



Teaching case

DCXNET: e-transformation at DaimlerChrysler

Arnd Klein¹, Helmut Krcmar²

¹smart gmbh, Information Technology Management smart, Böblingen, Germany

²Faculty of Informatics, Technical University Munich, Chair for Information Systems, Garching, Germany

Correspondence: H Krcmar, Faculty of Informatics, Technical University Munich, Chair for Information Systems, Boltzmannstr. 3, D-85748 Garching, Germany.

Tel: + 49 89 289 19532;

Fax: + 49 89 289 19533;

E-mail: krcmar@in.tum.de

Abstract

In 1999, the automotive industry was in a difficult situation: overcapacity and customer demand for faster delivery and better service drove executives to explore the potential business value of the internet. The authors provide a teaching case, which is based on an analysis of the DCXNET initiative which bundled all e-business actions taken by DaimlerChrysler to exploit the opportunities of this then new technology. The teaching case describes the strategic planning process for e-business at DaimlerChrysler, resulting organizational structures and an outline of the components of DCXNET. Furthermore, the authors provide results of the initiative, success factors and lessons learned.

Journal of Information Technology (2006) **21**, 52–65 doi:10.1057/palgrave.jit.2000047

Published online 22 November 2005

Keywords: e-transformation; e-business; DaimlerChrysler; Covisint; change management; innovation

The industry

As we enter the 21st century, the automotive industry finds itself in a quite difficult situation. The growth rate of the European car market is near zero and the world's most important economy, North America, has been hit massively by the worldwide economic downturn after the end of the dot-com hype and as a result of 9/11/01. In the 1930s, there were approximately 300 independent car manufacturers, by the end of the 1990s seven independent manufacturers remained. The industry structure is currently stable and further consolidation, due to legal aspects, is unlikely (Figure 1).

In the light vehicle market, the five largest manufacturers (General Motors, Ford, DaimlerChrysler, Volkswagen, Toyota) have a market share of about 70 per cent. And competition is tough. According to *The Economist* (see Figure 1), the car industry is operating with an increasing overcapacity. Vehicle sales in the NAFTA region have decreased and the car market in Western Europe is stagnant. Furthermore, customers demand better service and faster delivery. Market transparency has increased with the advent of the internet. As demand is volatile, manufacturers are driven to cut costs (e.g. by economies of scale), maximize flexibility and foster customer loyalty. For example, an average C-Class model from Mercedes-Benz consists of approximately 260,000 parts, the coordination of suppliers from all over the world is a major challenge. According to Davis (2001) it 'takes an average of 54 days to

get a car built and delivered to its customer today while only 1 or 2 of those days are actually spent on assembly; a full 36 days go by, according to a report by Roland Berger in June 2000, creating a schedule for production processing orders for materials and purchasing supplies.'

The company

In May 1998, Germany's Daimler-Benz AG and USA-based Chrysler Corporation announced the largest industrial merger in history. The result of this merger has been the establishment of the world's fifth largest car maker. Today, DaimlerChrysler is one of the world's leading automotive, transportation and services companies. Its passenger car brands include Mercedes-Benz, Chrysler, Jeep, Dodge, smart and Maybach. Commercial vehicles are produced under the Mercedes-Benz, Freightliner, Sterling, Western Star, Setra, Thomas Built Buses, Orion and American LaFrance brands. DCX, the share abbreviation on the New York Stock Exchange of DaimlerChrysler, offers financial and other services through DaimlerChrysler Services. With 372,500 employees, DaimlerChrysler achieved revenues of EUR 152.9 billion (\$136.1 billion) in 2001 (see Appendix A for details) (Figure 2).

The challenge

In 1998, corporate headquarters in Stuttgart and Auburn Hills were busy managing the consequences of the merger.

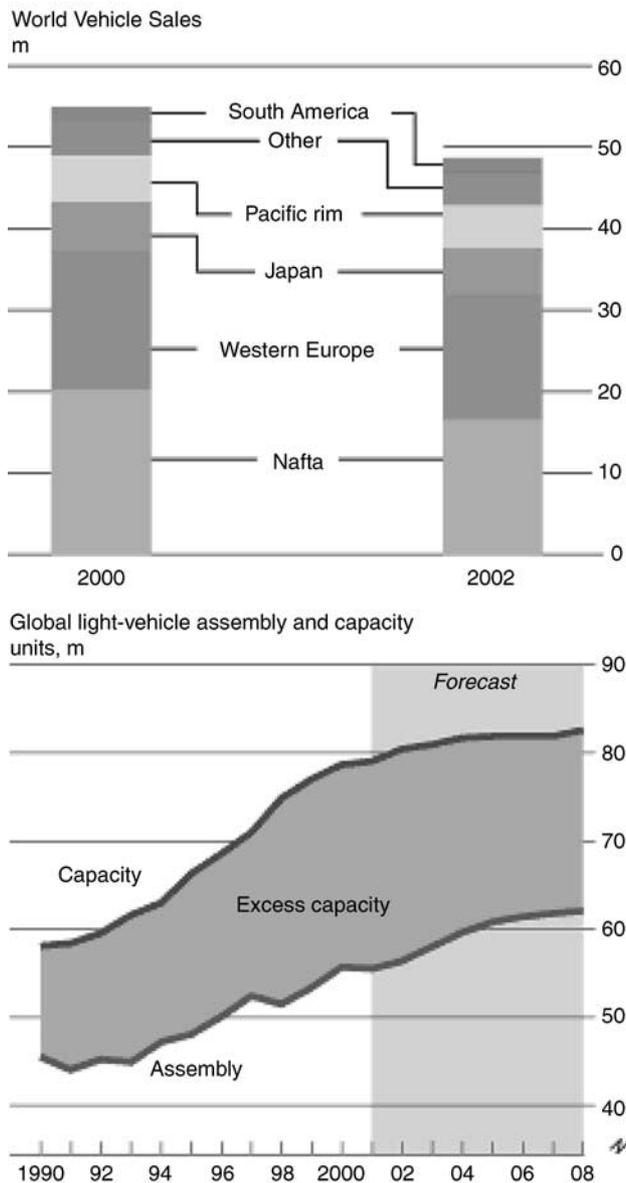


Figure 1 Vehicle sales and capacity in the car industry (Source: The Economist: Downhill racers. March 29th 2001).

Although operating profits rose (DaimlerChrysler, 1998), not all analysts were convinced that the merger of Daimler-Benz and Chrysler would unfold as a success story. The shareprice took a nosedive in late 1998 (Figure 3):

The merger was difficult to manage not only because of cultural differences – employees of both companies had strong ties to their local sites and cultures. Furthermore, financial pressure drove the company's executives and engineers to push for economies such as platform- and component-sharing. However, as business processes of the two companies were quite different, quick wins due to synergies were not on the horizon: For example, Chrysler deployed platform teams for the development of new cars, whereas Mercedes-Benz used cross-functional units (such as electronics or gear systems) for all series.

During spring 1999, the Lagezentrum (Corporate Strategic Research and Control Center) at the headquarters in

Stuttgart perceived that new ways of doing business were breaking ground. The Lagezentrum was established in 1995 to generate strategic intelligence for the Board of Directors. The staff recognized increasing media coverage for e-commerce and conducted some preliminary surveys and analyses. Olaf Koch, then Head of the Lagezentrum, describes the situation as follows:

In June 1999 it was clear that eBusiness would be a major topic in the automotive industry for the next ten years. We conducted a couple of briefings for members of the Board of directors. We tried to find out, which implications the internet would have for our business processes.

At about the same time (May 1999), Autobytel launched its IPO (Initial Public Offer). Autobytel sought to revolutionize the way to sell cars by linking car manufacturers and customers electronically. Strategy Consultants heralded, that in the future, the single most important sales channel for cars would be the worldwide web. Car manufacturers perceived this as a major threat for their profitability for several reasons. Firstly, increased market transparency around the world would hinder price differentiation strategies. Secondly, mediators could accumulate buying power and thus squeeze margins of the manufacturers. And thirdly, because sales channel conflicts could harm the relationship between dealers and manufacturers.

Ford and General Motors were key drivers of the e-revolution in the automotive industry among car manufacturers. They established separate e-business units in an attempt to reinvent the automotive business. On August 10, 1999, GM announced e-GM, a separate Internet business unit that integrated all e-business efforts of the world's largest car maker. The focus of e-GM was on building electronic shopping malls that offered customers car-buying information. Similarly, Ford on September 15 announced to re-organize its e-commerce activities into a new enterprise. DaimlerChrysler did not want to rush into the same hype, even if the company would risk to maybe miss the opportunities of the internet. A continuous stream of presentations, papers and concepts from consultants and analysts, all calling for massive investments to transform DaimlerChrysler into an e-business company poured on the desk of Olaf Koch. Although DaimlerChrysler had launched its Customer-Connect Program in early 1999 to link brands and customers worldwide, the real business potential of the internet to network the entire value chain still had to be exploited.

Owing to these external developments, the Lagezentrum together with the IT department suggested in September 1999 to conduct an accelerated strategic planning process for e-business at DaimlerChrysler. This was approved by Dr. Rüdiger Grube, then Senior Vice President in charge of the corporate strategy of DaimlerChrysler. This planning process aimed towards the clarification of the core of e-business: what really makes the difference in the wired age? Which role would the corporate IT function (Information Technology Management (ITM)) play in this process? As part of the planning process, staff from the



Figure 2 The Board of DaimlerChrysler 2002.

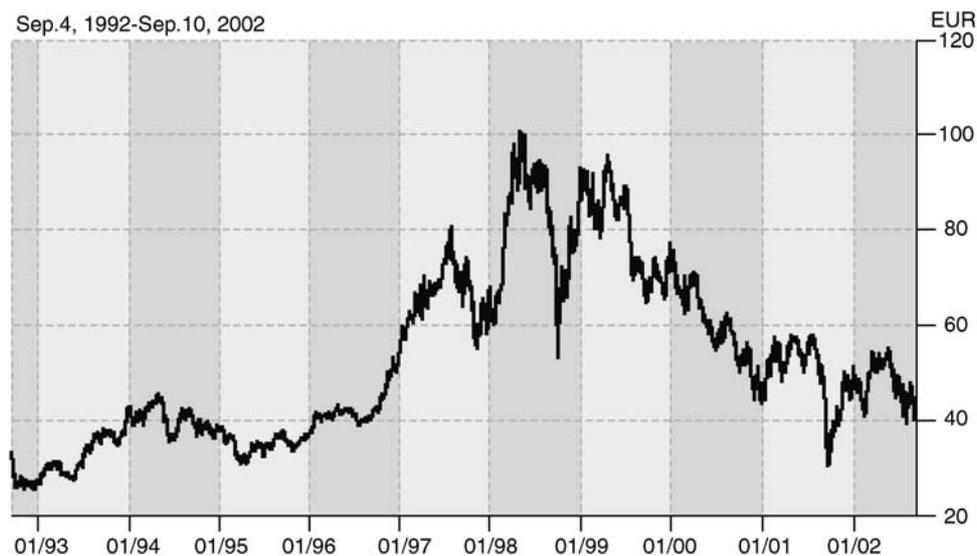


Figure 3 Shareprice of DaimlerBenz/DaimlerChrysler 1992–2002 (Source: http://www.daimlerchrysler.com/index_e.htm).

Lagezentrum and ITM gave a presentation for the Board of Directors in December 1999. The presentation focused on two key subjects:

1. What is the potential impact of the internet on our business?
2. What are our competitors doing regarding e-business?

The analysis of the Lagezentrum focused on three major areas: (1) sales processes and the value chain, (2) product features and (3) supply chain.

1. *Sales processes and the value chain:* New players like *autobytel.com* or Microsofts *CarPoint* entered the car market swiftly. They stepped into the car makers value

- chain between dealers and customers. The purpose of these companies was not only to sell cars on the internet, but also to provide information transparency, sale-related services like information on current incentives or rebates, and to capitalize direct contact to customers by supporting parts of the retail process.
2. *Product features:* For example, GMs *OnStar* initiative focused on telematic services like personalized information and safety services to foster ongoing contact between OEM and the customer. With the advent of smart phones, telecom companies tried to equip cars with enhanced information and communication capabilities (see *i-mode* of NTT DoCoMo in Japan or *E-Plus* in Germany).

3. *Supply chain*: E-business allows the optimization of supply processes and could provide a viable business case through global marketplaces, which would allow suppliers, dealers and other business partners to do business with each other online.

Based on the results of the analyses which were embedded in the description of initiatives of DaimlerChrysler's major competitors (General Motors and Ford), the Board of Directors demanded the Lagezentrum to examine e-business-related activities of each division. By the beginning of March 2000, Dr. Grube presented a *status quo* report at a Board Meeting: Although most divisions used the Internet for marketing purposes, that is, they displayed information about their products and organization, only minor effort had been spent on the design of transaction or collaboration-oriented systems on the demand/supply side of its value chain. Furthermore, activities were fragmented and lacked central coordination. By the end of March, survey teams were deployed to discuss the opportunities of e-business from each division's standpoint. The survey teams were equipped with a questionnaire to guide and structure the discussions.

One of the underlying assumptions of this process was that success was dependent on a bottom-up definition of e-business. The most important reason for that was the relationship between experience and learning. Olaf Koch describes the relationship as follows:

Well – there was no doubt that the world was changing rapidly. But we had the perception that it was easier for, let us say a sales executive, to learn how to enhance his sales business using the internet than for an internet guru to learn how to sell cars. After all, we have no e-business but business and the fundamentals of the automotive business did not change.

The major competitors of DaimlerChrysler continued their e-business activities. On November 2nd 1999, General Motors and Ford declared that they would transfer their *purchasing operations* to the web. AutoXchange, a joint venture between Ford and Oracle, aimed at connecting Ford to its material and parts suppliers over the net. GM, together with CommerceOne forged GM MarketSite for the same reasons: connecting suppliers, business partners and customers on a single platform to increase supply chain efficiency. AutoXchange claimed up to 20% savings on procurement and inventory for the case of Ford. Microsoft's Carpoint, launched in 1995 joined forces with FordDirect, a joint venture between Ford Motor Co. and its Ford Division Dealers (The Economist, 1999). This initiative focused on the customer side of the car makers operations and aimed towards the manufacturing of built-to-order cars.

By the end of March 2000, the internet economy imploded (in slow motion). Boo.com (see Erdener, 2000), a London-based Internet sports-goods business, an icon of the new economy, died 'as it had briefly lived – ridiculously over-hyped' (The Economist, 2000a, b). Shareholders were startled, and by the end of June 2000, CBOE Internet Index The Chicago Board Options Exchange (CBOE) included in 2000: Amazon, AOL, AtHome, CMGI, Cisco, Doubleclick, Ebay, Earthlink, Exodus, Inktomi, Infospace, Realnetworks,

Yahoo.) businesses lost 50% of their value. The downturn of the so-called new economy had an impact on e-business-related activities in every industry. Until March 2000, analysts asked DaimlerChrysler executives, why there was still no eDCX unit. Fall 2000 brought a new culture of questioning every action taken with a relationship to e-business. In late March 2000, another e-business-related Board Meeting at DaimlerChrysler took place. Staff from the Lagezentrum and ITM explained and discussed current e-business activities in the automotive industry and which core questions the divisions should address in their presentations. Presenters included staff from the following divisions/departments:

- Mercedes-Benz passenger cars and Smart,
- Mercedes-Benz commercial vehicles,
- Chrysler Group,
- DaimlerChrysler Services,
- DaimlerChrysler Procurement/Logistics,
- DaimlerChrysler Research & Technology.

The presentation started with a strategic outlook section, given by Dr. Grube. The section portrayed the current situation and scenarios of selected topics. They included brand portals, telematics, market places, built-to-order cars, e-financing and others. The discussion about current e-business topics led to three questions to be addressed by the divisions: The answers to these questions were an e-business action plan for each division (Figure 4).

After the strategic outlook session, the divisions presented their vision of the internet as a business process enabler. The discussion among board members and executives from the divisions resulted in five high-priority action plans in the B2C and B2B areas.

B2C: Action plans were developed to define and execute a DCX portal strategy, a content and portal alliances strategy and to build interactive relationships to customers. To support the buying process, it was planned to bring all transaction capabilities online. An evaluation of the direct sales approach was launched. Furthermore, a set of measures was developed to keep the contact with the customer.

B2B: In order to increase the speed from order to delivery, e-engineering and e-manufacturing initiatives were discussed. In addition, it was planned to strengthen the relationship to the dealers by electronic means.

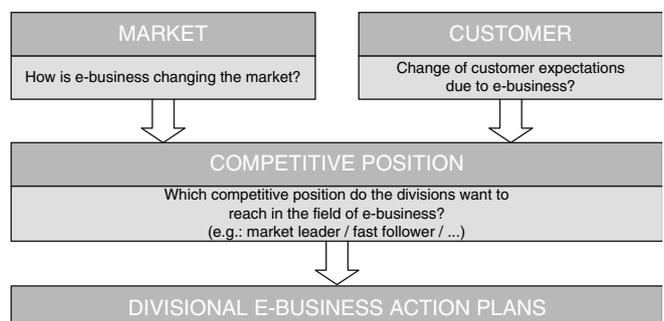


Figure 4 Divisional approach for e-business development.

To achieve efficiency and effective improvements, it was clear that a crucial issue of e-business implementation would be a deep interaction of backend systems at DaimlerChrysler. Thus, the information technology function (ITM) had to be a central part of DCXNET efforts. Without the support of ITM experts, DCXNET could not succeed. Still, DaimlerChrysler did not establish new organizational structures dedicated to e-business. However, it became clear, that a coordinated effort was necessary.

The answer

Mission, people and structures

One result of the Board Meeting in April 2000 was to develop an organization to coordinate all e-business-related activities. This organization has been labelled as a DCXNET initiative and took up operations in May 2000 with the following mission statement:

The 'DCXNET initiative' is intended to make the company faster, more efficient and therefore more competitive throughout all areas across the entire value chain, from purchasing to sales. The name DCXNET is derived from the DaimlerChrysler stock symbol and has been selected in order to emphasize the fully networking every aspect of its activities (Source: DCXNET Annual Report 2001).

The perception from outside was that something similar to e-GM was underway at DaimlerChrysler. However, unlike GM and Ford, DaimlerChrysler did not establish DCXNET as a functional unit. As technology has been seen as an enabler to increase process effectiveness and efficiency rather than a function on its own right, DCXNET is a temporal initiative with a limited lifetime of approximately 24 months. This reflects the perception of the Board that DaimlerChrysler did not have e-business, but rather

electronically enhanced/enabled processes. The role of DCXNET was to facilitate e-transformation by questioning legacy processes and to promote change together with process owners. According to this role, Olaf Koch had an informal contract with Dr. Cordes after he was assigned to lead the e-business initiative together with his colleagues:

I had a meeting with Dr. Cordes and I told him that I would come back in two years and ask him two questions: The first question will be: Do you have the feeling, that our effort made DaimlerChrysler more efficient and effective? If no, me and my team have failed. If yes, the second question will be: Are you convinced, that the process owners will use and further develop e-business in the future? If so, it is better to have them responsible for e-business. We will do the tracking and monitoring for some time, but there is no need for a separate organization, we can do that within corporate development.

To achieve its goals, DCXNET initiative has been organized as shown in Figure 5.

The organizational structure reflects the international core of DaimlerChrysler's activities. Furthermore, it reflects the change management approach of DaimlerChrysler. The Board did not install a separate business unit, they did not hire an external consultancy to encourage and monitor change. DCXNET has been staffed with 'car guys' from several business divisions and functional areas inside DaimlerChrysler.

The DCXNET Holding integrated and monitored all financial stakes of the company with relation to e-business. Olaf Koch was Head of strategy on the corporate level as well as e-business development. Together with John Stellman, Koch led the DCXNET Holding. Gary Dilts (Senior Vice President, eConnect Platform DaimlerChrysler) back then was responsible for the operative e-business integration at the Chrysler Group. He was also responsible for coordination of all e-business activities in the NAFTA region. Harald

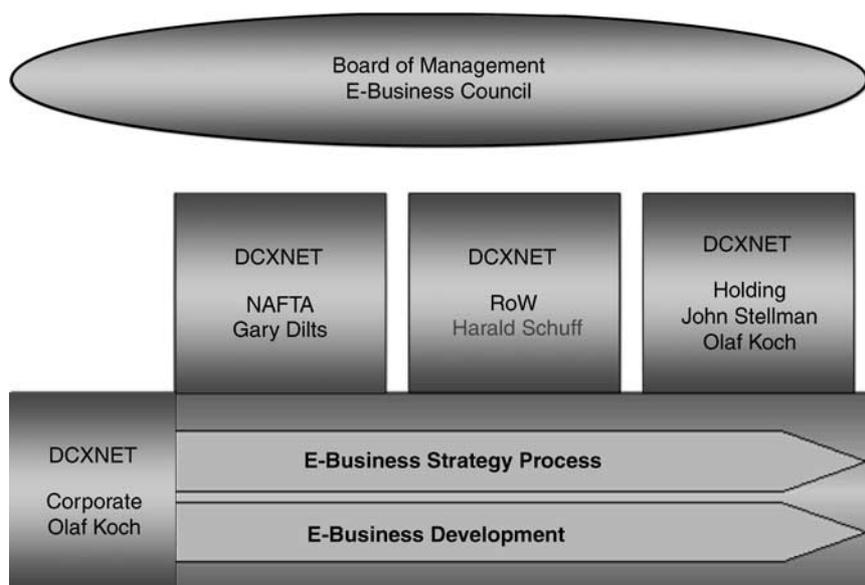


Figure 5 Organization of DCXNET.

Schuff (Senior Vice President, Development Sales Organisation) was responsible for all such activities outside the NAFTA region and for Mercedes-Benz passenger cars and commercial vehicles. Both are also in charge of the development of marketing strategies for their respective areas of responsibility.

The organization reports directly to the Board of Directors. These report meetings (internally called e-Business council) took place monthly as part of a Board Meeting and served as a coordination mechanism between all organizational units involved. Participants at these meetings were Board Members, the four e-business managers (Olaf Koch, Gary Dilts, Harald Schuff, John Stelman) of DCXNET and Sue Unger, CIO of DaimlerChrysler. The e-business council monitored all e-business activities, discussed and provided solutions for upcoming problems. By the end of June 2002, regular meetings at the Board level were discontinued, since the most important projects were underway. Since June 2002, the DCXNET initiative has taken responsibility for the monitoring of e-business projects together with Jochen Carrle, who reports to Dr. Grube.

The organization at the corporate level was staffed with 25 employees, the Chrysler Group with Gary Dilts responsible for the NAFTA area was staffed with 37 people. The procurement function worked with 72 and Mercedes-Benz car and truck division with about 50 employees from all parts of the world. A total of in all, approximately 180 employees were assigned to transform DaimlerChrysler into a networked company. One of the major challenges was to staff the new Corporate e-Business team with people familiar with the processes in high-priority areas as identified above. For the corporate level, Olaf Koch describes the profile he was looking for as follows:

Three principles led me through the hiring process: Firstly, people had to have strong ties to the divisions they were responsible for. Their personal network in the company was a key asset we needed to succeed with e-Business. Secondly people had to be enthusiastic about using information technology to enable new ways of doing business. Thirdly, since we are a temporal organization, people had to be flexible regarding their assignment and ready to move on to new challenges when our effort eventually succeeds. We all know, the staff of every division has to feel comfortable with e-business, as they are the owners of the process of implementation. I did not need some revolutionary experts, but rather moderators with a personal network in the company.

These principles reflect the implicit role model of the Corporate e-Business staff: they acted as moderators rather than advocates of change (Markus and Benjamin, 1996). Although people at DCXNET were formally internal to DaimlerChrysler, they were viewed as outsiders in relation to the change target. Thus, they were well aware of collective identities and emotional dispositions of their target groups (Fiol and O'Connor, 2002, 533).

Components of DCXNET

DCXNET consists of the following components (Figure 6):

In order to get some information about the financial dimension of the measures discussed at the meeting in April 2000, the financial department of DaimlerChrysler asked each division about their cost estimation for e-business projects. Olaf Koch describes the result as follows:

Well, this is something anecdotal. When we summed up all requests, we saw a remarkable number. It was not sky high, but remarkable. The reaction from the Board on that was remarkable too. They said: 'It's great that you want to spend the money on e-business projects. This shows us that you take the matter serious. But, we suggest that you try to integrate this in your own budget. What we are going to do is to provide resources for the best business cases. You can apply for that money and the e-Business council will make a decision'.

Although the organization had been established and announced in June 2000, not all employees at DaimlerChrysler were enthusiastic about the new DCXNET initiative. Usually, new organizations claim responsibilities, budgets and people-scarce resources. The divisions initially were concerned about the function, management style and responsibilities of DCXNET. When DCXNET staff met with division staff, there was an atmosphere of uncertainty in the beginning. For example, sales divisions of Mercedes-Benz and Chrysler were critical about the role of the internet for their business (as autoweb and autobytel emerged on the scene). However, quite quickly the unfavourable work climate changed with a direct interaction between the moderators of Corporate e-Business and target groups:

When we met our partners in the divisions, the first thing we made clear was, that they were the owners of the process and that we were a temporal unit to help them. After 15 min we had a quite relaxed conversation about e-business opportunities (Olaf Koch).

Following discussions on the objectives of the initiative, teams consisting of people from DCXNET and the departments proposed projects within the key areas identified above. The bases for these projects were the presentations, given by the divisions in March 2000 and a considerable (€550M) budget that was dedicated to be spent

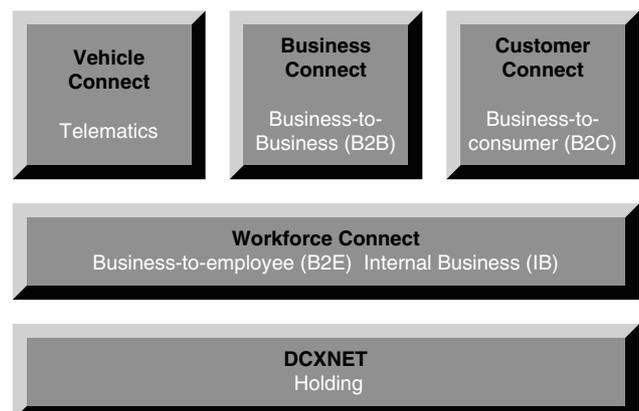


Figure 6 Components of DCXNET.

primarily on strategic investments to capture technology and intellectual capital. It even turned out later that spending of the total amount was not even necessary.

Business connect

The greatest efficiency gains were expected in the B2B area. The challenge to foresee the demand for certain products in the auto industry is more difficult than in other industries, due to longer and complex product creation and production cycles. Building a complete new segment busting model like the Chrysler PT Cruiser always implies lots of uncertainties about the market reaction and acceptance and therefore the volume planning (see Konicki, 2001 for details).

Within Business Connect, a project was launched to help solving this problem. The *FastCar* initiative aims at connecting developers, suppliers and other functional units of DaimlerChrysler (e.g. marketing) in order to provide real-time information about changes in the car configuration. ‘FastCar’ is an internet-based development platform that integrates the geometry of design with all its CAD-Data (Computer Aided Design) with the business infrastructure (suppliers, procurement and finance systems). To realize this vision, DaimlerChrysler uses i2 and Dassault Systems CAD applications. It informs and enables all stakeholders during the development of a future Chrysler Group vehicle to make immediate decisions based upon changes in weight, cost, speed and technology of the design in order to accelerate the workflow within the vehicle development process. And it engages the suppliers in the process much earlier than in the past. The business rationale of FastCar is to shorten the development cycles and to overcome communication barriers within the supply chain. Secondly, design accounts for only 5% of the overall development costs, but that 5 per cent directly affects and impacts approximately 70% of the total costs of that vehicle (DCXNET Annual Report 2001). Therefore, it is crucial to assess the impact of changes in the configuration in order to meet target costs of a development project. According to Gerbert and Birch (2001), Covisint (an acronym of **C**ollaboration, **V**ision, **I**ntegration) was a kind of shock for manufacturers worldwide, since it aimed towards the restructuring of the value chain of the automotive industry and could serve as an example for other industries as well. Launched in February 2000 by DaimlerChrysler, Ford and General Motors, it became operative in October 2000 after approval was given by US and European Control Commissions. Never before has an industry so large and complex attempted to do so much and so fast (Davis, 2001). Analysts at that time of the internet and stock market hype were enthusiastic about global marketplaces. Covisint would command \$240 Billion in purchasing power and some individuals estimated that supply chain optimization with Covisint could save up to \$3000 from the production cost of an average car (Wallace, 2000). Olaf Koch describes the business rationale of Covisint as follows:

If OEMs were to develop their own e-business solutions, suppliers would have to deal with a myriad of different applications and interfaces. This would lead to an enormous complexity within the industry. If, in the case of online auctions, every car maker would develop a separate portal for its suppliers, its own e-business tools

for supply chain management, one supplier would have to run and maintain several systems in parallel. And car makers could not benefit from joint tool development.

Covisint is an integral part of business connect within DCXNET. The functional focus of Covisint is to provide common web-based services in three areas: purchasing, supply chain management and joint product development as shown in Figure 7.

The COVISINT platform offers services in the following areas: (1) *Collaboration*, (2) *procurement* (3) *supply chain management*, (4) *quality management*, and (5) *portal features*. We will focus our description on items 1–3.

In the collaboration area, the so-called ‘collaboration manager’ provides a virtual project workspace, which facilitates information exchange, communication and coordination among members of virtual project teams.

In the procurement area, Covisint offers the following set of features:

Auctions/online biddings – after designers together with marketing and product creation come up with a specification of a new product, a manufacturer has to decide on which parts to make or buy from suppliers. Once this decision is reached, the car manufacturer traditionally enters into a so-called RFQ process, which consists basically of multiple rounds of negotiations. This time intensive activity is still a one-to-one activity that is conducted over a number of days. Companies have identified a growing need to streamline processes by electronically enabling negotiations via the Internet. Buyers can decrease the time it takes to negotiate prices and create a one-to-many sourcing environment that promotes market pricing. With the Buyer Auction tool, a buyer can establish an on-line event, invite all the participating suppliers to submit bids and conduct the auction in a matter of hours (*Source: Covisint*). Harald Brunini, GPS Car Division DaimlerChrysler says: ‘Without the internet, complex negotiations took 8–10 weeks. Now, with online bidding events, we can close a deal within 4–5 days’ (*Source: DCXNET Annual Report*).

Quote manager – is an electronic document management, analysis and collaboration tool that supports the automotive sourcing process. The tool provides a central, online repository of sourcing documentation, where documents can be posted, viewed, edited and/or downloaded by

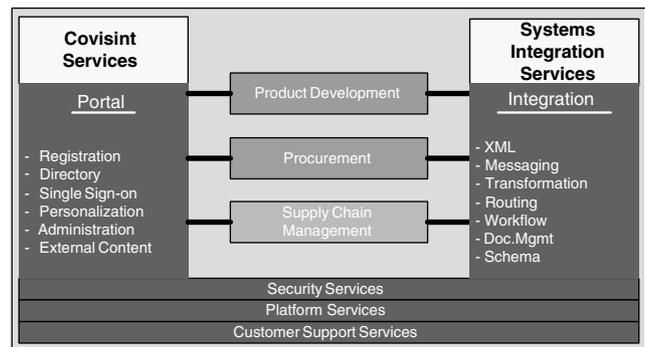


Figure 7 Services of COVISINT (Source: COVISINT).

authorized users through a Web browser. Potential users of this product include purchasing, engineering and design representatives from both buying and selling organizations.

Catalog – in order to simplify the steps in the paper-based process by which indirect or maintenance repair and operation material (MRO) is purchased, Covisint offers a catalog service. The paper-based process involves the buyer in a timely process, scanning through different catalogs to find an item and manually create a requisition and submit it for approval. Once approved, the order will be sent by fax, mail or EDI to the supplier. With the catalog feature, a buyer can order all MRO material online through a customized catalog.

Supply chain management – The supply chain management features of Covisint focus on fulfilment services for the automotive supply chain. It allows one to share information about inventory levels usage history and patterns, forecast, in-transit inventories, receipts and other relevant information between buyer and suppliers and helps one to eliminate excess inventory and premium transportation charges. The fulfilment service allows for real-time information and enables buyer and supplier to respond quickly to changes in inventory levels and consumption.

Covisint started at the time of the dot-com hype with high aspirations, but nevertheless its success remains at least on a medium level. Suppliers did not buy in the solution as quickly as estimated – by mid-January 2001 only 20 suppliers had signed up the new mega exchange. Covisint generates an annual revenue of \$60 Million, which is below projections (Sedgwick *et al.*, 2002). Kevin English, CIO of Covisint resigned in June 2002. The successor of Kevin English is Harold Kutner, a former GM executive. When Kutner retired as General Motors' purchasing chief in 2001, three supplier CEOs were among the attendees at his farewell party. Kutner has a reputation as a tough negotiator, and asked later why they honored an executive who had made their lives so difficult, one supplier quipped, 'We wanted to make sure he was really gone.' (Sedgwick *et al.*, 2002). Since the autumn of 2002 Kutner is back – with a different task, though. Rather than squeezing margins of suppliers, his mission is to convince them that the big three (GM, Ford, DaimlerChrysler) will not use Covisint as a tool to increase time pressure and market transparency for their advantage only. Covisint's most popular service are reverse auctions, that is, suppliers bid for the right to sell a specific part or component to a manufacturer and the lowest bid wins. As a consequence, a lot of the approximately 7000 suppliers who use Covisint by mid-2002 do so because there is some pressure from manufacturers. A vice president of a mid-sized supplier insists not to use Covisint since 'you can't put enough perfume on that pig to suggest that it represents quality, delivery or financial responsibility for suppliers {...}. All Covisint does is look for low bids. It's just a bid-trolling process' (Sedgwick *et al.*, 2002). In order to turn Covisint into a profitable market platform, it is crucial to achieve a critical mass of transactions to break even. That will not work without suppliers.

Customer connect

One of the most visible projects in the customer connect area is the Mercedes-Benz Portal (www.mercedes-benz.t-

[online.de](http://www.mercedes-benz.t-online.de)), launched on August 2001 as a joint venture of DaimlerChrysler and T-Online, the Internet-Provider of Deutsche Telekom. The range of services offered by the multichannel portal includes route planning with current traffic and weather reports, news, an office function with a calendar, news and transaction services for car rentals, hotels and much more. All services are accessible either from a standard browser or a WAP cellphone, Call Center, via Personal Digital Assistants and since January 2003 via the Mercedes-Benz Portal Online Package in the A-Class. Harald Schuff, Senior Vice President, Development Sales Organization & Automotive e-Business explains this strategy:

To date, our customers have generally been visiting dealerships no more than twice a year. The Mercedes-Benz portal now allows us to provide our customers with specific information on a regular basis – and stay in contact with them {...}. In addition, we can use the appeal of our premium services to attract interested visitors to our brand.

Another project of the customer connect program has been developed at the Chrysler Group. Since September 2000, MarketCenter focuses on premium (five star) Chrysler dealers in North America and offers the opportunity to buy office and workshop equipment as well as other business-related requirements bundled online via the Chrysler MarketCenter. Lower costs are due to larger buying power as well as the reduction of handling costs through web-based order processing and consolidated invoicing. DCXNET executives report cost savings of 15–20% for 52% of the 4500 Chrysler Five Star dealers who used the portal in 2001 (Source: DCXNET Annual Report 2001).

Vehicle connect

Vehicle Connect refers to telematics solutions of DaimlerChrysler. Telematics focuses on IT-enabled mobility services. Examples are:

- Information – general news, location-based services, e-mail,
- Transaction – mobile commerce, for example banking, tickets,
- Navigation – dynamic traffic information and navigation,
- Safety/Security – automatic emergency calls,
- Servicing – remote diagnosing.

One of the technological drivers of telematics is the convergence of technologies once known as separate entities, like PDAs, navigation systems, notebook computers and game consoles. A recent study of Roland Berger (Roland Berger, 2001) estimates a growth rate of 29% p.a. for mobile services and a worldwide market volume of 14 billion USD by 2006. According to Roland Berger, 38% of all car customers tend to include the availability of telematics services in their purchase decisions. Figure 8 provides an overview of some automotive telematic projects launched in North America.

Olaf Koch describes the approach of DaimlerChrysler in the area of telematics as follows: *The next hype after e-business will be mobile business. Our approach is not to*

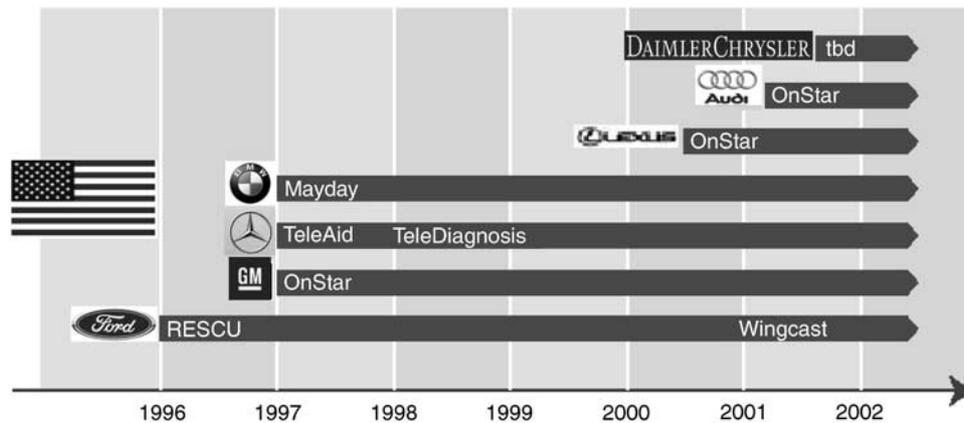


Figure 8 Telematics Services in North America (Source: Roland Berger Strategy Consultants 2001).

shape the service market which will definitely emerge around mobile services. Our purpose is to develop leading edge technology that provides the infrastructure for such services. When customers demand mobile services, we'll have the infrastructure ready to use.

As telematics is still on the brink of broad application by consumers, DaimlerChrysler offers services focused on the specific needs of the respective target groups for each brand. TeleAid for example, on offer since 1999, triggers automatic emergency calls. DynAps offers dynamic navigation services in consideration of current travel flow. In June 2002, DaimlerChrysler introduced the first reasearch-car with UMTS connectivit.

Workforce connect

DC eLife, as part of the DCXNET initiative, focuses on qualification and networking the workforce of DaimlerChrysler. DC eLife is a joint initiative of the Corporate eBusiness, Communication, IT Management and Human Resources departments under the auspices of the Board of Management member responsible for human resources. The initiative includes all employee-related e-business activities that can be accessed through the employee portal.

The portal bundles information, applications and services. DaimlerChrysler employees have access to this portal by a single sign on solution and can customize their personal portal site according to their job assignments and personal preferences. The portal displays time accounts, a job marketplace, company vehicle ordering among others. The ePeople project focuses on the standardization of administration processes related to human resources. The application is built on Peoplesoft and Paisy standard software with an underlying database and consists of three major elements:

1. Employee job marketplace – anonymous application for jobs within DaimlerChrysler,
2. Competency management – identifying suitable skills and knowledge,
3. Candidate management – standardized support for the recruitment process.

Although, DaimlerChrysler benefits from each project separately, the vision is to make DaimlerChrysler a networked company, the whole supply chain electronical,

that is, employees, suppliers and customers. To avoid a scenario as described above (remember, the problem to meet market demand of the PT Cruiser), projects of the DCXNET initiative help to tie dealer's order management software to DaimlerChrysler's order management applications (FastCar) and to link facility management systems to production and inventory management systems. A project manager is enabled to scan the corporate skillmap for talents needed and a networked supply chain avoids situations where one tier and supplier suffers from excess inventory and another one runs out of stock because sales forecasts did not match reality. Key is electronically enhanced flexibility, Gary Dilts says:

If you can assemble the car electronically, create a production schedule at the factory using real time tools, and handle fulfilment using another integrated set of tools, you can ramp up production very quickly (Konicki, 2001).

Results, success factors and issues for the future

Results

When Olaf Koch met Eckhard Cordes to negotiate the terms for his new assignment at DCXNET in 2000, his first question was, 'Do you have the feeling, that our effort will make DaimlerChrysler more efficient and effective?'. Both indices have a direct impact on the balance sheet. The next section provides an overview of the achievements:

- *Business Connect/FastCar*: Early 'FastCar' results have yielded a 60–90 per cent reduction in the average time required to communicate changes to the vehicle development process. FastCar will also contribute significantly to the speed in which DaimlerChrysler will bring new vehicles to market, thereby increasing its competitive edge.
- *Business Connect/Covisint*: Online Bidding Events reduced the time for complex procurement negotiations from 8–10 weeks to 4–5 days. These time savings reduced time to market and cut procurement costs. Within 12 months from February 2001, OBE accounted for €10 billion in 510 OBEs at DaimlerChrysler. This accounts for one-third of the procurement amount spent in all new contracts for 2001. The process time has been reduced by

80% through e-procurement, and as Dr. Grube says: *The net effect of e-procurement covers all investments in e-business related activities, which shows the great potential of a networked value chain.*

- *Business Connect/Quality Management:* In May 2000, DaimlerChrysler announced a partnership with powerway.com to develop a web-based process that allows for standardized quality management procedures. The solution provides real-time monitoring of quality management activities of DaimlerChrysler and its suppliers. Process time of quality management processes has been cut by 50%.

The second question referred to the commitment of the functional units of DaimlerChrysler to use existing e-business solutions and their willingness to take responsibility for further developments. A good example for success in this area is the procurement function of Mercedes-Benz, as Olaf Koch says: *'Well, a good example here is Johannes Rudnitzky (Head of Procurement Mercedes-Benz Passenger Car & smart). Rudnitzki has 30 years of experience in the procurement area and is a respected person in the car industry. If somebody like him leads the biggest online auction and commits himself to e-business publicly, you have achieved a breakthrough.'*

Similarly, Günter Fleig, member of the Board and responsible for human resources says: *'Through the internet and its application in DC e-life, we provide fast information access and allow for effective and efficient knowledge management. Thereby, we secure maximum flexibility of our employees and enhance our appeal as employer.'*

Success factors

The story of DCXNET is tied to a set of aspects that influenced its success:

- Diverse role model of change agents,
- 'Old hands' are to be convinced,
- Cultural aspects of e-transformation,
- Divisions are process owners,
- Strong mandate from the board.

We will discuss these aspects in the next sections.

Diverse role model of change agents

Markus and Benjamin (1996, 385) identify role models for change agents and argue that *'behavioural flexibility {...} – the ability to switch roles in different circumstances – would improve organizational effectiveness'*. Although the management philosophy of the DCXNET organization focused on cooperation and mediation, the use of e-business tools was all but optional. The pressure on DaimlerChrysler executives from outside rose steadily with every announcement of GM or Ford until March 2001. Consequently, the Board expected results from e-business efforts. So change agents have been in a dilemma: on the one hand, they had to win support from their partners in the divisions by cooperation. On the other hand, they had a clear assignment from the Board: enhance effectiveness and efficiency by electronic means.

The organization responded on this challenge in an interesting way. Firstly, DCXNET management hired staff

from within DaimlerChrysler, well-respected employees who had a strong network within the company. So, staff of DCXNET were familiar with communication codes and processes of their target groups and, *'they could open doors to fields, where we could test some e-business functionality without great publicity'* (Olaf Koch). Secondly, the Board monitored all activities (e-business council) and every division had to report directly to the Board, not to a DCXNET executive. Thereby, the Board had to be convinced, when goals were not achieved or projects stuck and DCXNET could play its role as a mediator. On the other hand, the Board tried to facilitate and accelerate e-business efforts by direct communication on a peer level. Thirdly, the preparation of e-business council meetings had a coordinating effect: Divisions and DCXNET staff had to orchestrate their activities in order to present a coherent picture of e-business activities to the Board. This effect provided some cohesive power in a turbulent and culturally diverse environment.

The role of the Board

The transformation of legacy processes into e-enabled business processes cannot be achieved without a strong mandate from the board. After all, not all business units were amused by the idea of changing their processes. The authority of a decision made by the board of directors was the basis of the success of DCXNET:

It was crucial for every e-business project that we had top management attention, including our CEO Jürgen E. Schrempp. The Board allocated funding and personal attention on e-business. On the other hand, they wanted solutions developed and approved by the divisions. (Olaf Koch).

'Old hands' are to be convinced

In addition to the support by the Board of Directors, DCXNET staff had to win support of key players at DaimlerChrysler which had direct responsibility for the processes to be transformed by electronic means. As mentioned above, some businesses of DaimlerChrysler have considerable freedom in their lines of activity – and their performance is measured by a simple index: operating profit. As the salaries of plant managers and division executives are tied to their performance by a certain degree, change agents have to be able to develop a viable business case together with their target groups: if e-business can be communicated as a potential profit booster, there is a strong incentive for executives to transform their businesses. That is why staff from DCXNET relied heavily on cooperation and not hierarchical coordination.

E-transformation as a process innovation can be characterized from a diffusion point of view. According to Rogers (1995, 5), diffusion is *'the process by which an innovation is communicated through certain channels over time among the members of a social system'*. A key variable of diffusion obviously is communication. Communication provides for a mutually shared understanding of goals and tools in the change process. A crucial question for a change agent, how to spread the message of e-enhanced processes.

Old hands can be used for communication purposes, that is, their opinion leadership as 'the degree to which an individual can informally influence other individuals' attitudes or overt behaviour in a desired way ...' (Rogers, 1995, 354). If change agents get opinion leaders to use e-business tools, others will be more inclined to use them too: As Olaf Koch says, the commitment of Johannes Rudnitzky as a well respected executive was a breakthrough for DCXNET.

Cultural aspects of e-transformation

DaimlerChrysler's employees have strong cultural ties with their local sites (on both sides of the ocean). Although the merger has taken place in 1998, the complete transformation into one company is still on its way. Unlike Chrysler, which has been run by a central coordination approach, Daimler-Benz allowed their managers significant autonomy, which resulted in strong plant cultures. When e-business is regarded as a toolset driven by operational units, the most important task of change agents is communication in direct interaction. That is, e-business managers and change agents had to address their target groups in different ways according to their cultural disposition. Rogers (1995: 19) argues, that communication among people who are similar in certain attributes 'is more likely to be effective'. Thus, DCXNET staff and management have been chosen from the target group itself and they were able to get the message of e-business across. Let us have a closer look on the concept of culture. According to Schein (1984), organizational culture can be described at three levels:

- Artefacts and creations (e.g. technology, visible and audible behaviour patterns),
- Values (e.g. standards, guide-lines),
- Basic assumptions (e.g. nature of reality, time and space).

As e-business aims at the transformation of work processes, the DCXNET initiative affected (and has been affected by) the organizational culture of DaimlerChrysler, respectively, the cultures of the divisions involved. For example, the FastCar project at Chrysler aims towards more transparency and faster results in the development process. These goals are tied to information sharing and cooperation among developers within the company and even suppliers. Change agents will have a difficult time, if engineers do not feel comfortable with information sharing and cooperation. Even worse, if engineers come from former rivals like in the case of DaimlerChrysler, information hiding as a reaction to maintain local identities is a major threat for success. However, as Koch says, DCXNET did benefit from the merger in 1998: 'The merger in 1999 was helpful for the DCXNET initiative. We were about to strengthen our international culture and people felt the need to network their activities on both sides of the ocean. For example, we established English as our corporate language and we introduced PMI (Project Management Institution) reporting structures based on a Lotus Notes application in 1999. This reflects our commitment to provide anytime/anyplace office environments on international standards. Furthermore, our employees were familiar with electronic tools for business coordination - thus it was not necessary to

run a separate 'e-business culture' project. Most of our partners at DaimlerChrysler were familiar with basic elements of e-business-related work practices'.

Divisions are process owners

The transformation of conventional business processes towards a fully integrated value network at DaimlerChrysler has been driven from inside, not by an external unit. How can change agents achieve commitment to change in their target groups? One crucial element of this achievement has been that business units were responsible for the change process and not DCXNET. That is, DCXNET staff triggered, supported and monitored change processes on the basis of a business case. Process redesign and the deployment of e-business technology like the collaboration manager from Covisint or quality assurance tools from powerway.com were issues mainly to be addressed by business units, not DCXNET staff. Success and failure have been the responsibility of the business units and both are compatible with the reward system of DaimlerChrysler.

Lessons from the past and issues for the future

The e-business hype is over and the next one is breaking ground - m-business. Waves of innovation are not new, neither for IS researchers nor for IS professionals. What can be learned from this wave of innovation? The next section suggests some implications of the case of DCXNET.

External communication is important

As we have seen, DaimlerChrysler communicated effectively with internal stakeholders. However, external communication was important, too. The company was a late mover in an environment obsessed by speed. This approach can be effective, but it can be dangerous too. Firstly, in a company driven by shareholder value, analysts and rating agencies play a central role by interpreting business-related information. The frame of reference of these people was, as major parts of the 'internet economy' were, driven by the idea to make processes faster. Consultancies coined buzzwords like 'B2B OR NOT TO BE' or 'E OR BE EATEN'. During the dot-com hype, patience was no attribute of shareholders and, as competitors announced their internet units to take advantage of a process innovation like e-business, pressure on DaimlerChrysler rose to do *at least something*. Despite pressure from outside, the board demanded a well-informed e-business strategy on the basis of the corporate planning process. This provided for a deeper understanding of e-business and its impact on DaimlerChrysler's operations. Based on this insight (and rising operating profits), the board could stand the pressure and deliver answers to analysts.

Assess the impact of the innovation on the industry structure and your business processes

First movers often command a premium for their ability to adapt new technology swiftly. The consequences of being a late mover depend on the impact an innovation has on business processes and industry structure. If information technology alters one or both, (e.g. decreasing costs per

unit through economies of scale or increased process speed through electronic sales processes or overall networked processes), the late movers' margins will be squeezed and it can be too late, if competitors drive quality, prices or services in unreachable regions for companies which did not take advantage of the innovation earlier. In that sense, e-business was no disruptive innovation for the car industry (until today). Neither established manufacturers nor market entrants succeeded in selling cars on the internet. Rather than being disruptive, e-business made some companies more efficient than others and allowed for process innovation that enhanced the quality of the core product.

Risk assessment and support of the IT function are crucial
This statement seems to be a commonplace, but was often neglected in the early days of e-business. As e-business is related to a set of socio-technical processes and product innovations, risks may arise from technical, organizational and personal issues. Process innovations require the ability to change legacy processes and therefore means to accomplish change. The integration of legacy systems and e-business tools is not at all trivial and may fail without thorough analysis. The central IT Function of DaimlerChrysler played a vital role in assessing technology-related risks and managing the integration of legacy systems into e-business solutions. Without the support of the CIO and her organization, DCXNET would not have been successful. The dot-com hype (and its downturn) around e-business damaged the reputation of the IT – and consulting industry severely. As Olaf Koch says: *The IT industry set the pace and sometimes people joined the hype without considering the risk. And when the hype was over, or 'fool prove' technology failed, people had to deal with wrecked projects which will never achieve their business goals. This happened too often in the early days of e-business.* Thus, one of the lessons that can be drawn from the story of DCXNET and its context is that the IT- and consulting industry will have a hard time re-establishing trust in their relationships with clients and shareholders.

Alignment between IT and strategy is key

The DCXNET initiative was a reaction on external pressure and the perception of the Lagezentrum that an innovation might alter ways of doing business. One of the most important questions for IT management is the alignment of business needs and IT investments and how waves of IT innovation can be identified and dealt with proactively. Alignment between IT and strategy can be defined as 'convergent intentions, shared understanding, and coordinated procedures' (Shams and Wheeler, 2001). According to Chan (2002), 'Strategic alignment means the fit between the priorities and activities of the IS function and the business unit. The goal in strategic alignment is for IS priorities, capabilities, decisions, and actions to support the entire business. Structural alignment means the degree of 'structural fit' between IS and the business. Structural fit relates to organizational structure and includes such areas as the location of IS decision-making rights, reporting relationships, (de)centralization of IS services and infrastructure, and deployment of IS personnel'. In an empirical

study which explored alignment in eight US-based firms, Chan (2002) reports four interesting observations:

1. Structural alignment varied by organization; there was no one right way.
2. IS strategic alignment mattered more than formal IS structural alignment.
3. Flexibility of IS structures was important.
4. The informal organizational structure important to IS alignment than commonly recognized.

Chan concludes that the informal organizational structure might be the single most important aspect in creating the ability to exploit waves of IT innovation. That is, informal relationships between IT and other parts of the business can be viewed as the infrastructure of an early warning system for information systems innovations.

Acknowledgements

We thank DaimlerChrysler Corporation for the permission to analyse the e-transformation efforts of the company. Special thanks to Mr. Olaf Koch, Vice President Mercedes Car Group, who provided valuable insight and all necessary assistance to complete the teaching case.

References

- Chan, Y.E. (2002). Why Haven't we Mastered Alignment? The Importance of the Informal Organization Structure, *MISQ Executive* 1(2): 97–112.
- DaimlerChrysler (1998). Rekordzahlen für 1998 [WWW document], http://www.daimlerchrysler.com/news/top/1999/t90331d_g.htm (accessed 25th November 2002).
- Davis, J. (2001). Some Assembly Required [WWW document], <http://www.business2.com> (accessed 23rd September 2002).
- The Economist (1999). Riding the Storm, *The Economist* (November 4th 1999).
- The Economist (2000a). Internet retailing: The boring bits [WWW document], http://www.economist.com/displayStory.cfm?Story_ID=312262 (accessed 11th August 2002).
- The Economist (2000b). A market for monopoly? [WWW document], http://www.economist.com/PrinterFriendly.cfm?Story_ID=82366 (accessed 15th June 2000).
- Erdener, A. (2000). Boo Makes Boo-Boos – Why Boo.com Didn't Survive the Internet, Stuttgart Institute for Management and Technology, Germany *Information Management* (Fall 2000). Unpublished Thesis.
- Fiol, C.M. and O'Connor, E.J. (2002). When Hot and Cold Collide in Radical Change Processes: Lessons from Community Development, *Organization Science* 13(5): 532–546.
- Gerbert, P. and Birch, A. (2001). *Digital Storm*, Oxford: Capstone.
- Konicki, S. (2001). Ready for a Recession? [WWW document], <http://www.informationweek.com> (accessed 20th September 2002).
- Markus, L. and Benjamin, R.I. (1996). Change Agency – The Next IS Frontier, *MIS Quarterly* 20(4): 385–407.
- Rogers, E.M. (1995). *Diffusion of Innovations*, Fourth Edition, New York: The Free Press.
- Roland Berger (2001). Telematics: How to hit a moving target [WWW document], <http://www.rolandberger.com> (accessed 1st October 2002).
- Sambamurthy, V. and Zmud, R.W. (1999). Arrangements for Information Technology Governance: A Theory of Multiple Contingencies, *MIS Quarterly* 23(2): 261–290.
- Schein, E.H. (1984). Coming to a New Awareness of Organizational Culture, *Sloan Management Review* 25(2): 3–16.
- Sedgwick, D., Kisiel, R. and Sherefkin, R. (2002). Analysis: Kutner has tough task at COVISINT [WWW document], <http://www.autonews.com/printStory.cms?newsId=2678> (accessed 20th September 2002).
- Shams, R. and Wheeler, F. (2001). Information-induced strategic alignment: Towards a semiological analysis, *Managing Information Technology in a Global Economy*, 2001, p. 1097. 2001.
- Wallace, B. (2000). Industry optimizes supply chain [WWW document], <http://informationweek.com> (accessed 20th September 2002).

About the authors

Univ-Professor Dr. Helmut Krcmar holds the Chair for Information Systems at the Department of Informatics, Technische Universität München (TUM), Germany since 2002. He worked as Post Doctoral Fellow at the IBM Los Angeles Scientific Center, as Assistant Professor of Information Systems at the Leonard Stern School of Business, NYU, and at Baruch College, CUNY. From 1987 to 2002 he was Chair for Information Systems, Hohenheim University, Stuttgart. From 2000 to 2002 he served as Dean, Faculty of Business, Economics and Social Sciences. Since 2004 he is board member of the Elite Graduate Program 'Finance and Information Management (FIM)' within the Elite Network of Bavaria. He serves as Academic Director for the qualification program 'communicate' since October 2003 and as scientific director for CDTM (Center for Digital Technology and Management) since April 2004. His research interests include Information and Knowledge Management, IT-enabled Value webs, Service Management, Computer Supported Cooperative Work and Information Systems in Health Care and eGovernment.

Dr. Arnd Klein studied economics and information systems in Hohenheim and Bradford from 1992 to 1998. He holds a degree in economics from the University of Hohenheim. His Ph.D. thesis (2004) focused on adoption of electronic meeting systems. Currently, he is responsible for IT business development retail at smart gmbh.

Appendix A

With 372,500 employees, DaimlerChrysler achieved revenues of EUR 152.9 billion (\$136.1 billion) in 2001 (see Table A1).

Appendix B

Teaching case questions

- Briefly describe the business model of autobytel.com.
- What is meant by the term e-business? Structure your answer in a useful way. Suggested reading: (Gerbert and Birch (2001)).
- Within the context of Porter's 'Five Forces' model, how will the internet influence DaimlerChrysler's competitive position. Include the activities of GM and Ford into your line of arguments. Describe the business model of autoexchange and discuss ramifications for the car industry. Suggested reading: (Anonymous, 2000).
- Briefly discuss alternatives to the management approach chosen for DCXNET.
- DaimlerChrysler decided to drive e-business development from inside. Discuss alternative organizational options and their advantages/disadvantages.
- Visit Covisint on the internet (www.covisint.com) and describe the collaboration manager tool in detail. What is the business rationale of collaboration along the value chain? Which features are crucial?
- What are prerequisites of Online Bidding Events for manufacturers and suppliers regarding organization and technology?
- Describe the concept of Supply Chain Management.
- Discuss reasons why suppliers might hesitate to join Covisint. Search the web for alternatives of Covisint. Describe and compare their features.
- Develop and discuss measures for the Board of Covisint that might help to convince suppliers to sign up to Covisint.
- What is the business rationale of the Mercedes-Benz portal? Which services could be based on accurate

Table A1 Key-figures of DaimlerChrysler 1999–2001

<i>DaimlerChrysler Group Amounts in millions</i>	<i>01 US \$^a</i>	<i>01</i>	<i>00</i>	<i>99</i>	<i>01:00 Change in %</i>
Revenues	136,072	152,873	162,384	149,985	−6 ^b
European Union	40,624	45,640	50,348	49,960	−9
Of which: Germany	20,612	23,157	25,988	28,393	−11
North America	81,814	91,916	95,939	87,083	−4
Of which: USA	72,216	81,132	84,503	78,104	−4
Other markets	13,634	15,317	16,097	12,942	−5
Employees (at year-end)		372,470	416,501	466,938	−11
Research and development costs	5348	6008	7395	7575	−19
Investments in property, plant and equipment	7918	8896	10,392	9470	−14
Cash provided by operating activities	14,192	15,944	16,017	18,023	−0
Operating profit (loss)	(1173)	(1318)	9752	11,012	—
Operating profit adjusted ^c	1197	1345	5213	10,316	−74
Net income (loss)	(589)	(662)	7894	5746	—
Per share (in US \$)	(0.59)	(0.66)	7.87	5.73	—
Net income adjusted ^a	650	730	3481	6226	−79
Per share (in US \$) ^c	0.65	0.73	3.47	6.21	−79
Total dividend	893	1003	2358	2358	−57
Dividend per share (in)		100	235	235	−57

^aRate of exchange: 1 – US \$0.8901 (based on the noon buying rate on December 31, 2001).

^bA 1% decrease after adjusting for changes in the consolidated Group.

^cExcluding one-time effects, see pages 54–60.



- information about consumers preferences? What are possible reactions of car dealers?
12. What is the potential benefit of MarketCenter for DaimlerChrysler?
 13. What are the aspects (technical and organizational) that might facilitate the commercial breakthrough of telematics? What are important questions related to telematics for the Board of a car manufacturer? Who are important players in the market?
 14. Should a company establish a global and standardized HR portal? Discuss advantages and drawbacks.
 15. Briefly describe the role models of change agents from Markus and Benjamin (1996). Which fits best to the approach of DaimlerChrysler?
 16. Analyse the MB Portal project and Covisint from a cultural point of view. Use the framework developed by Schein (1984).
 17. Describe the impact of e-business on the car industry. Use a structured approach for your description.
 18. What is alignment about? Which organizational unit should be responsible for alignment? Should alignment be considered as a process of negotiation between the IT function and corporate development or is a separate structure necessary? Which information might be helpful for your decision? (Suggested reading: (Sambamurthy and Zmud, 1999; Chan, 2002).