analyzed the company's business processes aiming at optimizing the complex guarantee situation and benefiting from the new market demands. In January 1992, Borchardt, and one of his colleagues took the initiative further: they completely redesigned CompuNet's value chain, mainly through simplifications of the core service activities.

The first principle underlying this redesign effort was to buy all products without any guarantee rights at accordingly lower prices. This would remove CompuNet's obligation to process individual reimbursements of guarantee claims with the manufacturer. However, the guarantee chaos from the customer perspective, and the resulting administrative difficulties at CompuNet, had yet to be solved. The concept of 'guarantee bundling' was then introduced, and the PC Life Cycle Guarantee emerged as the solution to adopt.

6 PCs in this case study refer to personal computers and workstations.

7 Until recently, the standard guarantee offered in Germany was 12 months for defective parts. Travel to and from the customer site, as well as time spent, was usually invoiced. Such conditions changed with the PC market's price war.

The CompuNet Life Cycle Guarantee for new IT equipment runs for 48 months, which corresponds to the expected life cycle of the hardware. It covers repair, travel expenses for technicians, spare parts and all other costs related to equipment damages. CompuNet puts a special four-year-guarantee sticker on all hardware products that it delivers. These products have their own casing, electric cabling and serial numbers.

When CompuNet's service centre agent keys a given PC serial number into SAP, information about the corresponding product and customer is extracted and displayed automatically. Hence, the PC serial number has become the customer's 'entry ticket' to the service centre. This new SAP-based procedure has automated all guarantee-related transactions and, therefore, has eliminated all the paperwork and documents normally associated with guarantees.

Benefits of CompuNet's business process re-engineering

Since October 1992, all CompuNet products have been delivered with the new Life Cycle Guarantee, and every customer has only one contact person within CompuNet. Time-consuming searches for delivery notes and invoices have been eliminated, and customers now benefit from a state-of-the-art spare-parts delivery system and a real-time guarantee application within contracted time windows. These offerings simplify the guarantee procedures of large customers and therefore reduce their overall IT management costs.

For CompuNet, its BPR effort, resulting in the Life Cycle Guarantee product, has simplified its core activities significantly. Various guarantee-related transactions within the company, as well as with suppliers and customers, were eliminated, thereby reducing CompuNet's maintenance costs by 66–75%. Moreover, the time required to process guarantee cases has decreased sharply.

Pushing lean guarantee management further

To leverage the Life Cycle Guarantee concept further, CompuNet introduced two types of customer guarantees for existing PC installations that are either old or supplied by a third party: the so-called 'Refresh Guarantee' and the 'Life Cycle Guarantee for Used PCs'. For CompuNet, both guarantee types do not require management efforts beyond those associated with the Life Cycle Guarantee; they present, however, a promising business opportunity.

Both guarantee types for already installed PCs offer customers the same benefits as those of the new equipment guarantee (i.e. covering repair, travel and spare part costs related to PC damages) but have a different starting date for the guarantee. While the Life Cycle Guarantee for Used PCs begins on the installation date of the equipment, the Four-year Refresh Guarantee starts once the hardware is checked and updated by CompuNet. These new guarantee types have been increasingly attracting customers who prefer to have total guarantee agreements with CompuNet for their existing hardware installations.

Business process re-engineering 2: towards customer-oriented support management

The core business activities of many companies increasingly depend on the availability and reliability of their IT infrastructure. Therefore, reducing the frequency as well as the duration of their system breakdown is of critical importance for them.

Call administration system (CallAS): the triggering idea

Since the introduction of the Life Cycle Guarantee and the resulting process simplifications, CompuNet's service business has increased dramatically. Hardware call volume per shipped PC has doubled every year and has led to diverse service requirements. For Walter K. Nagel, the partner responsible for the service business in the Cologne office:

> When it comes to defining their service requirements, customers' creativity has no limit. As a result of that, almost every contract has to be engineered to the exact specification that matches the corporate customer's requirements.

Making the PC service a standard product is difficult, but offering such a product in an effective and cost-efficient way is almost impossible. Since the variety of customer requests cannot be represented in SAP, delays for developing new software applications amount to approximately five years. In CompuNet's profit centre-oriented structure, each company is responsible for increasing its own service business. In this context, the difficulties in managing the new service concept and the inappropriateness of the SAP platform to support various service processes led to a new system development effort in

the CompuNet Berlin office. There, in 1992, Andreas Thimm, a service manager, deviated from the official IT strategy for standardized products by developing a Lotus Notes application to manage his local service business better. While his personal initiative helped him to do his daily work, the resulting application did not meet the corporate IT standards. When asked to stop his initiative, he argued that the Lotus Notes application was his 'private effort', developed during his free time. Moreover, not only has Thimm continued his user-oriented 'spaghetti code' attempts to build CallAS, but he has also convinced his colleagues in other CompuNet branches of the advantages of Lotus Notes. Over time, an increasing number of companies within CompuNet adopted CallAS and adjusted it to their business needs and software-development concepts. Therefore, the CallAS adoption has led to the use within the company of different versions of the Lotus Notes application for service management. CallAS's 'guerilla approach' (as Jost Stollmann calls it) and the various 'spaghetti code' versions were incompatible with CompuNet's IT policy of providing company-wide applications and pursuing an open information policy that allows everyone to access the company databases. Furthermore, information security could hardly be controlled, and maintenance and support costs for the 15 different CallAS versions increased beyond a reasonable limit.

CallAS's official start

With the simplification of internal business processes and the success of the Life Cycle Guarantee, CompuNet's main challenge was to maintain a customer-oriented approach to service management, while remaining cost-efficient. Due to recent technological breakthroughs in information and telecommunication technology, it became possible to envision a service management system that would encompass physically dispersed support personnel. Therefore, Jost Stollmann decided to start, under his own leadership, an 'official' project to re-engineer CompuNet's customer service offerings completely, using IT and telecommunications support. His strategy was to merge the process-oriented Notes front-end tool and the central SAP back-end application into a comprehensive, distributed service-management infrastructure.

The concept was first formalized in May 1993 by Reiner Borchardt. Then an extensive specification chart was developed by a team that represented the different concerned parties. In October 1993, this chart of CallAS redesign and its integration into the SAP backbone was contracted to the internal consulting company, CompuNet Computer Consult (Cologne), for a fixed price of DM550 000. (Table 11 provides CompuNet Consult's five-year results.)

Table 11 CompuNet Consult's financial results (1989–1993)
(in DM; figures in parentheses are losses)

1 January–30 June 1989	(122 000)
1989–90	(871 000)
1990–91	82 000
1991–92	(51 000)
1992–93	101 000

Source: CompuNet

Integrating SAP and Lotus Notes for a better CallAS

First steps

Beyond the use of Lotus Notes' capabilities, CompuNet Consult recognized the need to exploit the SAP backbone further. While SAP had been used only to support central business processes, Lotus Notes had served as a communication tool for the CompuNet Group since 1993. Due to the different hardware platforms that each of them requires (respectively, a mainframe computer and a client–server architecture), the SAP and Lotus Notes applications had been separated from each other.

However, in order to further simplify its service procedure, CompuNet developed a new service-management concept that integrates SAP and Lotus Notes. When a customer calls CompuNet's decentralized service department to report a PC problem, they need only to provide the serial number of the broken machine. This data item allows CompuNet's service staff to access immediately, through SAP and Lotus Notes, the product history and guarantee status, and to take the necessary service action(s).

Problems encountered

Early in 1994, a modified Lotus Notes version for sales support was installed, allowing the distribution

of maintenance and service-level contract data throughout Germany. A pre-release of CallAS was also installed to forward service calls between branches. However, the new networked version created total chaos. The CallAS application broke down at least six times a day, response times were unacceptable, and data and entire calls got lost. Recovering lost data was a source of frustration for everybody and, since problems were no longer fixed locally, all complaints were directed to CompuNet Consult. Service quality deteriorated dramatically, and customer complaints even led to the loss of some business relationships.

When reviewing the situation, CompuNet Consult identified the main reasons for the problem: (1) the branches had heterogeneous PC and LAN infrastructures and used different patch levels; (2) there was no real support structure for CallAS and Lotus Notes; and (3) the CallAS and Lotus Notes applications had some faulty features.

As CompuNet Consult was trying to turn its business into a profitable operation, its human resources were completely overwhelmed with work. Fixing CallAS, while at the same time working on external customer projects, led to drastic service problems. In the midst of this stressful and chaotic situation, it was decided to change the fixed-price contract relationship with CompuNet Consult. Instead, the CompuNet Group hired 13 of the best specialists of CompuNet Consult to be dedicated exclusively to the development of the IT support for CompuNet's service management. This brought focus and stability back into the operations and, in the subsequent months, the so-called 'Dream Team' made major progress.

Achieved goals

Initially, all incoming customer calls were represented in Lotus Notes and were also entered into SAP. The current version of CompuNet's SAP–Lotus Notes integration enables automatic communication between both software products through mouse-clicks. When using Lotus Notes, SAP information and dialogues can be accessed without leaving Lotus Notes. SAP data (such as customer number, order number and PC serial number) are integrated online into Lotus Notes documents, thereby allowing them to be processed further through Lotus Notes' graphical interface. Thus, different work procedures are 'melted' into one business process. This SAP–Lotus Notes integration is at the core of the advanced company-wide CallAS version and helps to further improve CompuNet's management of incoming customer calls and the resulting hotline activities.

With the new application, the contact person knows in subseconds what kind of product is damaged, whether it was damaged before, whether the spare parts needed for a potential repair are in stock, if and when a CompuNet engineer was at the customer's site before, and whether the service was handled remotely. Lotus Notes also makes it possible to find out immediately when an engineer with the necessary know-how will be available. The customer can then be informed about the date and time of the repair.

Furthermore, the schedule of support staff is managed and the necessary spare parts allocated. Technically speaking, customer calls are received in the PC-based Lotus Notes environment where online SAP data (such as customer address, contact person and PC-related information) are integrated. The calls are then processed as support orders for the different CompuNet offices.

Another crucial aspect of shortening the reaction time to a customer problem is the quick availability of information about technical staff engagements. CompuNet has developed a telephone-based central automated operator system (AOS) to complement CallAS functionalities. Technicians call the AOS before and after their customer visits, and all relevant data (e.g. reference number, date and time, status) are automatically processed and stored within the call documents of the Lotus Notes database. Moreover, in order to remind the technicians' supervisors of urgent actions, a built-in escalation mechanism automatically sends them an email (Autopost) shortly before support deadlines. Upon request, several warning levels (e.g. different timeframes before the deadline) are accessible online to control continuously the processing of customer calls.

Achieved benefits

CallAS allows CompuNet to monitor predetermined service levels and to allocate its technical field personnel accordingly. The automation of most steps in the support value chain reduces order-processing time and provides continuous online information and control of any service activity, be it for in-house purposes or for CompuNet's customers. Thus, the second BPR project laid the ground for better service

management, including hotline and help-desk processes, and enabled CompuNet to offer unique customer service options in Germany. Ludwig Schlösser, partner responsible for the CompuNet Consult business, explains:

> For CompuNet, CallAS is the IT backbone to keep our service promises to our customers. Due to the fast processing of calls, we can guarantee our customers that they will regain the full functionalities of their PCs and networks nationwide within the contracted up-times of typically four to 24 hours.

Since CallAS had become the basis for fast, cost-efficient and high-quality PC support and maintenance, Jost Stollmann decided to leverage these new capabilities further and package them in an attractive way for his customers. This led CompuNet to add, in April 1994, another offer to its service product range: the Support Guarantee. This guarantee aims at eliminating all administrative processes from support management. It reduces support efforts at CompuNet and at the customer site to 'one bill, one site, and one phone number'. Comparable to the Life Cycle Guarantee concept, CompuNet ensures reducing system down-times – depending on the contract type – to one day, eight hours, or four hours. Paying an all-inclusive guarantee premium, the customer can call the same CompuNet phone number whenever and wherever a PC problem occurs.

Moreover, CompuNet has started to leverage its expertise further by offering the SAP–Lotus Notes integration to its customers. Andreas Thimm says:

> Altogether, the SAP–Lotus Notes integration has allowed for major synergies at CompuNet. Having put two already implemented application packages together, it is clear that the total is more than the sum of the parts.

Future use of CompuNet's SAP–Lotus Notes integration

Further development plans

For the near future, CompuNet's goal is to develop a concept whereby a customer can reach their contact person at a distributed maintenance and support department. This decentralized structure would not need to be grouped geographically but could be based on logical organizational units. Implementation-wise, an advanced telecommunications system will be used to transfer the caller's number, which will then automatically trigger a database search. As the incoming call reaches the service agent, historical data about the calling customer are displayed, providing the agent with information about the client, their IT infrastructure under CompuNet's guarantee, and past maintenance cases (what they were, when they took place, who handled them, etc.). Once the customer call is qualified, it will be routed within subseconds to the next appropriate, geographically independent service person who could offer some remote support. An even more advanced version of the system could be based on automatic voice recognition, at least with regard to the serial number of the broken PC.

While this project requires the co-operation of a telephone company, a specialist in automatic call distribution (ACD), and a network provider, the integration of all application modules (which include a case-based knowledge system) will be completed by CompuNet. Hence, a new integrated product for service support will be developed and marketed.

Expected benefits

To leverage the new service-management application (currently under development), CompuNet aims at increasing the percentage of remote services from today's level of 50% to 80–90%, a figure that is already common in the USA. Jost Stollmann expects that 'in the medium run, the only service requests requiring field service will be material fatigue and hardware upgrading'.

Customers' Experience with Compunet's New Services

Thyssen Handelsunion AG

Thyssen Handelsunion AG (THU) is one of Europe's leading trade companies, with sales of DM16 billion and 29 000 employees. It currently uses 800 PCs in its corporate headquarters in Düsseldorf, Germany. In order to manage its PC infrastructure cost-effectively, THU decided to outsource PC tasks such as purchasing, installation, software support and maintenance, and it chose CompuNet as its external service provider.

Mr Weide, project manager at THU, says:

> CompuNet was already known to us as a partner of many years standing. We believed that CompuNet was best able to meet our requirements due to its size, experience and knowledge of hardware, software and logistics. THU and CompuNet staff already work together as a team. This form of co-operation enables us to slim many processes quite extensively, and to eliminate duplication, both in-house and for our partners. Today, we can supply better service to our users at lower cost.

BEB Erdgas und Erdöl GmbH

BEB is a major supplier of gas in Germany (it provides approximately 20% of the country's gas requirements) and is also involved in the domestic oil extraction business. It has 2000 employees and its activities are spread over the entire country. Approximately 600 PCs are installed in the company headquarters in Hannover, and an additional 250 PCs are used at other locations connected to the headquarters via a WAN. After analyzing its IT expenses over the entire PC life cycle, BEB wanted to improve its service quality while at the same time reducing PC costs and making them transparent. Explains a BEB IT manager:

> We realized the need to tackle the substantial costs of IT service and support. CompuNet's offer to supply all required services for a flat fee meets this need. We now have a firm basis for our IT costs.

Aachener und Münchener Informatik Service AG (AM)

Together with Aachener und Münchener Informatik-Service AG, SWT Software-Technologie und Systemberatung GmbH and CompuNet developed a UNIX-based SAP R/3 application as the basis for an integrated insurance model built by KPMG, SAT and SWT (an AM subsidiary). The project team identified a way of connecting, via the existing SNA network, the individual PCs to the UNIX system. The problem was that the PCs could only be connected via the protocol TC/IP; however, the latter was not supported by SNA.

Regarding his joint work with CompuNet, Andreas Münchow, project manager at AM, said:

> CompuNet's value is the familiarity of its staff with all systems platforms. It is not easy to find consultants at CompuNet's competitors who can demonstrate a depth of knowledge covering the broad range of PCs, UNIX systems and large mainframes, who understand their clients' needs and who can implement forward-looking solutions to those needs.

General Electric (GE)

GE in Europe has 45 000 employees at 160 locations. Its major businesses include capital, plastics, medical appliances, power control and aircraft engines. GE annually purchases through corporate resellers approximately US$10 million of hardware, peripherals and services, and has an installed base in Europe of over 10 000 central processing units.

In order to reduce the total cost of procurement and support of PC hardware and software, GE decided to streamline and standardize its IT infrastructure. After choosing IBM and Zenith to provide the hardware, and Microsoft Office as a basic interface, GE looked for a reseller able to fulfil its requirements across all European countries with standard Europe-wide prices. Because of ICG's comprehensive European coverage and international account-management capabilities, GE chose ICG over EDS, ECS and KNP BT to be its pan-European supplier. ICG now provides delivery, installation and customization of hardware, peripherals and software add-ons, and on-site technical support for all GE locations across Europe, while CompuNet is responsible for the German operations of GE.

Outlook

For Jost Stollmann, the merger of IT and telecommunications technologies offers an opportunity for new service offerings and a more efficient in-house handling of service-related business processes. He says:

> Having heavily invested in IT since the very first years of CompuNet's existence, it will always be necessary to check where and to what degree our IT experience and infrastructure can be leveraged as additional competence across diverse business processes. The efficient use of IT has become a particular challenge in the context of our shift from a reseller to a service provider. It still remains a continuous effort to adapt our IT infrastructure, originally targeted towards reselling, to the needs of the service sector. It's not only the economics that are different between the reselling and the service business ...

For Stollman, CompuNet's future developments should be in two directions: (1) the appropriateness of the company's IT policy and its business impact; and (2) CompuNet's competitive position. Regarding the first direction, he asked his assistant Patrick Bischoff to think about the following questions:

- Is an investment of DM230 000 per month for the 'Dream Team' appropriate to further develop CallAS?
- Is it justifiable to invest so much time and money into the service side of the business if services account for only 17% of total revenues?
- Is it a future-oriented choice or a strategic mistake to design Lotus Notes applications based on a telecommunication infrastructure that is not yet available in Germany?

- Do CompuNet's management concepts need to be adjusted once the business process redesign projects are completed? How?

Concerning CompuNet's competitiveness, Stollman wondered:

- How will the competitive environment of multivendor service providers change over time? Who are currently the main competitors in this business, and who will they be in the near future?
- To what degree does (or will) the complexity of multivendor service management require strategic partnerships? For what activities should CompuNet consider such a partnership, and who could its partner(s) be?

DICUSSION QUESTIONS

1. Is it justifiable for a company such as CompuNet to invest a lot of money and effort into the service side of its business when service accounts for only 15% of its total revenues?
2. Is it advantageous or, rather, adventurous for CompuNet to design advanced IT applications that require an ISDN-based telecommunications infrastructure not yet available throughout Federal Germany?
3. How will the competitive environment change over time, considering CompuNet's shift towards a multi-vendor service provider? More specifically, who are currently the main competitors and who are they likely to be in the near future?
4. To what degree does/will the management complexity of a multi-vendor service provider require strategic partnerships? For what specific activities should CompuNet consider such partnerships, and who should it consider as potential partners?