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## **THE CHALLENGE OF THE DATA HIGHWAY FOR SMALL AND MEDIUM-SIZED ENTERPRISES**

### ***Introduction***

Small and medium-sized enterprises (SME) are one of the main economical pillars for most countries in the European Union and for the German economy in particular. The importance of SME, i.e. companies that employ less than 500 people, for the German economy is reflected by the following figures: at about 90 % of the companies in Germany are SME, they employ 66% of all employees and train almost 85% of the apprentices.

The competitive advantage of SME is generally based on their ability to react quickly on customer demands. They compete in small market niches with a specific knowledge. But the competitive edge of SME in comparison to big companies vanishes. Big companies recognized the problem of inflexibility and started in the last few years splitting up their organisation in smaller, more flexibel business units. Thus, they adapted a specific feature of SME to gain a broader market position.

Further the globalisation of the world economy demands a high standard of international business knowledge. SME have to change their strategic target system from a close national or even regional sight towards an international strategy to keep and broaden the market position.

In 1994 the German research ministry initiated the research program „Production 2000“ for analysing the needs of the German economy related to the changing economical and business structures and to give solutions to the challenges of future tasks. Due to the

important role of SMEs in the German economy, one research field dealt with the specific problems of SME. „Production 2000“ started in July 1994 with an one-year preliminary research study in which research teams had to extend the research fields for a large number of subsequent projects, which are based on the results gained in the preliminary study.

### ***Research Project "CONCERT"***

The Institut für Wirtschaftsinformatik (IWi) at the University of Saarland was appointed to realise and coordinate the preliminary research project for SME. The institute focused on the possibilities of cooperation between SME and how to meet the upcoming challenges by that mean. Hence the project was called „CONCERT“, which is (in german) an abbreviation for „networking cooperation models for SME“.

There is a wide range of project partners integrated in the project to get a broad sight on the problems and structures of SME. Beside several SME, institutions which are closely related to SME were integrated: consultancies for SME, unemployment offices and chambers of commerce. The institute chose two different project locations based in two different states to take into consideration specific federal problems related to the German re-unification: The Saarland representing the Western part and Sachsen as an example of a "new" federal state located in the Eastern part of Germany.

### ***Approach***

The research project CONCERT is subdivided in four potential fields, in which SME typically have lack of resources and potential to cooperate:

- Products and Markets
- Employees/Qualifications
- Product Technology
- Information/Organisation

Each of the four fields was examined subsequently within a time of three months. The proceeding in analysing the different points has been divided by the research team in the two subsequent steps. In the first step of the research work - desk research - existing research results, statistics, literature etc are analyzed. In the second step - field research - questionnaires were drawn up in cooperation with the project partners and exemplary

SME were selected for interviews. On base of desk research and case studies problems in the different fields could be identified. In the end of each potential cooperation field the results were presented to the project partners and discussed exhaustively.

In the following, a general overlook will be given over the problems, which are identified in the different cooperation fields (see figures in appendix).

### ***„Products/Markets“ - Problem Areas***

Four different problem areas were identified in the first possible cooperation field.

- **Innovation/Products:** SME are not able to do sufficient market research and subsequently base their product ideas mainly on intuition. They do not perceive market trends and hence they cannot deduce the opportunities for their range of products.
- **Quality:** Quality problems often are the consequence of an insufficient definition of customer requirements.
- **Communication:** Promotion is not correctly targeted to the segment as SME do not know using the right communication mean for their target group. Besides insufficient sales forces, especially in the new states the distribution channels are instable.
- **Location/New Markets:** The market prospectives in regional markets are low and require the extension of the activities to international markets. SME are not able to cope with the problems resulting from an internationalisation of the activities. The problems in finding a suitable market are not only enhanced by the lack of financial resources but also by cultural and language problems.

### ***„Employees/Qualifications“ - Problem Areas***

The problems in this field are based on demographic, technological, economic changes and the change of personal values. The research team identified three different problem areas.

- **Personnel planning and recruitment:** SME can not identify precisely the requirements of future employees. Hence the personal profiles and the job specifications are too general. The planning is too short ranged.
- **Personnel development:** SME are not able to meet the technological changes by training their staff and suffer a lack of high tech staff. Further on, they do not have a

strategic resp. structured personnel development but rather intuitive decisions. Another problem for the SME is the to less specific training provided by external agencies and representations of interest. The internal training as an alternative is too expensive and for most of the SME not affordable.

- Corporate culture: SME are often steered exclusively by one person. Hence the communication and cooperation depends on the behaviour of the leader. An autocratic style causes lack of motivation among the employees. Lack of motivation is almost a "warrant" for quality problems.

### • **„Production Technology“ - Problem Areas**

The research team identified four different problem areas.

- Production planning and control: As delivery dates become shorter, the run through has to be diminished. This requires an efficient production organisation. In reality, organisation often is badly structured, machines run below capacity and the information systems are not consistent.
- Investment: SME have old machines, have not any strategic investment planning and cannot afford the high priced machines. Hence the lack of modern assets causes a lack of quality in the production.
- Qualifications: SME have a need for specialists but it is very problematic for them to attract well educated employees due to better loans and working conditions in big companies.
- Environmental Protection: The surging number of environmental laws and restrictions causes that environmental management systems become increasingly important. But SME have lack of knowledge to introduce that kind of system in the production area.

### • **„Information/Organisation“ - Problem Areas**

The research team is working in that cooperation field at the moment.

#### **Future Options**

The flow of information and the communication has been identified as one of the main problems. The research work identified the need for information about markets, technology, products, qualification etc. SME need efficient information structures and systems to cope with the surging flood of information. They also need new instruments

that enable new organisational structures. The Data Highway<sup>1</sup> and the effective use of new information technologies e.g. offer SME new forms of cooperation to keep a competitive edge in market.

The virtual corporation is closely related to this vision. A virtual corporation is a temporary network of independent companies, e.g. suppliers, chambers of commerce, authorities, customers and even competitors, linked by information technology to share their specific skills and information. The main feature of a virtual organisation is that it neither has a central office nor hierarchical structures. The competitive advantage of this new form of cooperative organisation is its flexibility and ability to react on changing environmental conditions in a very short time. They come together quickly to exploit fast-changing opportunities on a very informal base.

### ***Conclusion***

SME are one of the main economical pillars for most countries. Their competitive advantage is generally based on their ability to react quickly on customer demands and specific knowledge in small market niches ("close to the market"). The competitive edge of SME is threaten by several changes: for example big companies split up their organisation in smaller, more flexibel business units. This units adapt a specific feature of SME. And this units are integrated in a broad company network where they can obtain resources and know-how.

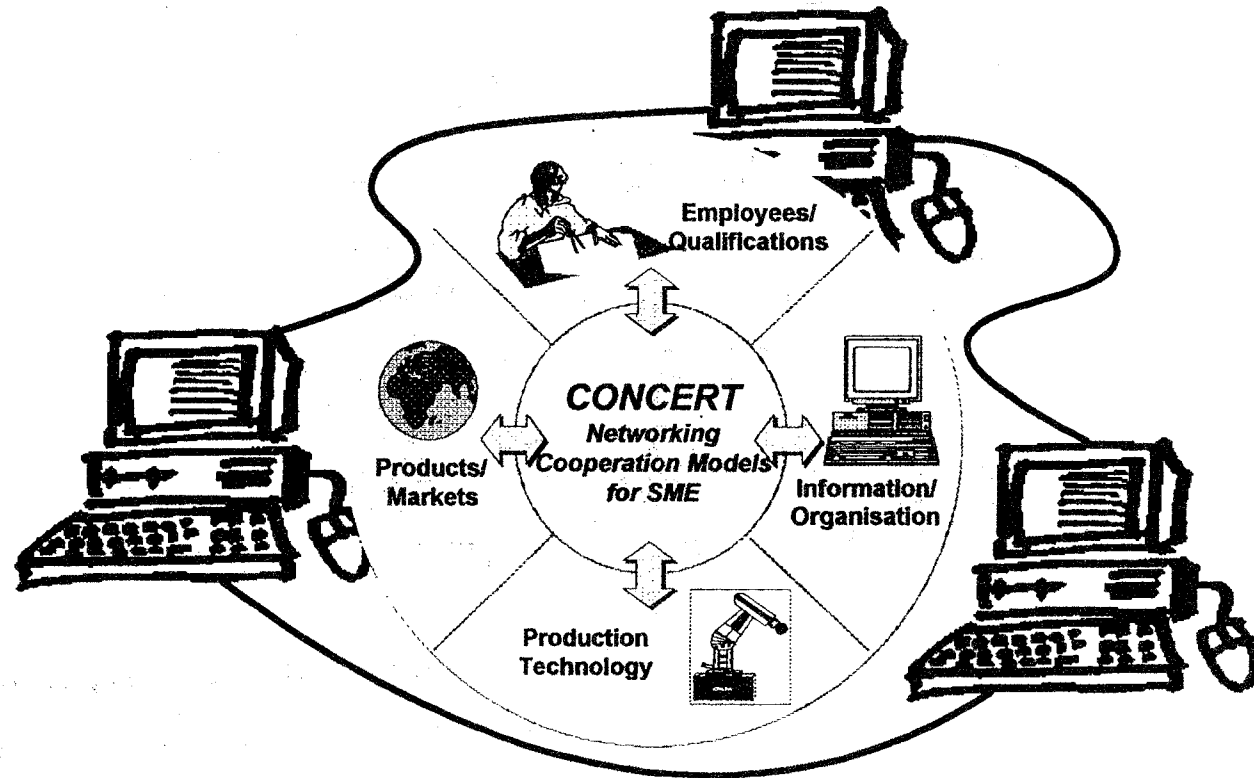
The Data Highway and new information technologies offer SME new possibilities of cooperation to keep a competitive edge in market. Virtual corporations link SME by information technology to share their specific skills and information. Experts call the virtual corporation the management model of tomorrow.

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<sup>1</sup> At the moment the INTERNET is the prototype of the Data Highway. The INTERNET is a vast international network that enables computers of all kinds to share services and communicate directly.

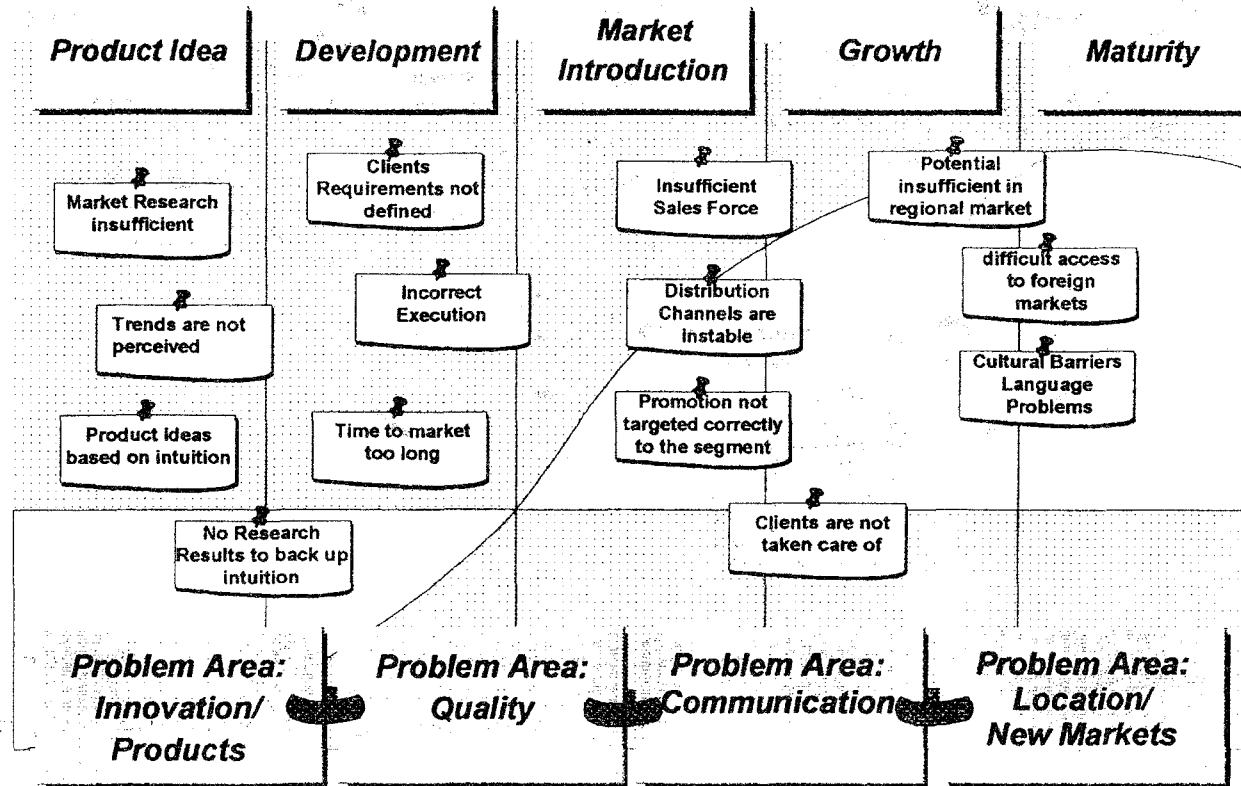
# CONCERT - Networking Cooperation Models for SME

## The challenge of the Data Highway

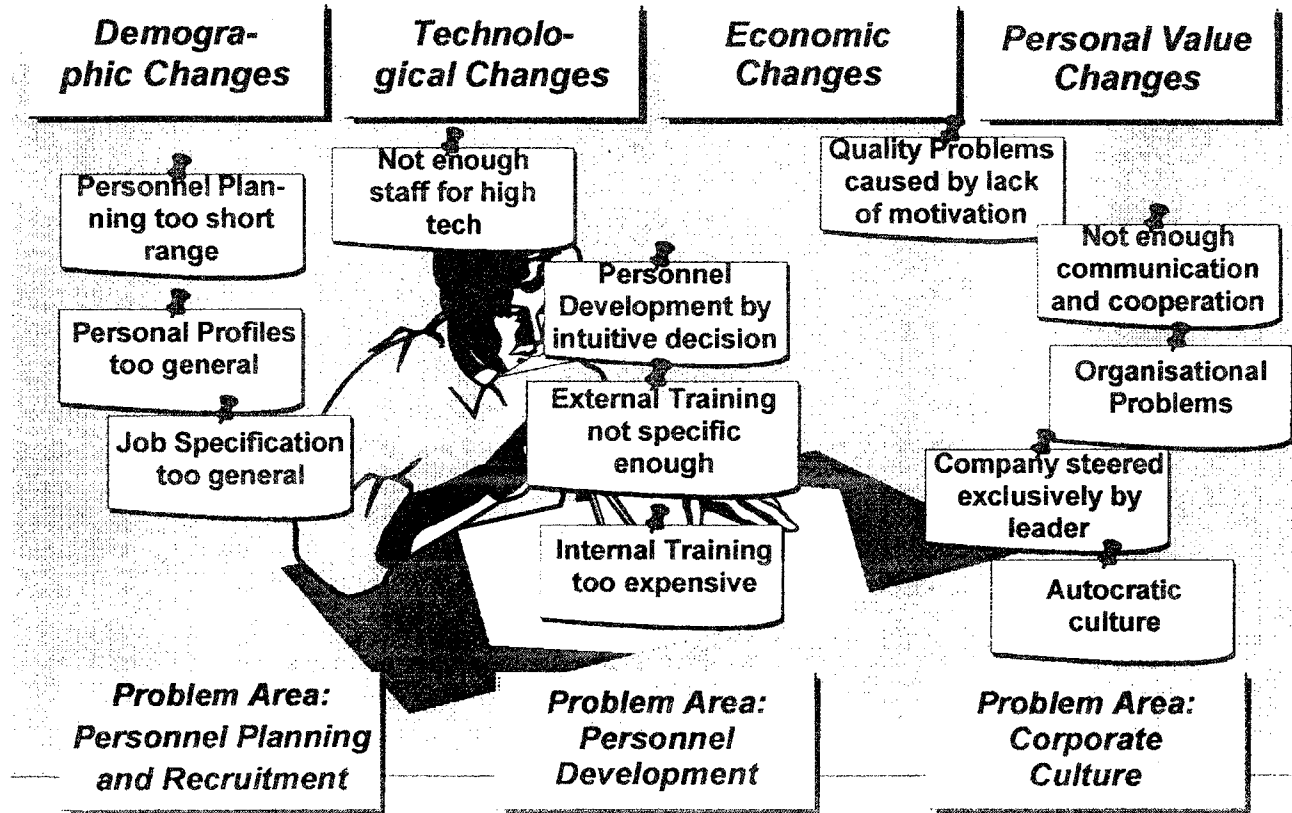


CONCERT - Networking Cooperation Models for SME

"Products/Markets" - Problem Areas

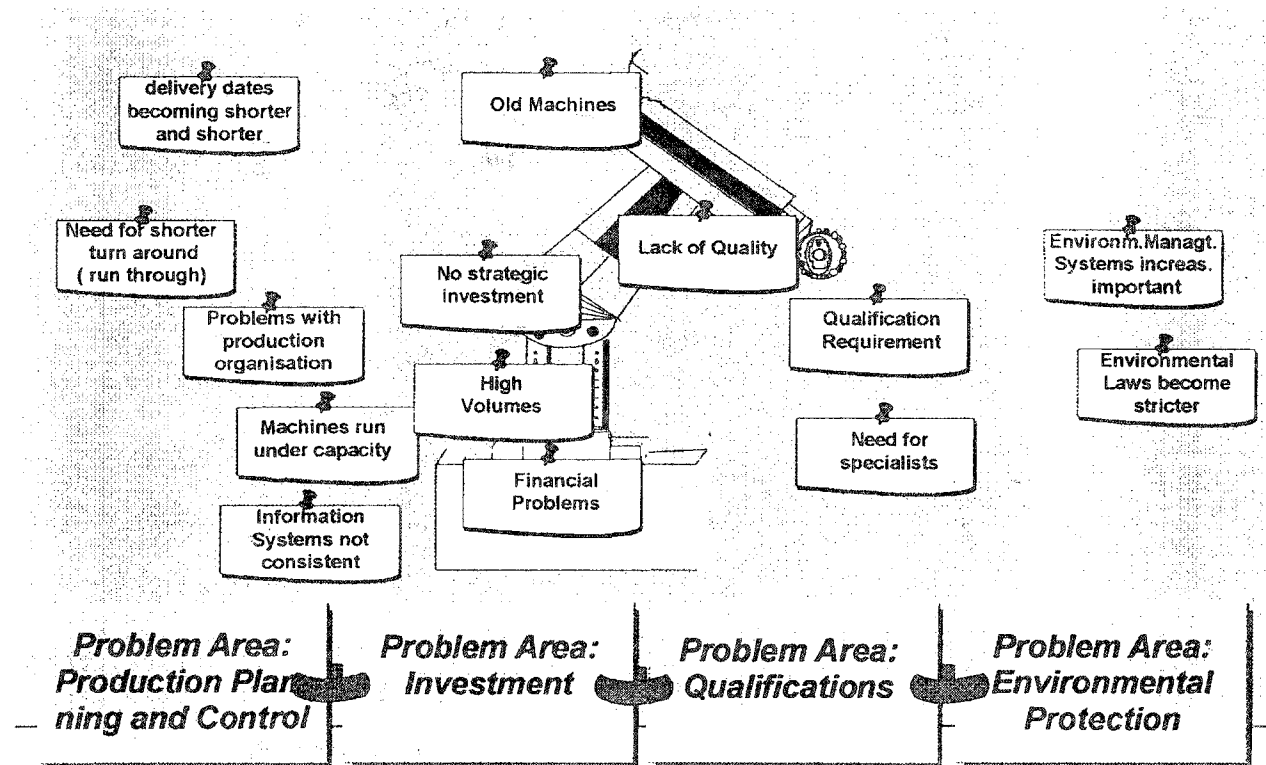


"Employees/Qualifications" - Problem Areas





"Produktion Technology" - Problem Areas



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INFORMATYKI GOSPODARCZEJ**

**II Międzynarodowa Konferencja Informatyki Gospodarczej**

**INFORMATION TECHNOLOGIES  
IN  
BUSINESS REENGINEERING**

Redakcja naukowa: prof. dr hab. Tadeusz Kasprzak  
Opracowanie techniczne: mgr Renata Sapór

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**Rynia, maj 1995**