

# Software@Siemens



- ▶ *Siemens Software Blows the Dust Off the Register of Corporations*
- ▶ *A&D Data Management Reduces Production Downtimes*
- ▶ *The Search for the Lost Treasure*

*Dear Readers,*

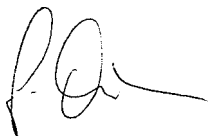
*E-business is the logical extension of e-commerce, which is currently conquering the B2C (Business to Consumer) consumer market on the Internet. It is only with the additional possibilities offered by e-business that these electronic media become interesting for the capital goods sector as well.*

*What's involved in e-business are not lower costs for suppliers, but rather time and cost savings in procurement, particularly in pre- and post-sales. This is where most of the 200 euros in costs for each procurement transaction are incurred.*

*Compared with the purchase of consumer goods, the procurement process causes inordinately greater costs. A great deal of detailed information must be collected before an order can even be placed, and the order process itself is more complex as well. Here is where e-business provides valuable assistance in the form of newsletters, online catalogs, sample application and live chats. In the post-sales phase, teleservice, technical support, online databases for downloading software and manuals, or online training give fast, focused support around the clock.*

*For many years Siemens A&D has provided its customers with the benefits of e-business and continued to work to make these benefits even more attractive – for practically any infrastructure, whether via Internet or direct connections. For example, we link merchandise management systems via EDIFACT to enable the exchange of order information. Electronic order confirmations and electronic invoices can then be processed without further data input in the customer system. The CA01 electronic catalog on CD-ROM makes extensive product information available offline. Finally, the A&D Mall offers everyone with an Internet connection the convenience of shopping in an electronic department store.*


*At Siemens e-business is suitable for every company. Comprehensive product information, ready-made applications, configurations and selection aids make it easier to choose the right products – from contactors and switch gears to automation systems and software, to motors and converters. Current, individual price information and immediate, automatic confirmations of delivery dates are included, as are availability checks. And, of course, the status of orders can be tracked online at all times – regardless of whether an order was placed by mail, fax or e-mail. The result is optimized processes, from planning to disposition. And the perfect solution for every customer. Many customers are already taking advantage of these simple and efficient transactions. Why don't you join us in this new dimension as well?*







Georg Dintenfelder  
Siemens AG, A&D AS EB  
Director E-Business





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




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

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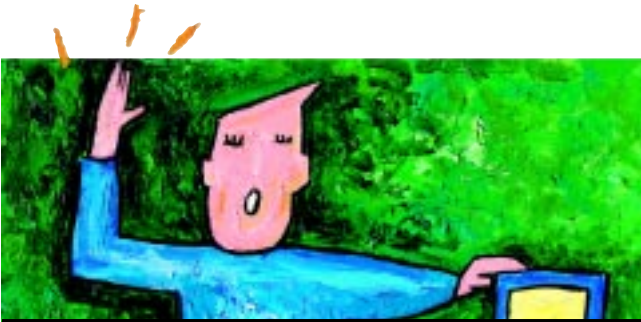
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## Customers and Projects Kaba Benzing Succeeds Leap into the E-Commerce Age

Companies, which offer configurable products, have a hard nut to crack with innovative distribution channels such as the Internet. With every customer query, the various product variations, the dependencies or restrictions of systems must be exactly recognized and the correct price must be determined. The design and maintenance of web sites for presentation of such products is expensive and time consuming. It is even more demanding if sales colleagues need current configuration and price information available per laptop with Internet/Intranet links.

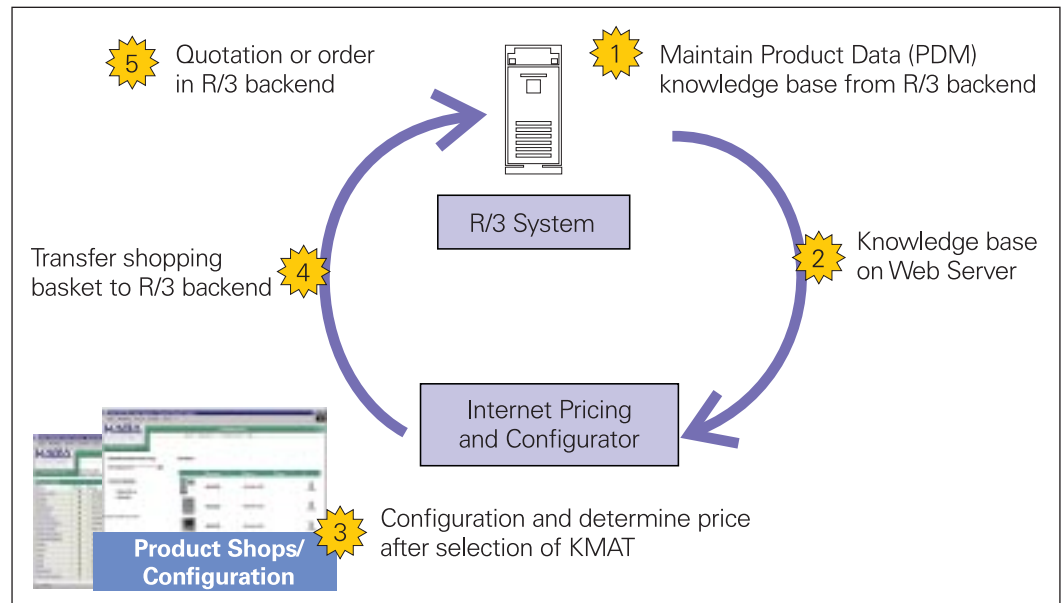
However, modern e-commerce solutions coordinate both requirements. Siemens Business Services (SBS) is considered as leading service provider and integrator of such solutions. In the scope of a project with Kaba Benzing GmbH SBS recently developed a special e-commerce system that supports Business-to-Business sales processes via the Internet and allows the configuration and pricing of products. The e-commerce system relies on mySAP.com technology with which the SAP R/3 systems and the Internet are linked. Furthermore, it comprises the integration of the SAP Internet Pricing and Configurator (IPC). The SAP IPC provides information about products, versions

and characteristics as well as the rules, conditions and options of configuration via the R/3 system in the Internet.

If the Internet customer or partner selects a configurable system, they are guided by the system through the configuration process. Prices are automatically calculated on the basis of the configuration data entered. Special price conditions such as individual prices, discounts or scaled conditions are thus taken into consideration and several currencies are supported. The organizational data of the SAP R/3 SD module controls the price determination in the IPC.

After ordering the products, which end up in the electronic shopping basket, the order data is loaded directly into the SAP R/3 system. There, the order is further processed allowing customers and partners to track down the status of their order at any time. Furthermore, by means of the "News Channel" news service, every customer can be automatically supplied with current, order-related information from Kaba Benzing.

The e-commerce system at Kaba Benzing offers the useful option of being able to import and export product master data via an XML interface. This can be used, for instance, to enter and



Order and Request System – Functional Overview

further process data into an external retailing system. Offers and orders can additionally be imported and exported via a Microsoft Office interface.

An authentication system guarantees that only authorized users receive access via the Internet. A hierarchical access concept additionally assures that specific information is available exclusively for the authorized user or user groups. The user interface is personalized i. e. the user sees only the functions which he is authorized. The data transmission is furthermore protected by an extensive encryption technique.

The Kaba Benzing sales system also comprises yet another "Partner-only-area". In this shop system an authentication system is integrated in order to make data from the customer's Intranet – for instance videos, graphics or construction drawings – available to other selected business partners. This transpires as soon as such a service order is affected.

The Kaba Benzing online business sales system was implemented using an "inside-out" approach with the SAP Internet Transaction Server (ITS) and linking the SAP Internet Pricing and Configurator (IPC) to the sales system.

Contact:

Gerhard Mühlhäusser

SBS D IRU BC SW

Phone: +49 711 977-2054

E-mail:

gerhard.muehlhaeusser@stg2.siemens.de

Uwe Beierling

SBS D ECS EC 2

Phone: +49 5251 8-22641

E-mail: uwe.beierling@pdb.sbs.de

Internet: [www.siemens.com/e-business](http://www.siemens.com/e-business)



## ***DirX Meta Directory*** Deployed in Central Telephone Exchange – No More Holding Patterns at Deutsche Bank

**A company's telephone exchange is its acoustic calling card. That's why Deutsche Bank is beefing up its caller service in Germany with an ultramodern Telephone Service Center built around DirX Meta Directory from Siemens.**

*Deutsche Bank's central exchange is divided among its Duisburg and Berlin locations. Anyone who calls one of the bank's 100 largest branches or its head office in Frankfurt automatically lands in one of these two service centers. The caller is connected with a call agent, who accesses the central DirX Meta Directory for the necessary information. This directory synchronizes the data stored in all directories in the Deutsche Bank network into a global data pool. It eliminates the information chaos typical of large firms with their multiple directories. DirX Meta Directory also performs a daily update of all modified data.*

*Thanks to this central directory, all the information the agent needs is just a mouse click away. Besides knowing*

*which bank representative the caller dialed at what branch, the agent also sees the specialties and phone numbers of that staffer and all other employees of the branch.*

*As a result the agent can always forward the call to the right partner. DirX Meta Directory puts a stop to endless searches through out-of-date phone numbers and other data made obsolete by internal reorganizations and employees leaving the company.*

*But DirX Meta Directory was not the only reason why Deutsche Bank selected Siemens as its system partner. The Siemens ICN solution also minimizes connection costs for the call-forwarding process, which is now handled with*

*ViNet (virtual networking) technology. This combined solution is something no other manufacturer could offer.*

*After the first phase of the project is completed, Deutsche Bank will tackle the next step – a global, centrally managed directory with decentralized suppliers. The DirX Meta Directory is the first step in that direction.*

Contact:

DirX Meta Directory Infoline

Phone: +49 89 636-48878

Fax: +49 89 636-47186

E-mail: [directory@icn.siemens.de](mailto:directory@icn.siemens.de)

Internet:

<http://www.siemens.de/directory>



## CSI Enables Fast and Efficient Subscriber Administration at Vodacom

Siemens Telecommunications have provided Vodacom South Africa with a direct interface to the Siemens switch for faster subscriber provisioning and administration tasks.

Stringent Vodacom requirements for the interface included a capability of handling at least 2000 individual man machine language (MML) commands per hour for up to 15 home location registers (HLR). The direct interface provided by Siemens SA substitutes a solution, based on the automatic operator (ATOP) Interface of the operation and maintenance center of the switching subsystem (OMC-S), as developed by Vodacom.

The introduction of a Customer and Subscriber Interface for Vodacom South Africa is a joint venture with Siemens Austria and includes full time on-site support to Vodacom. The specified Vodacom interface was supplied by CSI, a product developed by PSE – the software development department of Siemens Austria. PSE serves Siemens

sales and product responsible departments all over the world.

The Customer Subscriber Interface, which went live in October 2000, supports integration between customer care, billing, workflow systems and network technology in telecommunications networks.

CSI provides the best solution for Vodacom as it offers straight forward interfaces using CORBA technology, which can be easily integrated into the applications used for customer relationship management.

"Providing a fast link between Vodacom's Customer-Care Center (C-CC) and the Network elements, CSI improves the quality and speed of the customer service and enables Vodacom to handle complex service provisioning," says Luis Martins, Divisional Technical Manager KA Vodacom for Siemens South Africa.

Martins said the C-CC is able to speed up activation of services and to handle service change requests with minimum latency. CSI also provides the customers with quick information about the status of their orders.

"Without CSI we would not have been able to manage the massive increase in subscriber administration traffic created by the prolific growth of Vodacom's Vodago Pre-Paid product. Vodacom's HLR subscriber provisioning is now carried out using the CSI functions," says Derek Morgan Manager Systems Design and Integration for Vodacom Billing and Admin.

Contact:

Ingrid Wariwoda-Haas

Siemens Austria PSE CSS MPS

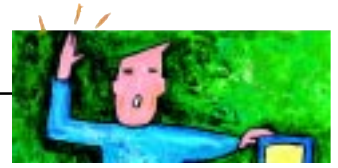
Phone: +43 5 1707-46616

Fax: +43 5 1707-56535

E-mail:

ingrid.wariwoda-haas@siemens.at

Internet: [www.css.gud.siemens.at/CSIHomePage/default.htm](http://www.css.gud.siemens.at/CSIHomePage/default.htm)



## Siemens Software Blows the Dust Off the Register of Corporations

**"Essen Registrar of Corporations CRS 14466: Gartenanlagen de Wit GmbH, Essen, Horticulture and Landscape Design....."**

Thus began, on October 2, 2000, the first on-screen examination of a computerized register of corporations. On this day for the first time in Germany, an electronic entry was made and archived in a central location. Then it was retrieved online using North Rhine-Westphalia's state administrative network.

In the future, online retrieval of register data will be possible at any time. It won't be necessary to go to the registrar of corporations to search through records, or wait for the answer to a written request.

Everyone will have access to the electronic register of corporations and cooperative associations via information terminals at court. The central record-keeping office is dialed using an ISDN connection via the state administrative

network at the GGRZ (Department of the Interior's Collaborative Regional Data Processing Center) in Hagen. The program's user interface is clearly structured, and the user is led rapidly to the desired entry in the register. Also provided are corporate data and details about the company's authorized representatives. The data can either be read on screen or printed out.

The real-time implementation of RegisStar software, ordered by the North Rhine-Westphalia Department of Justice, made this evolution possible. A study group of the higher regional court in Hamm planned and assisted the development of the software in a cooperation within the federal states association for Bavaria, North Rhine-Westphalia, Saxony and Saxony-Anhalt.

The study group, composed of judges and court clerks and assembled by Essen's local court under the direction

of President Heinz-Jürgen Held, developed the detailed concept and tested the software constantly using a dedicated line to the developers in Munich. RegisSTAR has achieved such maturity that since October 2000, all new registrations, modifications and cancellations in Essen are performed, stored and retrieved electronically. More than 4,000 electronic entries were input as of January 2001. After successful trial operation, RegisSTAR is scheduled for implementation in the spring of 2001 in the local courts in Cologne and Düsseldorf, and later statewide in all 30 registrars of corporations. In Bavaria, real-time implementation will begin in spring of 2001, and will be expanded thereafter across the state.

The enormous task of entering the old data will accompany the introduction of the new process: in the registers of North Rhine-Westphalia's courts there are entries for nearly 200,000 active



companies. All data must be electronically entered, but only current texts will be included. This means, for instance, that the register entry for the RWE stock corporation has been reduced from 38 paper pages to one electronic page, and is now easily decipherable to a layperson. Closed files will also be added to the active entries: they, too, must be available for inspection, and so they will likewise be scanned into the system.

A prototype for the entry of old files is currently in development at Siemens. As soon as it is ready for mass production, the approximately two million pages of register data can be scanned in quickly and archived for internal processing and external use. The use of a new OCR program means reductions in personnel costs and time in the processing of register information for administration by registrars. The new system differentiates in seconds between outdated text (marked red) and the current

contents of a register entry. Only the current text is filed in the database for the electronic register. As a result, what was formerly a confusing mass of data is concentrated into a manageable and easily legible amount of information.

The text of a register entry is selected from an extensive menu of modules that the legal practitioner or clerk can later sanction or modify through his electronic signature. RegisSTAR also offers even more useful modules such as file and deadline monitoring, statistics, and support in the preparation and publication of cost accounting.

The judicial system sees immense advantages. The staff-intensive provision of information, with its time-consuming searching and photocopying of register entries, will be eliminated, as will telephone inquiries about the current authorized representatives of a company.

Questions such as "What does exemp-

tion from the restrictions of §181 of the German Civil Code actually mean?" will become obsolete, and even the registrar's in-box will only be full until the data is entered in the system.

Author:  
Heinz-Jürgen Held,  
President of Essen's Registrar  
of Companies

Contact:  
Nikolaus Bösl  
SBSSIP CSP  
Phone: +49 89 636-47914  
Fax: +49 89 636-52888  
E-mail: nikolaus.boesl@mch20.sbs.de



Heinz-Jürgen Held,  
President of the  
District Court Essen



## Slender Databases at VW

**Shortly before the turn of the year the VW AG automobile concern and Siemens Business Services signed a framework agreement concerning the supply of archive software in the SAP environment from the CE Computer Equipment AG. The CE Document Server and CE-Link for R/3 should substantially relieve the burden from the databases of SAP R/3 systems. In the long term VW intends to establish a corporate-wide archive solution linked with the successive standardization of the existing archives.**

*A prerequisite for the corporate-wide use is that the archive solution is successfully realized throughout Europe, and then worldwide for the "ET 2000" spare part supply. The Europe-wide spare part supply is operated via a central depot in Kassel (Germany) and ten other depots in Europe. Seventeen HP UX servers (partially clusters) are utilized, with ten SAP R/3 productive systems in operation. With the high data volumes – approximately 20 terabytes per year – the databases are heavily burdened, which leads to substantial performance bottlenecks. Comprehensive investments in the hardware sector were able to support the processes; yet VW sees better, long-term effects in streamlining the databases. This will be possible through the roll out of the index, and the reorganization of the data*

*to external storage media in an electronic archive.*

*The VW requirements foresee an HSM system (Hierarchical Storage Management), already utilized with the Tivoli software "ADSM / TSM" before this project, as the basis for archives. The storage media will be mainly DLT (Digital Linear Tape) systems – magnetic tapes with substantially greater storage capacities than optical storage discs.*

*For this purpose, CE developed an expedient function expansion for TSM link in the CE document server. The expansion comprises of a container accumulation of archive material, and an emergency component for fail-safe security. The adaptations were realized with Windows NT and tested by VW.*

*The availability of HP UX cluster systems based on HP Service Guard is additionally necessary for this project. The program implementation and the utilization have been available since the end of January 2001.*

*Customer access was made possible through the existing contacts of SBS Industries Hannover, which is a general contractor vis-à-vis VW, and has already proven its competency through a broad involvement in the SAP consulting sector.*

Contact:

Andrea Sassenberg

Computer Equipment AG

Phone: +49 511 875-4052

E-mail: a.sassenberg@ce-ag.com



## Operations Research – Discrete Optimization

Operations Research (OR) is a discipline that uses mathematics and computer science techniques to solve complex business or technical optimization problems. This technology is used by the Discrete Optimization department (CT SE 6) at Siemens Corporate Technology to produce software-based solutions that allow business and machines to perform better, faster, and more profitably. Typical OR problems range from the optimization of the distribution of goods to production scheduling, machine sequencing, capital budgeting, facility locations, portfolio selection, design of telecommunication or transportation networks or automated production system, and airlines operations.

To successfully provide optimization solutions to its customers, CT SE 6 relies on two domains of expertise: model construction and optimization. After studying the situation at hand, OR analysts build a model to decipher the real prob-

lem. It is usually not possible to fully represent all the complexities of a problem. The analysts must therefore identify and analyze the important issues. The model is then used as a basis to find algorithmic solutions. The classical toolbox of OR includes, among others, techniques such as linear, integer, dynamic, nonlinear, stochastic, combinatorial and constraint programming, statistical analysis, probability theory, queuing theory, simulation, reliability theory, search techniques, genetic algorithms, and graph theory. Almost every new optimization problem requires its own solution technique, and these concepts must be modified and extended to fit the situation at hand.

The Discrete Optimization department has gained experience in a broad range of applications. Examples of projects in collaboration with other units in Siemens, include:

- Train scheduling optimization
- Metropolitan public transportation network simulation and design
- Optimization of placement machine operations for printed circuit board production
- Optimization of the throughput of production lines in the steel industry
- Production planning for water supply systems
- Design of a telecommunication network in which the "last mile" of cable is substituted by a wireless link
- Design of the layout of telecommunication network ducts and cables in metropolitan area
- Traffic localization in GSM networks
- Frequency allocation tool for GSM networks

Two of these are now described in details as illustrative examples.



*The Discrete Optimization department licenses two products: TURBO and Fast Routing. Many decision problems are hard to solve in terms of mathematical and computational complexity. There is no all-purpose optimization engine, and solution procedures must usually be developed anew for each problem. Most of the projects described in this article draw upon TURBO, a C++ class library described in the February 2000 issue of Software@ Siemens, for fast implementation and efficient algorithms.*

#### **Optimal control of hot rolling in the steel industry**

A production line consists of a furnace, roughing mill, finishing mill, and a cooling area. A steel slab is discharged from the furnace and follows the production line, where it receives different treatments and finishing, until the cooling area. The material dependent treatment and travel times along the line are subject to stochastic fluctuations, leading to potential collisions between slabs. The project's objective is to schedule the actions on the production line to maximize the throughput while respecting security constraints and avoiding collisions. The system presents many restrictions and interdependencies. These conditions require an optimization of the process globally, from beginning to end. The controller is currently being implemented on two production lines. Simulations predict increases of the throughput of up to 20 %.

#### **Cost optimal planning of cable based communication networks in metropolitan areas**

Designing and building a telecommunication network is expensive. Overall costs include the cables, installation and burial in the ground, and the diverse components for signal processing and distribution. Optimizing the network design in terms of these costs yields significant savings. Our planning tool also allows for fast evaluation of the design alternatives and reduced planning phase. The correctness of the design is automatically ensured. A telephone network planned in Poona resulted in savings of 13 % in construction and multiplexer costs. The approaches used in this project are also applicable to other networks, such as gas, electricity or television cables.

Because of its experience in system design, production, scheduling, telecommunication and transportation,



*CT SE 6 is clearly well positioned to make substantial contributions to increase the value of Siemens products and services to our customers, by combining leading edge Operations Research know-how with the expertise of our business units. The opportunities offered by Supply Chain Management and the booming e-business are abundant, and raise the interest of Operations Research analysts around the world. Do you have to optimize something soon?*

*Fast Routing is an innovative approach to design routes. It uses preprocessing to give extremely fast response time for the computation of the optimal shortest path between two points. Based on an European map for trucks containing roughly 600,000 edges and 400,000 nodes, the shortest path from Tenerife, in the Canary Islands, to Moscow, Russia, was computed in a matter of milliseconds. Fast Routing can be applied to a wide variety of applications such as transportation, distribution, and navigation systems and e-business services.*



*Design of an hybrid fiberglass/copper cable telecommunication network in Poona*

*Authors:*

*Dr. Astrid Kenyon*

*Professor Dr. Ulrich Lauther*

*Contact:*

*Professor Dr. Ulrich Lauther*

*Siemens CT SE 6*

*Phone: +49 89 636-48834*

*Fax: +49 89 636-42284*

*E-mail:*

*ulrich.lauther@mchp.siemens.de*



# Incremental Software Development Process in the *Simatic* Development

The Simatic development is on the verge of a new era. It is confronted with a higher complexity of software, strong dependencies among the products and within the overall system, as well as with short release cycles. The previously applied "Waterfall Model" for software development no longer covers these requirements. That's why the development process was converted to an incremental process in the Simatic development.

*The A&D AS (Industrial Automation Systems) is responsible for industrial automation products and is considered, along with Simatic, as world market leader for Programmable Logic Controllers (PLC). The A&D AS focus of development has increasingly shifted from hardware to software development. In order to master the subsequently linked challenges of complex software development, and to achieve increased efficiency in development, an incremental software development process was introduced.*

*The basic idea with an incremental process is to periodically sweep the activities from planning to test – not once,*

*as in the Waterfall Model, but several times. On the basis of the previous increment further features are added in every cycle. The functionality of the product increases with every iteration, until finally the required overall functionality is achieved. Project risks are recognized considerably earlier with this procedure, and are not shifted into the future as with the Waterfall Process.*

*The introduction of the incremental process at A&D AS and the subsequently linked conversion of further process improvement measures were undertaken in the form of a project with clearly defined goals and responsibilities.*

## **The five project phases**

*From the CT SE 3, which accompanies the project as a consultant, five phases were proposed for the introduction of the incremental development process in the Simatic development:*

### **1. Analysis:**

*The introduction began with a CMM assessment (Capability Maturity Model) in the S7-400 CPU software development. A detailed analysis of the approach in the project, a strengths and weaknesses profile, as well as a package of measures were the results of this assessment. As a core measure, the conversion of the pre-*



*Dr. Peter Weckesser*

*vious process model to an incremental procedure was defined, because this supplied the basis for covering a vast number of other individual measures from the assessment. The targeted improvements were essentially aimed at the topics project management (planning, assessment, risk management, project tracking), configuration management, quality assurance, and integration & test*

#### *2. Process definition and planning of process improvement:*

*The definition of an incremental process adapted for the Simatic development was expedited very quickly. For this purpose, experiences at A&D MC were called upon, and expanded with the specific requirements of A&D AS. As a result a process model, available after two months, allowed the planning of the conversion in the S7-400 pilot project*

#### *3. Piloting:*

*The piloting with S7-400 started with an intensive training of all project employees. Throughout the entire length of the project, the specialists responsible for the process tracked the conversion in the project and carried out intensive coaching*

#### *4. Evaluation and adaptation:*

*Thanks to the close interaction with the pilot project, it was possible in the pilot phase to evaluate particular measures, to carry out optimization of the process and – subsequently acting on this – to integrate further measures. In addition, during this phase a vast number of resources and tools for project management support and controls were prepared (templates, checklists, web-based project tracking)*

#### *5. Roll-out:*

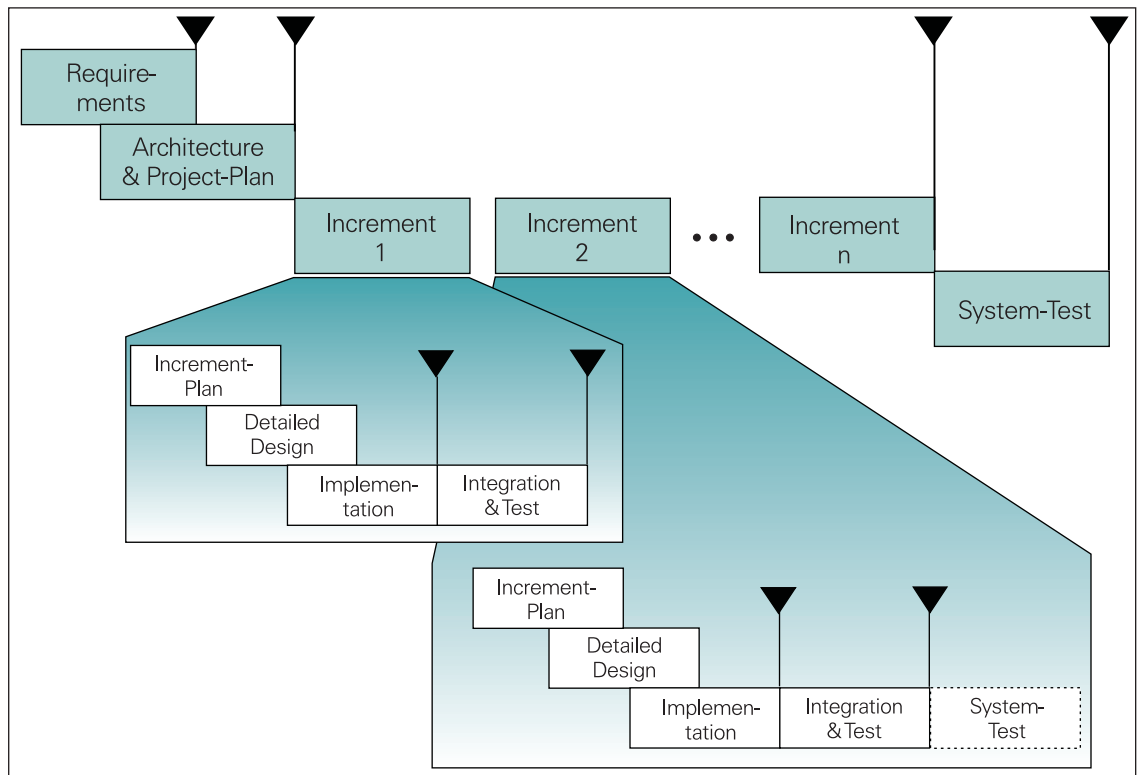
*After successful execution of the pilot project, the roll-out of the incremental process in all CPU projects*

*was decided. In the meantime, the expansion of the new process to all development projects in A&D AS E is planned*

#### **The incremental process model**

*The A&D AS process model consists of two main components: the role descriptions and the phase model.*

*The responsibilities, as well as the working results to be provided by a role, are defined through role descriptions. Currently, the role project manager, software manager, integrator, software architect, usability designer, software designer, software developer, integration tester, system tester, configuration manager, tool smith and authorized quality representative are defined in the A&D AS process model. In every project*



Incremental process

all of these roles must be cast, whereby one employee can look after several roles. The phase model determines the sequence of operational procedures, results, production criteria (such as deadlines), methods and activities to be executed. The phase model initially defines four main phases – from the determination of requirements to acceptance test. Every phase is concluded through a formal milestone with a milestone review meeting.

#### A&D AS Phase Model

Before the start of the first increment the key requirements, a coarse archi-

itecture and a global planning must be fixed. This phase is concluded with a milestone review meeting as well as the release of the coarse design and the developmental planning.

All increments have a determined sequence with defined increment milestones. Initially, for every increment, a detail planning (content, deadlines for interim milestones) is drawn up. Therefore two essential requirements must be fulfilled by every increment. For one thing an external testable functionality must be realized in every increment, and for another every increment must

be manageable from a planning perspective. The typical increment lengths consist of four to eight weeks. As a rule there are between three and eight increments per product release.

After a detailed planning of the increment, the fine design for the functionalities to be realized in the increment is prepared. The implementation phase is linked to that. In this phase continuous partial integrations and generations take place, which on the other hand enable module and function tests. The implementation phase is again concluded with a milestone review meeting to



determine whether all of the functionalities planned for the increment can be included into the overall integration. If this is not the case, functionalities are shifted to later increments, but not the planned increment deadlines themselves (time-boxing method).

Then the integration phase begins. Here the increment undergoes an integration test from a development viewpoint, and a stabilization of the software version is achieved. The conclusion of this phase depends on whether the achieved stability of the increment is suitable for further development. Hereby an objective progress control with tangible interim results is achieved. After the milestone review meeting, this cycle is repeated in the next increment.

The development in increments requires a well-functioning configuration management in order to optimally ensure the management of multiple software versions and that the removal of errors and further development can be done in parallel.

### Five Phases – Five Advantages

According to previous experiences, the incremental process offers a few substantial advantages as opposed to the previous development process. In the initial projects carried out according to the incremental development process, the following improvements were observed:

- A high transparency of project progress is achieved through project controlling based on tangible interim results
- As a result, a substantially more distinct management of the project and the risks is possible. The probability to reach the planned deadline is increased
- The mastery of the complexity of large systems through reduction of the work load is facilitated. The increments are able to be more rapidly integrated than a "big bang" integration of the entire system
- A greater flexibility according to changing requirements is achieved through controlled inclusion and realization of "late requirements" in later increments



Hermann Friedrich

- Early feedback via pre-released and quality-assured interim versions can be obtained from customers

#### Contact:

Dr. Peter Weckesser

Siemens A&D AS E13

Phone: +49 911 895-3840

Fax: +49 911 895-5014

E-mail:

[peter.weckesser@nbgm.siemens.de](mailto:peter.weckesser@nbgm.siemens.de)

Hermann Friedrich

Siemens CT SE 3

Phone: +49 89 636-49451

Fax: +49 89 636-44424

E-mail:

[hermann.friedrich@mchp.siemens.de](mailto:hermann.friedrich@mchp.siemens.de)



## Information Brokers – Modern Know-how and Technology Exchanges

If you hear the name Siemens, you don't think immediately about software. Nevertheless, Siemens and Siemens products would be inconceivable today without software. It is all the more important to incorporate the product strategies of trend-setting software manufacturers into one's own products quickly, and to optimally utilize the manifold experiences and enormous know-how of such a large company.

The Software and Engineering (SE), a technology division within the Corporate Technology (CT) of Siemens has taken these challenges, and in the meantime built up four corporate-wide information hubs with concerted software know-how. But these are far more than mere meeting places: The platforms foster intensive contact with respective partners which allows Siemens to not only discover details of future developments in time, but to contribute their own ideas and requirements.

In order to make the flood of information manageable each broker has specialized in a subject area. In addition, to

current trends and technologies services, such areas as consulting and project support are among the offerings for the particular alignment. These hubs are available worldwide on the Internet.

The most important innovations reach interested parties automatically via a newsletter. An important technology or a major firm backs all four information brokers. The broad interest of the respective subject is always the focus of Siemens efforts. The information brokers at CT SE are:

- Java Task Force (JTF)

In addition to consulting and project support, current information concerning new developments is the mis-

sion of the Java Task Force. A CT employee – directly on location in Silicon Valley, ensures the technological and strategic line to SUN

- Linux Information Exchange (LinX)

The LinX information hub is characterized by the Linux open source operating system. In addition to well-established information concerned Linux technologies, the LinX team offers broad support in the decision for and the utilization of Linux

- Microsoft Technology Information Broker (MIB)

Current and future Microsoft technologies and their utilization in Siemens



products are the core themes of MIB. A Technical Liaison Manager sent by CT is located directly at Microsoft in Redmond, and thus ensures the exchange of information with Siemens

- Rational Information Broker (RIB)

The RIB is online since January 2001 and is aimed at all of those involved in the software development process with focus on the know-how and the domain experiences to iterative processes, UML, component architectures, requirements engineering, testing & quality and configuration management

One of the chief concerns of the information broker is to strengthen the exchange of experiences and know-how between groups. Upload areas in all information brokers allow the user to briefly characterize his interesting projects and to display these directly in the information broker. Together with detailed progress reports a store of knowledge is gathered over time which links

product know-how and technology competence directly with the relevant experts. Hence established contacts open extensive possibilities, from pure exchange of information to intensive collaboration.

The larger the community of interests, the more convincing one can be with his partners. Such an example is an ongoing project with a goal to optimize the support workflow between Siemens and Rational. For example, interested parties can take advantage of the purchasing agreement with Rational or, alternatively, pass no longer needed licences on to other parts of the company.

The information broker's spectrum of tasks and offerings at CT SE is varied. The more intensively the various Siemens sectors actively utilize these platforms, the more they will profit. With the information brokers, Siemens can bundle its capabilities and thus strengthen the meaningful dealing with

resources, and in the end supply customers with more expedient and qualitative, high-grade products.

JTF contact:

Marquart C. Franz

Siemens CT SE 2

Phone: +49 89 636-48767

E-mail: [jtf@mchp.siemens.de](mailto:jtf@mchp.siemens.de)

LinX contact:

Dr. Thomas Wieland

Siemens CT SE 2

Phone: +49 89 636-52203

E-mail: [linx@ct.siemens.de](mailto:linx@ct.siemens.de)

MIB contact:

Michael Stal

Siemens CT SE 2

Phone: +49 89 636-49380

E-mail: [mib@ct.siemens.de](mailto:mib@ct.siemens.de)

RIB contact:

Wolfgang Kuhn

Siemens CT SE 3

Phone: +49 89 636-45021

E-mail: [rib@mchp.siemens.de](mailto:rib@mchp.siemens.de)



## Whoever Stands Still Falls Behind – The Innovation Cockpit – Measurement and Control of the Innovation Capability

The realization that innovation is considered the main source of entrepreneurial growth is nothing new. As early as 1911, the Austrian economist Joseph Schumpeter described innovation as the critical success factor for business. Much has been published on this subject since then, but nevertheless even today the capability for innovation is still a great challenge for companies.

*The Siemens Software and Engineering division within Corporate Department Technology (CT SE) has now developed the Innovation Cockpit, a software-supported method that reveals strengths and weaknesses in the innovation management. The method can be used in all corporate organizations with their own strategic planning, whereby the entire innovation process is taken into consideration – from the idea through the realization to the return on investment. All roles of the innovation process are queried for preparation of this comprehensive analysis.*

### **Hard and soft influence factors**

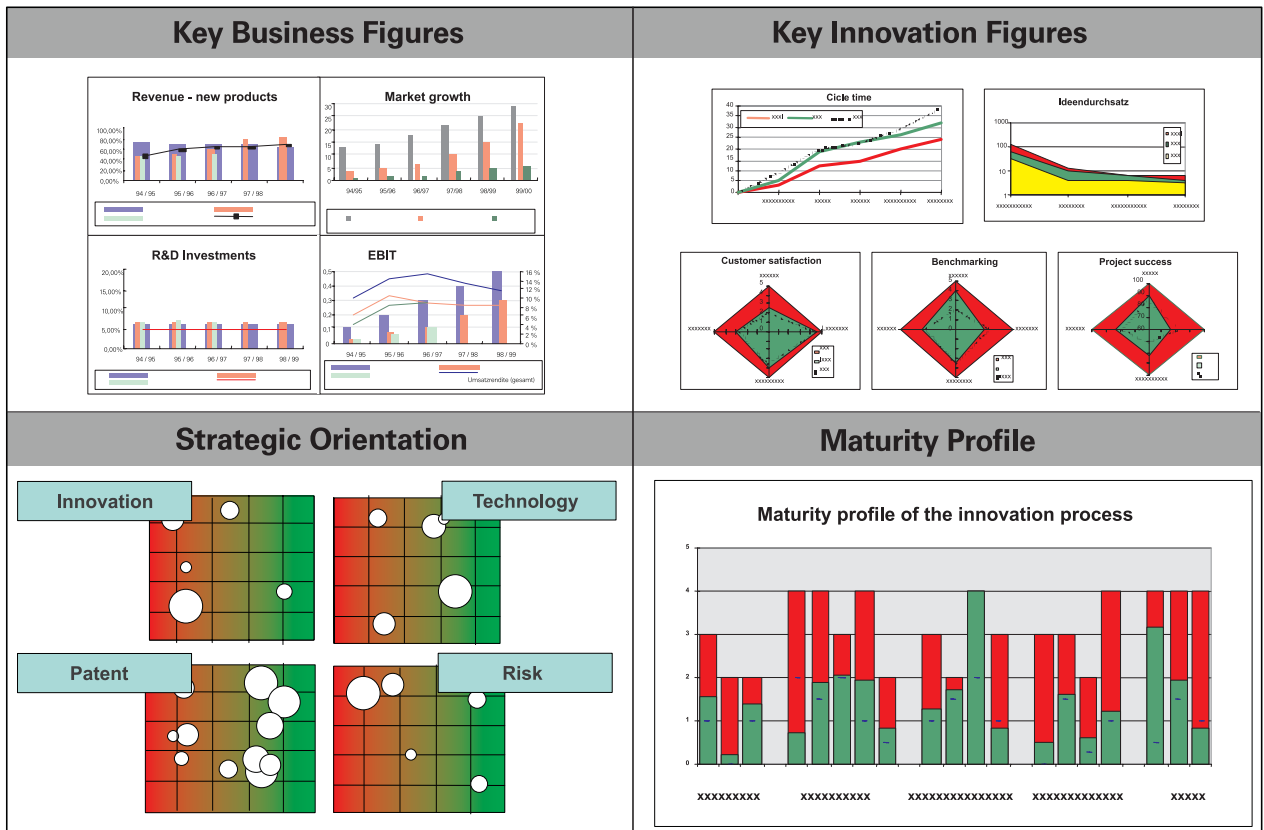
*The Innovation Cockpit consists of four pillars (see illustration). The two key*

*figure sections at the top are both retrospective and facilitate a strengths and weaknesses analysis. On the bottom part, the strategic orientation and innovation maturity profile deal with future innovation success.*

- *The key business figures examine the previous success with innovative ideas, products or business services. Characteristics are, for instance, turnover or the operative result with new products*
- *The key innovation figures subsume indicators, which provide insight into the previous quality of the implementation and execution of the innovation process. This is especially ex-*

*pressed in the idea throughput or the cycle time – the turnaround time of the ideas in various phases of the innovation process*

- *The company's strategic orientation towards innovation is visualized using the portfolio presentation. For instance, the technology position, the innovation and risk potential, and the patent situation are examined. The portfolio analysis is consulted for evaluation of innovation projects already underway and also as a strategic planning instrument for innovations in early decision phases*
- *The innovation maturity profile focuses on the driving forces of the*



The four pillars of the Innovation Cockpit

innovation process to ascertain whether the previous innovation success was controlled or coincidental – to determine whether the success can be repeated or not. These influence factors are predominately "soft factors", that cannot be quantified exactly, but nevertheless cannot be ignored. They are analyzed by means of extensive scorecards in various subject areas and accumulated in the innovation maturity profile shown

**Innovation is no coincidence**  
 The synaptic overall examination with the Innovation Cockpit delivers a detailed picture concerning status quo and the future innovation capability of the company. It forms the foundation for the improvement of innovation capability. The system was repeatedly applied in various Siemens Groups and has already led to consistent increase of innovation yields through improved innovation

processes, the targeted utilization of "best practices", and the observance of critical success factors.

Contact:  
 Dr. Bodo Hasubek  
 Siemens CT SE 3  
 Phone: +49 89 636-55509  
 Fax: +49 89 636-44424  
 E-mail: bodo.hasubek@mchp.siemens.de



## Quantitative Methods – Neural Networks for Decision Support – Financial Forecasts with Quantative Methods

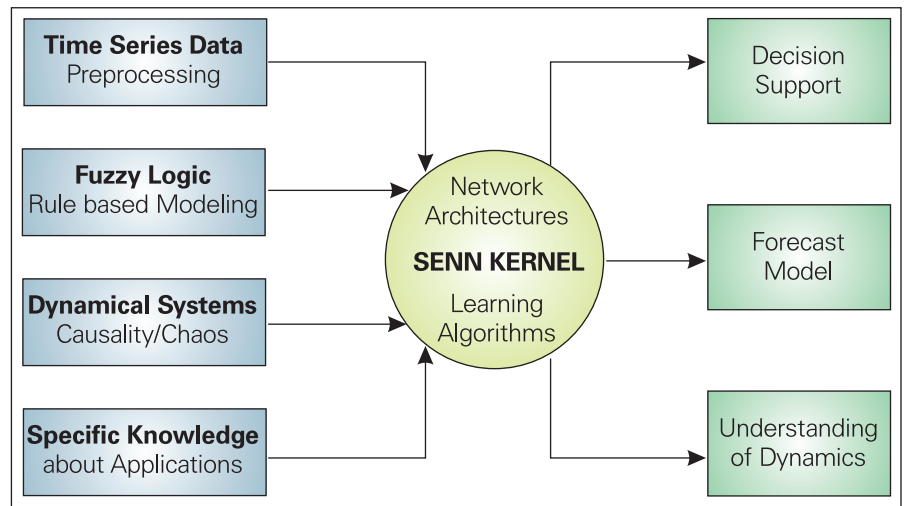
*The globalization of financial markets, extensive deregulations and considerable developments in information technology introduce new tasks to such institutional capital investors as banks and insurance firms. These institutions need to distinguish themselves from competition through innovative, customer-oriented solutions if they want to be successful in the acquisition of new funds. However, the recipe for success is "solid" forecasts of financial market developments. New hopes are now placed in quantitative methods, based on mathematics and statistics, which describe and forecast the complex dynamics such as financial market events. The Siemens scope of activity "Prognosis and Diagnosis" is engaged in this new trend, and develops solutions with the help of recent findings in computational neuroscience combined with years of well-established experiences.*

*"In the final analysis, every rational decision is based on a forecast in order to anticipate the consequences of a planned action", explained Hans Georg Zimmermann, project manager of the sub-*

*ject field. According to the mathematician and doctoral graduate of economics, not only is the expected value of significance, but also above all the assessment of the occurrence probability is necessary for the evaluation of every forecast. That's why good decision support systems combine forecasts with intelligent risk evaluations. With the Siemens forecast models the decision support system concerns individual customer solutions. The spectrum ranges from stock forecasts and foreign exchange forecasts via models for interest rates to cash management and a portfolio management system.*

### **Foreign exchange rate and interest forecasts**

*With investment decisions for foreign financial markets it is sound to include the risks from exchange rate modifications. At the same time, currency itself can be considered a capital investment. For exchange rate forecasts, Siemens offers solutions based on neural networks for various forecast scenarios, such as planning decision support in foreign exchange trading. Another focus area is interest forecasts, for which Siemens already has*



*Software architecture of the simulation environment for neural networks (SENN)*

implemented several solutions. These solutions predict the modifications of a complete yield curve in an economic area such as Europe or the US. Because the development of bond markets can also be anticipated, the management of bond portfolios is especially supported.

#### **Portfolio management**

The portfolio management system is conceived for institutional investors in the asset management sector. This innovative system accompanies the investor through all stages of the capital investment process. For instance, it combines financial forecasts and specific investment recommendations,

while allowing monitoring of portfolio performance. Behind the portfolio management are neural financial forecasts, which optimize investments under consideration of the customer's risk preference and profit expectation.

#### **Cash management**

The subject field "Prognosis and Diagnosis" also offers cash management. This application helps recognize short-term payment bottlenecks in time through planning and controls in the receipts and disbursements. On a medium to long-term basis the cash management offers a more effective moni-

toring of ongoing projects. Neural networks are also utilized for the forecast of future payment flows. Among other things, a cash flow analysis was prepared at Siemens for internal purposes. The task of this cash management is the control and planning of corporate financing.

#### **Contact:**

Dr. Hans-Georg Zimmermann

Siemens CT IC 4

Phone: +49 89 636-44495

Fax: +49 89 636-49767

E-mail:

georg.zimmermann@mchp.siemens.de



## The Search for the Lost Treasure

### **KDD potential**

*The enormous potential of KDD is of particular interest in the e-business domain. Some of the application areas are:*

- *Attrition/Churn analysis*
- *Self-adapting profiling*
- *Collaborative filtering (Recommendation Engine)*
- *Matching between customer and product*
- *Fraud detection in electronic commerce*
- *Customer's Lifetime Value estimation*
- *Cross-Selling of products and business services*
- *Customer base and market segmentation*
- *Ad targeting and personalized advertising messages*
- *Qualitative, high-grade analysis of an Internet appearance through web mining*
- *Purchase probability analysis*

*In electronic business processes enormous quantities of data are gathered and stored in large databases on daily basis. However, the data per se is often of less interest than the possibly valuable and hitherto unknown knowledge hidden in the data. This knowledge can contribute towards well-founded strategic decision making thus boosting profits by, for example, costs reduction due to better understanding of the customer's needs. It facilitates more effective management, and can be instrumental in achieving substantial business advantages. However, the proper tools are required in order to extract and utilize this treasure trove of knowledge.*

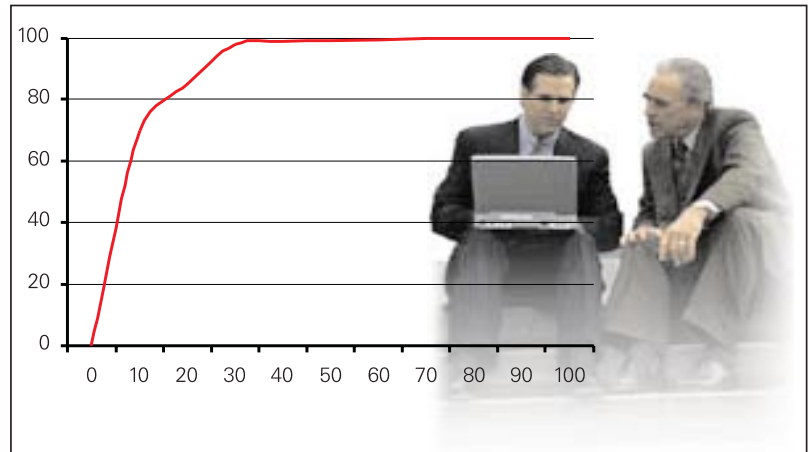
### **Knowledge Discovery and Data Mining**

*(KDD) is the right solution. The term "Knowledge Discovery and Data Mining" is used to designate the complete acquisition process of the valuable knowledge from stored data possibly being distributed among databases scattered across the company. There are three different kinds of data sources usually encountered in e-business: information data (e.g. web log data),*

*communication data (e.g. question forms) and transaction data (e.g. purchase order). The process of Knowledge Discovery & Data Mining consists of several stages. It starts from the problem identification and then continues via data acquisition and data mining to the visualization of the extracted knowledge. Data mining is central to the KDD process.*

### **Data Mining**

*In data mining, models are created. These models, in an abstract way, represent the knowledge patterns and links present in the data. Here they help to understand business processes better and suggest corrective actions where needed. Modeling is based on the existing data from a wide range of sources – such as demographic information, the history of customer behavior, intercompany transactions etc. – using modern techniques based on neural nets, bayesian networks, statistics and machine learning. The modeling tasks include classification, profiling, time-series analysis and segmentation. Models serve as a basis for, e.g.*



*Targeting profitable customers by data mining technology leads to 30 % cost*

*the recognition of trends, analysis of customer behavior, or early warning of fraudulent activities in the e-commerce environment.*

*In contrast to classical database queries, data mining provides answers to questions until now unanswered, such as:*

- *Where do I place which banner?*
- *What do my best motor vehicle customers in the rural area look like?*
- *How do I optimally design my web structure?*
- *How high is the probability for the customer x to buy product y?*
- *Which products can I otherwise offer customers?*
- *Are there typical behavioral patterns for swindlers?*

**KDD portfolio**

*Siemens has many years of experience in the analysis of data and model creation, basic research as well as the employment of these innovative methods in a wide variety of applications. The "Knowledge Discovery" group is a part of Siemens Corporate Technology and works closely together with various Siemens business units.*

*In close collaboration with customers Siemens is carrying out a pilot project, which includes:*

- *Identification of problems and potential for success*
- *Preparation of solution concepts*
- *Assessment of the data necessary for modeling*

- *Preparation and provision of necessary data*
- *Intensive data analysis and model design with the most modern data mining techniques*
- *Presentation of the results in the form of workshops*
- *Integration of the models in the electronic business process*

*All steps are characterized by the purpose of creating considerable competitive advantage for the customers.*

Contact:

*Michiaki Taniguchi*

*Siemens CT IC 4*

*Phone: +49 89 636-49506*

*E-mail:*

*michiaki.taniguchi@mchp.siemens.de*



## Mobile Business is Advancing

**Mobile technology is changing the landscape for consumer finance. While nobody knows how wide ranging its impact will be, banks are already starting to put the technology to work to help their customers.**

*As the next step in the electronic revolution, mobile business is expected to gain the same importance as electronic business has today; and it will do so quickly. Mobile business, which allows wireless use of the Internet, will change the way financial institutions interact with their customers. It will also affect financial business itself.*

*For a technology that is only a few months old, mobile business is already creating sweeping changes to the banking and financial services sector. Businesses that have been comfortable developing e-business solutions are once again having to rethink their market positioning and technology strategies to take advantage of new capabilities. This is especially true in Europe.*

*Europe is set to become the most significant m-business marketplace in the world. "When it comes to mobile business, Europe is far ahead of the US," says Friedrich Fröschl, president and chief executive officer of Siemens Business Services (SBS). By 2004, Boston-based research firm, For-*

*rester Research calculates that there will be over 250 million mobile devices in use across Europe — that is double the number being used today. But, this rapid adoption is not that surprising given the wide range of devices that are capable of using the mobile Internet, including smart phones, car computers, mobile TVs and MP3 players. Such devices are even becoming fashionable in the form of wearable hardware like watches and wallets.*

### **Flexible Finance**

*Like the e-business revolution, the m-business scenario presents a whole new range of business opportunities for the financial services sector. Wireless Application Protocol (WAP) is set to enable customers to bank or shop wherever they are and at any time they want. They will no longer have to be tied to a personal computer to check a bank balance, renew their insurance policy or buy and sell stock shares. M-business promises to answer the customer's desire for flexible finance: anytime, any place and anywhere.*



One of the major issues for financial services companies is when to invest in m-business technology. At present, WAP and the SMS messaging culture are among the key drivers for change. But although WAP protocol works with newer XML-based web sites, it does not communicate directly with websites based on HTML programming. That means that the technology that is available today is posing some restrictions on m-business solutions, particularly those that aim to offer sophisticated interactive services.

If organizations act too soon, before these protocol questions are worked out, they may have to redevelop their sites in the near future as new technologies – such as UMTS – emerge. Since the migration paths utilize different standards, they bring different benefits. But waiting also has its risks. A bank that takes too long could lose vital market share to more nimble competitors who were able to offer advanced services faster.

Either way, whether they start now or later, making the change will not be cheap. According to estimates by Data-monitor, the banks in eight European countries are set to spend 250 million Euro on WAP technology alone, between 1999 and 2003.

#### Is it worth it?

With all its associated problems, why should financial organizations spend the money to migrate to mobile technology? The reason is obvious. Mobile phones are ubiquitous. They are easy to use, and because people carry them everywhere, mobile phones become the obvious extension for the delivery of financial services products.

Today, technology changes drive the financial sector. Those organizations that have stood on the sidelines have seen their market share dwindle and profits erode.

But to successfully migrate to the m-business world, financial services organizations need an experienced

partner who can provide flexible solutions. Siemens' SBS is the only global vendor positioned to provide all the necessary solutions for effective m-business services from a single point. SBS also has the necessary experience.

It has been helping banks and insurance companies take advantage of the massive opportunities mobile business offers by providing end-to-end solutions to cover every aspect of supplying mobile solutions to the financial services industry. SBS can advise, design, build and operate the entire process.

Contact:

Rolf-Fritz Gessner  
SBS GPM Financial Services

Phone: +49 89 636-42906

Fax: +49 89 636-47728

E-mail: [rolf-fritz.gessner@mch20.sbs.de](mailto:rolf-fritz.gessner@mch20.sbs.de)

Dr. Volkmar Pflug  
SBS GPM Mobile Business

Phone: +49 89 636-32236

Fax: +49 89 636-31324

E-mail: [volkmar.pflug@mch20.sbs.de](mailto:volkmar.pflug@mch20.sbs.de)



# Recognizing, Clearing and Avoiding Faults

**In addition to good mechanical and electrical structure, high availability of machines and systems is also dependent on an efficient and uniform recovery system. Simple planning, quick fault search and fault removal are also appropriate.**

*A recovery concept must be uniform in all phases of a production system: in systems planning, in starting-up, and in production operation. In the planning it must be possible to integrate the recovery in the system program without problem. The utilization of the same database makes planning on the SPC (Stored Programmable Control) and HMI (Human Machine Interface) pages easy. The data can be carried over from the control project into the HMI project. The planning portion on the HMI page is limited because standard images are also used. Back-up plans are thus unnecessary.*

*In the start-up it is important to quickly find sequence faults in order to selectively modify the system program. In production operations, fault causes must be quickly recognizable and easy*

*to remove – even without knowledge of the system program or the engineering language.*

## **Uniform recovery concept**

*With Simatic S7 and Simatic HMI Siemens offers simple implementation of process recovery with the following components:*

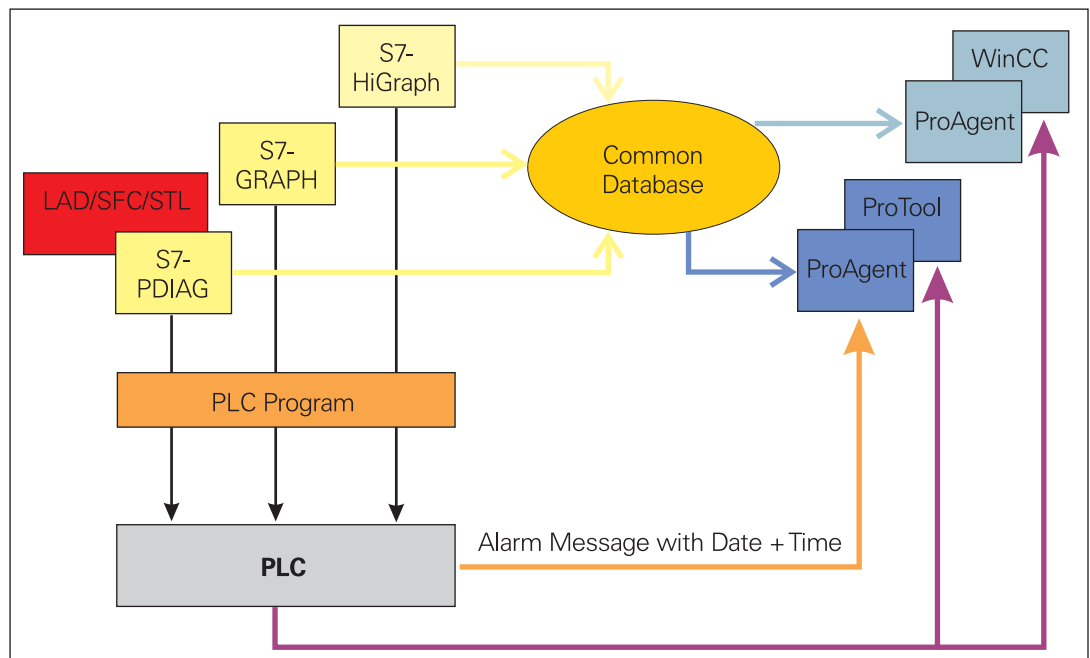
- *Simatic ProAgent for operating and monitoring with Simatic ProTool and Simatic WinCC*
- *S7-PDIAG as a supplement to LAD/FUP/STL*
- *S7-GRAPH and S7-HiGRAPH as a supplement to the control program*

*Simatic ProAgent expands Simatic WinCC and ProTool around the process fault recovery; during the occurrence of a fault, the point of fault and the cause*

*of failure are determined and the operating personnel are supported during the error recovery. The programming software Simatic S7-PDIAG supplements the usual programming of the control program around fault detection components for process monitoring. To a great extent this occurs automatically. Simatic S7-GRAPH is a programming language (incremental chain language) in which the monitoring and signal functions, as well as the recovery functionality, are anchored in the chain components.*

## **From fault to message**

*The classical HMI systems use the message bit process for generation of the message. At the same time the system cyclically polls the message bit domain of a projected control, and in case there is a message, displays a message projected on the HMI system.*



With Simatic S7 in conjunction with Simatic HMI, message registration is handled on the automation system.

The advantages are:

- The time stamp of the message is allocated by the control system
- The control system manages the status (for instance handshake)
- In addition to the message event an initial value registration concerning the engineering tools S7-PDIAG, S7-GRAPH and S7-HiGRAPH is effected

All linked HMI systems receive the same information message from the control system. But before messages are produced, they must be projected. A message needs an expressive text, and sometimes it is necessary that the messages can adjoin. In the process recovery with Simatic S7 and Simatic HMI with ProAgent, existing data is coupled in the projection. The messages are only carried over in the HMI system.

In a Simatic WinCC/ProAgent system the message systems offers expanded functions, as long as engineering packets such as STEP7, S7-PDIAG/S7-GRAPH are installed in the WinCC system. Then, in addition to the text and time components, the message also has information about the place of origin. Thus a context-sensitive recovery for system and process messages can be executed in WinCC on the basis of a message. System messages such as module or channel malfunction triggers the automation system. With system messages, the STEP7 "Hardware Online Recovery" can be started on account of message events on the WinCC system. The maintenance operator receives information about the fault cause and recovery events.

*Interplay of engineering tools with ProAgent*

In case of a process message, the operator can execute a recovery of the message directly in the process recovery with ProAgent. The operand causing the fault is already displayed in the detail image contained in ProAgent. Status information about the monitored event is also able to be called-up by means of the contact plan or the instruction list. With all of the occurring criteria, messages capable of being analyzed are automatically archived together with fault causes in a WinCC/ProAgent system.

Contact:

Oliver Heise

Siemens A&D PT 1M

Phone: +49 911 895-4020

Fax: +49 911 895-4019

E-mail: [oliver.heise@nbgm.siemens.de](mailto:oliver.heise@nbgm.siemens.de)



# Object-Oriented Programming in a Traditional Development Environment

**In multiprocessor systems with real-time-critical applications procedural programming environments still dominate. Many developers shy away from a revision of the software. But an object-oriented approach can be thoroughly realized with reasonable expenditure. Then the advantages of object-orientation are also useful, (i.e. the preparation of modular and maintainable software).**

*Procedural languages are utilized in many software projects such as business software, telephone exchanges and control systems. With the introduction of an object request broker (ORB) object-oriented technologies can also be successfully implemented here. The object handler shows how.*

## **Object Handler**

*The difficulty of object-oriented methods in parallel-running systems lies in the definition and assignment of event chains to specific system processes. In systems without parallel processing, the active characteristics of objects (methods) are implemented as simple procedures. In parallel-running systems this can also be affected, in case the caller and the system called are running in the same process. Communications between two processes is effected per message exchange.*

*The ORB system has the task to make the implementation of methods and method calls independent of current process design.*

*An object-oriented approach is achieved through strong data encapsulation. Every program module with its data and procedures is determined as an object class. Entity data can be maintained in a database.*

*The object handler contains the process definitions. Various process incarnations can exist independent of desired characteristics, which are differentiated in the process characteristics (e.g. priority). The assignment of objects, or event chains to specific processes, is effected via table control. This makes the design and the implementation independent of current process design.*



*The object handler makes an interface available for the method call. Independent of the process design stored in the tables it attaches a query to the specific message chain, or the query is sent to the appropriate object handler instance. A method call via the object handler is thus strictly asynchronous. For synchronized event chains, the object handler allocates single-valued numbers with which the objects can identify the event chains. In addition, every event chain is time-supervised by the object handler. If an event chain exceeds the time, all of the involved objects are informed. Late modifications in the process design do not affect implementation of the objects.*

#### **Practical experience in the telephone exchange**

*The concept was realized in the system alarm of the EWSD (Electronic Dial System Digital) telephone exchange system. The programming language CHILL, similar to PASCAL, was utilized for the implementation. The entity data is stored in an object-relational database.*

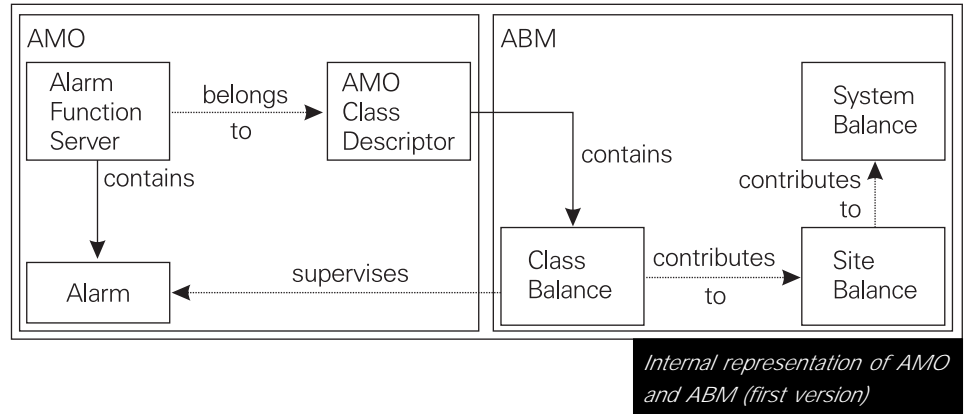
*Modern telecommunications systems are served via the object-oriented Q3 interface. The auxiliary object Current Alarm Summary Control (CASC) as*

*well as the attribute Current Problem List (CPL) is defined for the alarm. This attribute can be utilized in all objects, which can malfunction and must be cleared by service personnel. The objects are generalized as alarming managed objects (AMO). The task of a CASC is to integrate the alarms of an AMO group.*

*System Alarming decides whether to implement a proprietary CASC version with characteristics slightly diverging from the standard. This object is called alarm balance monitor (ABM).*

*The initial implementation is effected in the traditional design. The software was structured according to its processes and event chains. For data maintenance a special data model was designed, which could be stored unaltered in an object-relational database. It turns out that any small modification in the data model entails a vast number of code alterations. This created the desire to utilize a stronger object-oriented programming for the next version.*

*Therefore the object handler was implemented in the second version. Every software, which func-*



tions in a data object, was integrated in a code module. After stabilization phase the object modules were realized without consideration of the system processes or platform communications.

For the third version, a revision of the model was carried out. This was done for several reasons: In the model the data for realization of the ABM were not accurately separated from the data of the AMO's; this was associated with constant structural problems. The model drew on a service feature of the database for data distribution in the multiprocessor and was not stable in critical load situations. In addition, the model provided a three-stage alarm balancing, which was periodically computed and led to excessively high processor loads.

The new model was structurally adjusted, restricted to the basic functions of the database system and comprised only a two-stage balancing. Be-

cause no software for process communications was dealt with and a majority of the software within the objects was reusable, two people alone were able to execute the analysis and implementation of the revision in a few weeks. The modification effort is limited to the adaptation of the database definitions, the process incarnations in the object handler, the control tables and the modification of the object module, which were affected through the revision.

Authors:

Michael Wagner,  
Friedrich Eisenhauer

Contact:

Friedrich Eisenhauer,  
Siemens ICN WN CC EB C11

Fax: +49 89 722-26226

E-mail: [friedrich-h.eisenhauer@icn.siemens.de](mailto:friedrich-h.eisenhauer@icn.siemens.de)

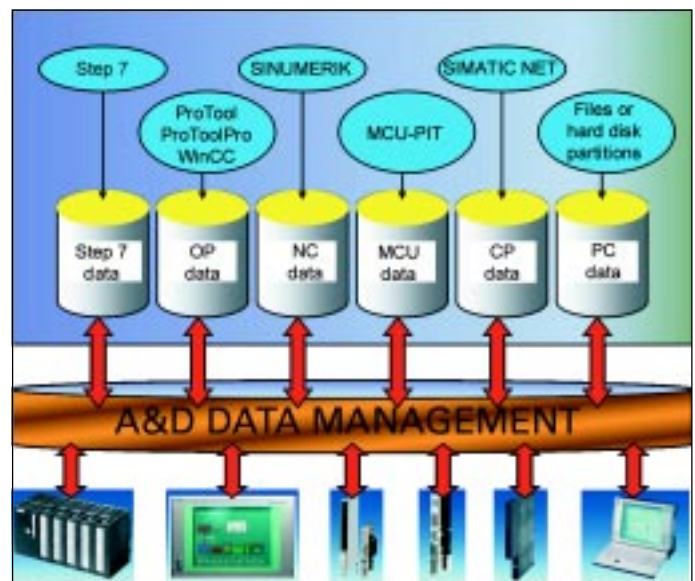


# *A&D DataManagement* Reduces Production Downtimes

A well-known scenario: It's shortly after midnight, the third shift is only sparsely staffed and ... a control component breaks down. Production comes to a standstill. Naturally, at this hour is no one available. Of course, the exchange of a component can be accomplished quickly, but the restoration of the software presents a great problem! Quite often the software is not found quickly enough or is not available in the current version. Even the search is expensive. Every minute of a standstill in production is costly.

## The "Download Button" of the third shift

Central data filing puts things right. A readily-available server keeps the original data at hand around the clock – in a networked environment even at the push of a button. A&D DataManagement stores the data on the server in technological structures. As a result, even the "serviceman of the third shift" can access the right data without a problem. An elegant Windows surface directs him to the correct broken-down component. The current software can be restored with a mouse click (download). As a result it makes no difference whether this concerns an SPS (CPU), a communications processor, an operator panel, a machine-tool control or an entire hard drive. There is still only one "download button". Even an inexperienced user can manage to reload the components.



*A&D DataManagement – central data management for all components with a single tool*

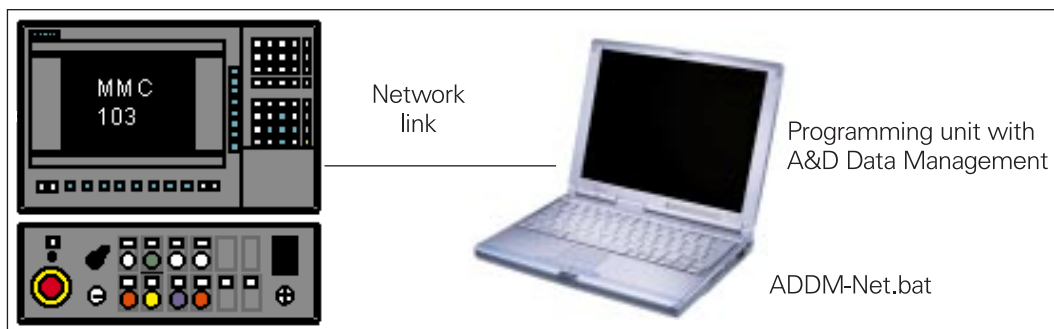


While a broken-down CPU can be restored within a few minutes, the reinstallation of a Windows PC is a much more expensive matter. Based on experience, PC hard drives break down about every three years. An exchange of hard drive and the pertinent reinstallation of Windows NT, MS Office, STEP7, etc. take several hours. With 50 PC's one must accordingly reckon with two weeks of maintenance effort every year.

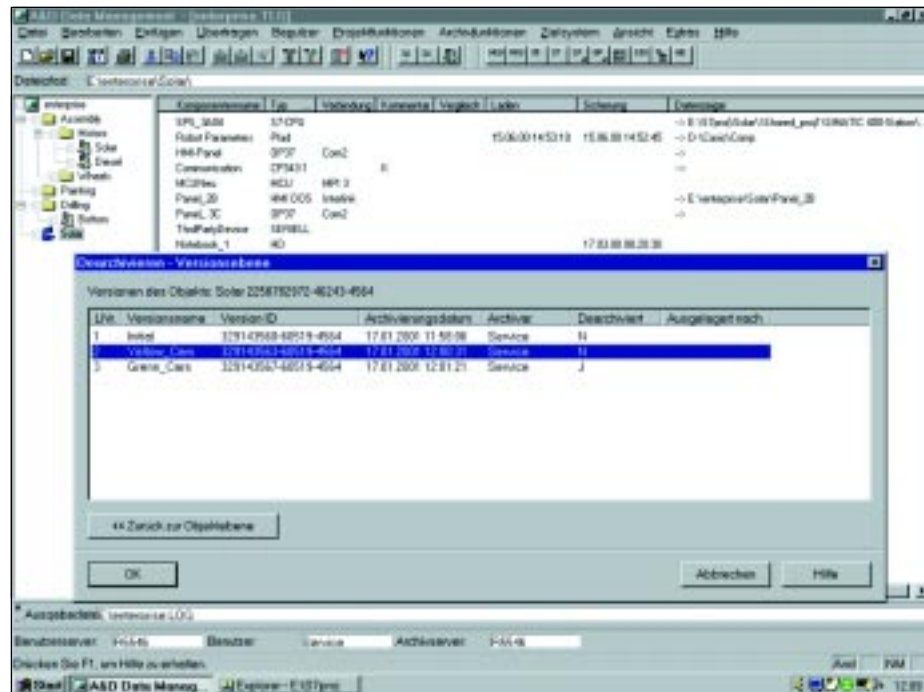
A considerable higher system availability is able to be achieved with disc images. A&D DataManagement restores broken-down discs through transcription of single back-up files (disc images) to new, unformatted reserve discs. As a result one saves several hours of hands-on installation work per PC can be saved.

Normally this is enough to restore current status. Planning and system data lie unpacked on the server and can be quickly reloaded at any time. With system modifications and expansions or "bread-board" models the original data should not be overwritten without thinking. Especially if it concerns so-called "take-off tracks" on which a warranty claim exists.

In this case, making copies is recommended. In order to maintain an overview, the version works should be transferred to a tool. A&D DataManagement automatically allocates new version labels and files the copies in a space-saving fashion (packed) on the server.



*Image transmission via parallel port or Ethernet connection*



Selecting archived tracks

The current tracks can be called-up directly. Archived tracks can be selected via comfortable menus and by virtue of their version name or their version number.

The easy-to-operate A&D DataManagement

- reduces training expenditure for service personnel
- enables access to historical data (versions)
- allows a rapid replay of data when changing modules

- increases data security through the utilization of a central, readily-available server
- and protocols interventions in a logbook

Contact:

Horst Schönheiter

Siemens A&D SH 2

Phone: +49 9131 98-3152

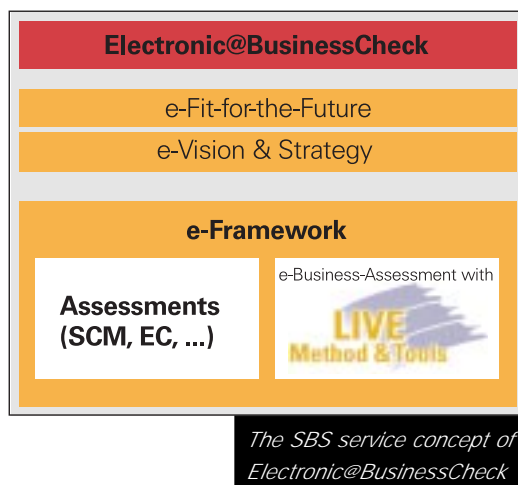
Fax: +49 9131 98-2285

E-mail: [horst.schoenheiter@erlf.siemens.de](mailto:horst.schoenheiter@erlf.siemens.de)



## Measuring E-Business Readiness: *Electronic@BusinessCheck*

Electronic business has set a revolution in motion, one that is redefining relationships among vendors, partners and customers. It's no longer individual products that are crucial to success, but rather end-to-end solutions that create new e-business potential in this revolutionary environment. Siemens Business Services (SBS) now offers the **Electronic@BusinessCheck**, a comprehensive service concept designed to support companies entering the world of e-business. This SBS offering consists of a sequence of carefully structured workshops.



### **E-Fit-for-the-Future**

This entry-level workshop covers the theoretical foundations of e-business, clarifies technical terms and defines a

common language.

With the addition of *OnlineCheck*, it can also include the analysis of a company's general and sector-specific positioning in the e-business environment.

### **E-Vision & e-Strategy**

This workshop develops a custom corporate vision and strategy for e-business and compiles suggestions for an appropriate reorientation of a company's business strategy and portfolio.

### **E-Framework**

*Initiation (Internet-based consulting)*  
Once the e-business vision and strategy have been determined, the next step is the *OnlineCheck* (see *e-Fit-for-the-Future*). By answering the online questionnaire at [www.livekit.de](http://www.livekit.de), the client gets an automatic analysis of the current situation and an initial appraisal of his or her e-business needs.

### **Concepts**

Almost anything is possible with e-business. But what does a particular company really need? To rough out the basic structure of the company's e-business



processes, the results of the situation analysis are evaluated in cooperation with experienced e-business consultants. In this phase, predefined and typical business processes are depicted in graphical form and customized with the help of the modeling tool LIVE KIT Power:



Process modelling with LIVE KIT Power

The compressed form in which the processes are modeled gives the depicted information greater transparency, and that makes it easier to select the right business processes and associated software components.

### Business Blueprint

In the next step these results are imported into the expert system LIVE KIT Structure to enable a detailed examination of the affected business processes and the existing infrastructure. To this end, LIVE KIT Structure incorporates a rule-based expert system with more than 7,000 questions and typical solu-

tions as well as 35,000 rules. This method of associating rules with a user-friendly question-and-answer structure helps clients reach their objectives quickly and easily. The user selects the desired depth of analysis and the planned software components; the rules are then applied, filtering out the questions relevant to the project at hand.

**The objectives of Electronic@BusinessCheck** are real-world solutions and project-specific recommendations that describe necessary resources (e.g. IT infrastruc-

ture) as well as a suitable software solution, including implementation planning and specific process and interface models.

Contact:

Kirsten Schweickhardt

SBS E-Business Solutions

Phone: +49 89 636-46827

Fax: +49 89 636-44224

E-mail: sbs.live@mch20.sbs.de

Internet: <http://www.siemens.de/sap/dienstleistungen/live>



## Public Radio LAN's: Mobile Business for Business Travelers

**While at the office, a manager has rapid access to e-mails, Internet and Intranet. Thanks to innovative technology access now is also possible while traveling. Through its Access Gateway Technology, Siemens has refined the new technology of the 11 megabit-fast Wireless Local Area Networks (WLAN) to such an extent that even hotels, exhibition companies, and airport operators can offer business travelers Internet access via radio LAN.**

*"Business Hotspots" are public places whereby notebook users in need of quick and easy access to the Internet are concentrated: at airports, business hotels, conference centers and at exhibitions. Hence WLAN systems are not only utilized in companies, but also at such business hotspots.*

*Travelers must be booked into and out of the high-speed data radio network very quickly. In addition, their radio communications traffic must be accounted for exactly to the minute. Such capabilities as rapid authentication, authorization and charging were not yet provided for in the 802.11b corporate radio LAN*

*systems. Now Siemens Information and Communication Networks provides its experiences from the expansion of public networks, and supplements the fast, cheap radio LANs with the previously lacking hotspot capabilities. The innovative core of this overall solution for business hotspots is the "Siemens i250 Access Gateway".*

### **The "Siemens i250 Access Gateway" hotspot manager**

*The Gateway manages access to the WLAN radio network for all hotspot business travelers via a portal page. It*

- identifies and authorizes the mobile hotspot surfer*

- gives free access or cost-obligated services*
- regularly logs off the notebook surfer again during his future travels*
- prepares a billing*

*For instance: A business traveler is sitting with his radio notebook in the waiting area of an airport terminal, switches his laptop on and receives at registration a temporary IP address from the Dynamic Host Configuration Protocol (DHCP) server of the Siemens i250 Access Gateway for the duration of his time in the radio network. Then he logs in to his Internet browser where the airport's portal page appears. From here, he can*



either continue to surf in the free information and display pages of the hotspot operator – where information about flight times or hotel and rental car reservations are offered - or he can register for cost-obligated web and video services, which are billed on a credit card or mobile phone account.

The business traveler often needs to utilize his stay in the lounge to take care of his work. For that purpose, he needs a remote access to his corporate LAN. The Siemens i250 Access Gateway also provides this safe access to the corporate network through "Remote Tunneling over IP" directly from the hotspot radio network.

"This IP Gateway is a key component of public Internet access. You need a component, which says: Who is the user? How does he pay? Which services would he like to use? How long? That's why we developed this Gateway", ex-

plained Paul Cullen, Product Manager of Business over IP at Siemens ICN.

The i250 Access Gateway protocols the utilization of services and can also report this back to the user. This function continues in the event if the browsers crash one day. The Gateway i250 recognizes, via DHCP, that the specific notebook is no longer available and sends the user a SMS message to reassure that he was: "logged-in xx minutes in the system", and that he will be charged xx DM to his account."

The business traveler often uses an hour in the lounge to take care of business. For that purpose, he needs a remote LAN access to his corporate Intranet. The Siemens i250 Access Gateway also provides this safe access to the corporate network through "Remote Tunneling over IP" directly from the hotspot radio network.

### **New business for hotspot operators**

The hotspot operator can generate new business with the Siemens solution. Siemens offers "Wireless Internet Minutes" and can invoice users. New value-added services are conceivable, and are calculated based on the volume and according to the amount of transmitted data. In addition, an airport can also enter into cross-selling arrangements, for instance with automobile rental agencies or hotels.

The public radio LAN is an excellent opportunity for hotspot operators to offer their customers genuine benefits while attaining stronger customer relations.

Contact:

Paul Cullen

Siemens ICN ISA CCI POIP PM

Fax: +49 89 722-27443

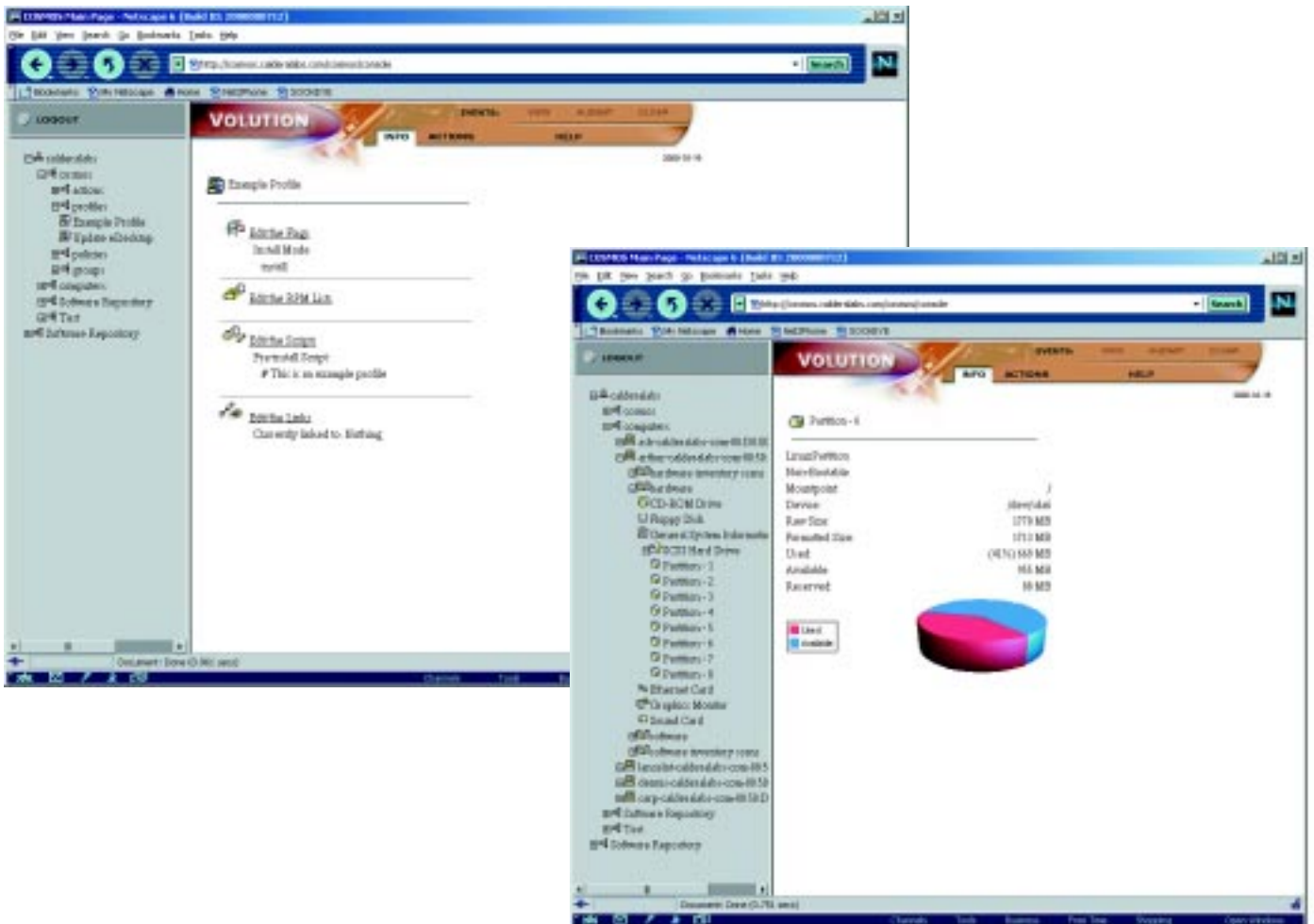
E-mail: paul.cullen@icn.siemens.de

January 16<sup>th</sup> 2001 Caldera announced the availability of the Linux Management solution Caldera® Volution™. Caldera Volution reduces the cost of ownership of implementing and managing Linux systems significantly. Caldera Volution does so by enabling secure, remote management of multiple Linux systems through a browser. It enables administrators to manage the network with policies, without having to individually manage each system. Caldera Volution provides the capabilities for administrators to effectively manage their systems through hardware and software inventory, software distribution, health monitoring of systems, printer configuration and scheduled scripted actions. Caldera Volution is built on open standards.

- Key Features:**
- Supports all major Linux distributions
  - Secure Web-based management console
  - Electronic software distribution – installs and removes applications on remote Linux systems
  - Hardware and software inventory
  - Health monitoring of Linux systems
  - Linux printer configuration
  - Scheduler/Global event system
  - Policy-based management
  - Customizable machine profiling
  - Data repository based on an LDAP V3 directory



For more information visit [www.caldera.com/products/volution/](http://www.caldera.com/products/volution/).



**Werbung**



**Partners**

## New Web Assistants in Field Service, and yet not Out of Touch

**Frequent travellers and field service staff knows the problem: The e-mailbox, fax and post basket in the office are overflowing. Countless messages are on the answering machine. The problem is that employees can't access the data while they are on the road. This is one reason why rapid growth rates confirm a market for mobile terminals such as organizers and WAP mobile telephones.**

*But a mobile terminal with Internet link alone is not enough to satisfy the needs of business travelers. Because the Internet has two snags: Although it is used professionally by 84 percent of surfers for procurement of information, it often can't deliver satisfactory answers to specific questions. Of course search machines find countless links for every index word, but the time and effort to "separate the wheat from the chaff" is not beneficial. And: Although the Internet delivers useful information such as stock market prices, it doesn't deliver internal corporate data.*

### **Two birds with one stone**

*With web assistants such as "My Excite" or "Personal Lycos" Internet users can generally get hold of information, but not corporate-related information.*

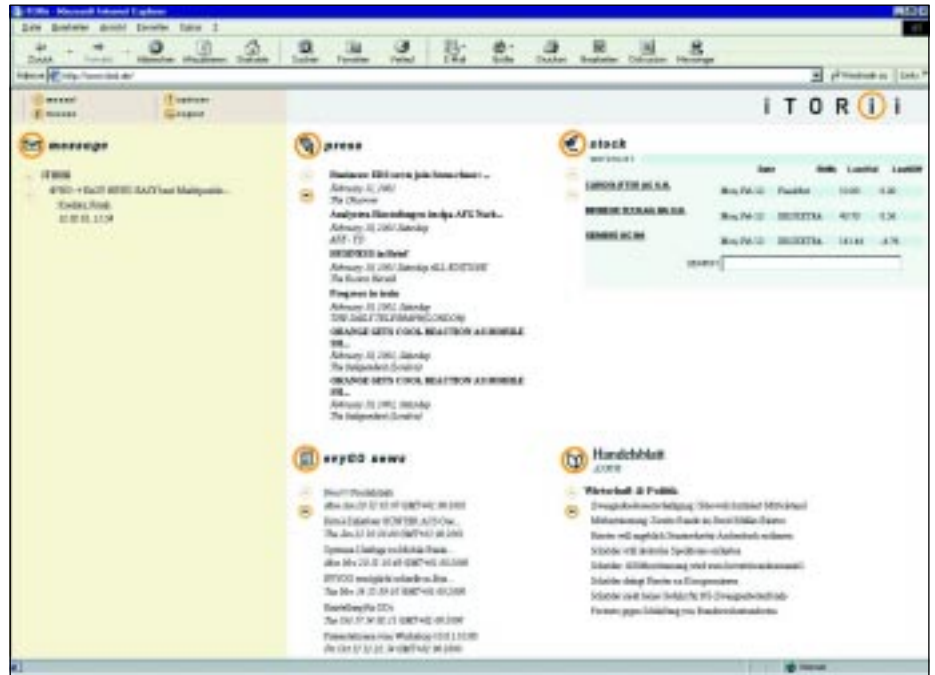
*On the other hand, EIP applications (Enterprise Information Portals) improve information networking within a company, but do not include external news.*

*Second generation web assistants such as the EVYGO's iTORii close this gap. The tools combine the utilization of web assistants with the company Intranet by means of a single online access. As a result the single log-in saves lots of time: One-time log-ins are sufficient to release tailor made information sources for the user are released. This requires the highest safety standards – especially for corporate data. In addition, the software features include: easy installation, operational capability on any conventional market browser and a self-explanatory user guide.*

### **Communication at all levels**

*Web assistants such as iTORii offer everything you need via their information channels: current headlines, international press reports, trade journal news, stock market quotes and share indexes, as well as current, internal corporate information. Frequent travelers and telecommuters can thus be kept up-to-date at all times.*

*Employees must be able to communicate independently of terminals – anywhere and at all levels. However, technology often leaves users in the lurch. Important details are lost, arrive garbled, or are too late. Here the Unified Messaging System makes sense. In cooperation with Internet providers and the link to the company's own server all private*



iTORii – the mobile solution from EVYGO

and business e-mails can be called-up via the new web assistants. Also included in the service are a personal telephone and fax number with the capability for faxes, letters and SMS messages to be sent and received via Internet. In addition to e-mail, the entire spectrum of modern communications is available to the user.

### The agony of choosing

The core of web assistants form the personal adjustment possibilities for individual information channels, for example the selection of various press databases, the input of index words from which news is to be selected as well as the installation of an individual watch list with stock market securities

and share indexes. Second generation web assistants take into consideration the high mobility of employees. They can be utilized with laptops, organizers and WAP mobile telephones.

### High efficiency

The efficiency obtained with web assistants is evident. According to estimates, users save half the costs in comparison to access via such portals as Yahoo, and even 75 percent in comparison with a manual search in the Internet. Mobile access goes down in price as a result of an optimized HTML; for instance, likewise by half via EVYGO mobile access. The individual pre-selection for information call-up with a WAP mobile telephone provides the same result. Provi-

ders such as EVYGO in Bremen already use the technology. Being on the road and out of touch is now a thing of the past.

### Contact:

Peter von Westberg

Siemens A&D SH 6

Phone: +49 911 895-4370

Fax: +49 911 895-4312

### E-mail:

[peter.westberg-von@nbgm.siemens.de](mailto:peter.westberg-von@nbgm.siemens.de)

Frank Berger

Marketing Manager EVYGO GmbH

Mobile Corporate Communications

Phone: +49 421 5969-440

E-mail: [fberger@evygo.com](mailto:fberger@evygo.com)



# CETIQ – Intelligence for Business

*The CE Computer Equipment AG brings a new, complete solution for information management onto the market.*

*CETIQ combines classical document management with intelligent solutions for classification and extraction of information.*

*The solution is sector-neutral, scalable and implemental corporate-wide. It accompanies the entire cycle of document processing – from preparation to final archival storage. All information is initially digitized and then managed as "living" or "archived" documents.*

## **Information classification**

*Pre-classified documents are made available to the system as a training component. Classification criteria are*

*learned independently with the help of these documents. At the same time documents can be organizationally and thematically classified in various classes.*

## **Similarity search**

*The classical full text search is supplemented by the similarity search. CETIQ lists all documents whose content is similar to the search criteria. The natural linguistic research takes into consideration textual contexts. Thus entire text passages can be utilized for the search.*

## **Term search**

*In addition to wide-ranging research possibilities CETIQ also comprises a feature extraction, which determines characteristic terms for an optional collection of documents. CETIQ finds related expressions to pre-stated terms with this term search. For instance, a trend analysis can be executed by means of the extraction. It pro-*

*vides insight to which terms, for example, are characteristic for current stock market news in the New Market.*

*CETIQ expands performance features of CE products such as revision-safe archival storage of large data holdings and access via Internet, integration into existing business environments and management systems such as SAP and Oracle by polished possibilities of information acquisition and information research.*

*Siemens, Siemens Business Services (SBS) and Fujitsu Siemens Computers already work closely together with CE Computer Equipment in the document and knowledge management sector.*

*Contact:*

*Volker Rädisch*

*CE Computer Equipment AG*

*Phone: +49 521 9318-514*

*E-mail: v.raedisch@ce-ag.com*





## Events You Won't Want to Miss!

### March

**Madrid** Global IP Summit 2001  
**Mar. 15 - 17, 2001** [www.VisionInBusiness.com](http://www.VisionInBusiness.com)  
 IP Switching and MPLS in  
 Next Generation Networks;  
 Sprache via IP; Access und IP  
 Technologies

**Hannover** CeBIT 2001  
**Mar. 22 - 28, 2001** [www.cebit.de/index\\_e.html](http://www.cebit.de/index_e.html)

**Florenz** Gartner Group IT Expo  
**Mar. 28 - 30, 2001** Europe/Spring  
[www.gartner.com](http://www.gartner.com)  
 Customer relation manage-  
 ment; Enterprise business  
 applications; M-Business and  
 IT infrastructure/managment

### April

**Hannover** Hannover Messe  
**Apr. 23 - 28, 2001** - World Trade Fair for  
 Industry, Factory Automation  
 and Innovation

**Düsseldorf** TelcoNet 2001  
**Apr. 24 - 26, 2001** [www.iir.de](http://www.iir.de)  
 International strategies in the  
 telecommunication market;  
 competition; mobile future/  
 M-Commerce

### May

**Berlin** Internet World  
**May 15 - 17, 2001**

**Barcelona** IDC Suisse First Boston  
**May 20 - 23, 2001** European Technology  
 Conference  
[www.idc.com](http://www.idc.com)

### June

**Amsterdam** European Software  
**Jun. 11 - 14, 2001** Engineering Process Group  
 Conference  
[www.espi.co.uk](http://www.espi.co.uk)



## Software in the News

### Communications News, February 2001

#### ” Enable fast network provisioning

Optical networks and dense wavelength division multiplexing (DWDM) technology have increased the capacity of a single fiber by many orders of magnitude. Just as advanced transmission systems can eliminate congestion in fiber cables, similar breakthroughs are occurring in the network node. A new generation of managed optical cross-connect systems route huge volumes of network traffic, while adapting dynamically to changing traffic patterns and customer needs.

The new units keep pace with the demands of today's networks by providing the

ability to route thousands of individual streams of network traffic without restrictions regarding signal format or type of communications service. Just as DWDM allows transmission of multiple channels of traffic in the gigabit range, optical cross-connects enable switching to handle data streams of 2.5, 10 and 40 Gbps and higher. The amount of data able to flow across a network node is quite staggering, representing millions of simultaneous phone calls, of thousands of pages of text.

Optical cross-connects provide other features in addition to the granularity needed to accommodate raw bandwidth. Service aggregation combines smaller streams into larger ones to increase efficiency. “

### Industry & Market Update, November 2000

#### ” From WLL to BWA

Five years ago, wireless local loop (WLL) was touted as an easy solution for universal access. People living in the most remote villages could finally get reliable, inexpensive telephone service. This was because WLL, at the time, boasted several key advantages over other access technologies.

For one, WLL could be installed quickly – in a matter of days or weeks, versus months – and relatively easily because no digging is involved. Simply by installing a base station and a small, lightweight rooftop antenna, you're connected. WLL's case of installation, so it was argued, was particularly be-

neficial in areas characterised by rough, swampy or rocky terrain. Another purported benefit of WLL was its scalability. You could deploy WLL gradually as new customers were signed up, simply by adding antennae where necessary. With fixed-line solutions, argued the WLL protagonists, you have a bigger front-end cost because you lay the cable and then wait for customers. Plus, you can move WLL cells to another area if the market doesn't pan out. With cable, once it's in the ground, it's in for good.

The last and most attractive promise of WLL to operators was lower costs. The system can transmit typically within a 20 - 30 square km area, and costs remain the same within that area. “

*Dear Readers,*

*Today you received the last international edition of our customer magazine Software@Siemens, but you'll also receive reports about new solutions, trends and successes in the future. In addition, your sales agents and technical advisers, from whom you have acquired products and solutions, will keep you abreast of all new developments at Siemens. Technical publications and reports of various news and events will be sent to you.*

*Various international economic and trade magazines of the Siemens groups will continue to inform you about the most important topics and developments around these markets. These will offer practical information, news, the latest technological advances and market trends, as well as technology solutions and management knowledge.*

*We, the Paderborn editorial team, Marion Schmeling and Detlef Seidel, would like to say goodbye. For the last five years, we gladly gathered and published relevant information for you. We would especially like to thank all those readers who contributed during this time with praise and critique, references, requests and for creating lively discussions.*

*Our online German and international editions will be available until the end of April 2001, at [www.software-at-siemens.de](http://www.software-at-siemens.de).*

*Many thanks for an exciting time.*

*Yours truly, Detlef Seidel*

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**Editor in Chief:** *Detlef Seidel, Siemens A&D SH S, Riemekestraße 160, 33106 Paderborn, Germany  
Phone: +49 5251 / 8-11994, Fax: +49 5251 / 8-11965, E-mail: [detlef.seidel@pdb.siemens.de](mailto:detlef.seidel@pdb.siemens.de)*

**Advertising Sale:** *Marion Schmeling, Siemens A&D SH S, Riemekestraße 160, 33106 Paderborn, Germany  
Phone: +49 5251 / 8-11711, Fax: +49 5251 / 8-11965, E-mail: [marion.schmeling@pdb.siemens.de](mailto:marion.schmeling@pdb.siemens.de)*

**Editors:** *Michael Hofman, Siemens A&D TN SWI, Gleiwitzer Straße 555, 90475 Nuremberg, Germany  
Phone: +49 911 / 895-3838, Fax: +49 911 / 895-4554, E-mail: [michael.hofman@nbgm.siemens.de](mailto:michael.hofman@nbgm.siemens.de)  
Rüdiger Mühlhausen, Siemens Information and Communication Networks, Hofmannstraße 51, 81359 Munich, Germany  
Phone: +49 89 / 722-31273, Fax: +49 89 / 722-38273, E-mail: [ruediger.muehlhausen@icn.siemens.de](mailto:ruediger.muehlhausen@icn.siemens.de)  
Axel Völker, Siemens CT SE SWI, Otto-Hahn-Ring 6, 81739 Munich, Germany  
Phone: +49 89 / 636-48824, Fax: +49 89 / 636-43778, E-mail: [Axel.Voelker@mchp.siemens.de](mailto:Axel.Voelker@mchp.siemens.de)*

**The Software Initiative is represented by:** *Monika Gonauser (Siemens CT SE), Helmut Clemm (Siemens Switzerland), Gerhard Ott (Siemens ICN), Rudolf Tobiasch (Siemens ICN), Herbert Steffen (Siemens TS), Dr. Klaus Wucherer (Siemens A&D)*

**Where to find us on the WWW:** *Siemens AG: <http://www.siemens.de>*

**Software@Siemens on the web:** *<http://www.software-at-siemens.de>*

**English version editor:** *Michele Nadeem, Media Boston International, 266 Beacon Street, Boston MA 02116 USA*

**Title and illustrations:** *Christian Weiß, Landwehrstraße 37.2, 80336 Munich, Germany*

**Typesetting:** *text & design Heike Rössler, Plessnerstraße 3, 33106 Paderborn, Germany*

**Printed in Germany:** *Offsetdruckerei Hansmann, Wewerstraße 40, 33106 Paderborn, Germany*

**Werbung Brokat**