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# **Information and Knowledge Visualization in Development and Use of a Management Information System (MIS) for DaimlerChrysler**

## **A Visualized Dialogue and Participation Process**

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### **Abstract**

The contribution outlines the process and the results of the development of a computer system for DaimlerChrysler. The task was to create a Management Information System (MIS) for the leaders of the department of research and technology responsible for technical innovations and the management of technology. The MIS was conceived as a tool for strategic decision making, for sharing experiences, as a knowledge and information repository, and as a dialogue platform for opening up possibilities for continuous collaboration and dialogue about task-relevant information, operating data, and knowledge for directing research and development projects. The contribution focuses on how the dialogue and participation process of different partners as well as the results of the development process are visualized and integrated into the system.

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### **3 Client and Project Aims**

DaimlerChrysler is one of the leading companies in the automotive industry with 362,100 employees worldwide (at year-end 2003). DaimlerChrysler's product and service portfolio ranges from passenger cars and commercial vehicles to financial and other automotive services. The task was to create a Management Information System (MIS) for the leaders of the department of research and technology. This is DaimlerChrysler's central function for technical innovations and the management of technology. At several locations in different countries around the world approximately 28,000 employees work in the field of innovation. The MIS was conceived as a tool for strategic decision-making, for sharing experiences, as a knowledge and information repository, and as a dialogue platform for a continuous dialogue about task-relevant information, operating data, and knowledge for directing research and development projects. This is the basis for new products and processes as well as for strategies in technology. For managing the department as well as for directing research and development projects it is important that relevant, up-to-date and consistent information is quickly available to leaders. This information should be easy to find and to present. Content has to be identical for all the users.

The aim was to create a Management Information System with high up-to-dateness and flexibility, suiting the users' needs, processes and visions as far as possible. The basic idea was to develop not only a tool with a control function, but also a general homogenous information and dialogue platform with intuitive qualities and to create a knowledge and information space.

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## 4.2 The Role of the Dialogarchitect®

In order to visualize the dialogue and participation process as well as to represent the network of knowledge and information relevant for users a powerful visualization tool has to be used. The Dialogarchitect® (registered trademark of Hans-Jürgen Frank) develops and uses images and space structures for improving effectiveness and for facilitating dialogue and the creation of good intentions between different cultures by designing and simulating win-win situations. Dialogue between different cultures does not only mean between different nationalities, but also between different professional languages and professions, between different hierarchical levels and groups of different interests as well as between technical and personal processes which often seem to represent conflicting cultures. One of the particular services of the Dialogarchitect® is to build up a visual “Project Space” or a “Knowledge Space” which can be used for dialogue and for creating a “Project Memory” or a “Common Brain” for a team or a company.

The toolbox of the Dialogarchitect® contains different manual and computer-generated instruments for visualizing and facilitating dialogue, for working with a large number of content elements, highly complex information structures and large knowledge networks. The Dialogarchitect® facilitated this development process and visualized the different content and experiences brought in by users, content providers, internal or external experts, decision-makers, the board and by developers. Thus, images were created in real time during workshops in a process which is similar to the drawing of storyboards in filmmaking. The resulting visual modules were organized in a knowledge space (see Fig. 7, 8 and 10-13) showing the overview and the relationships of all collected inputs during the dialogue (see below: KVis level 1). The Dialogarchitect® created a stage for dialogue between all the participants of the project and set up a dynamically growing “Project Memory” (see Fig. 7, 8 and 10-13).

After that development work the Dialogarchitect® accompanied the software programming to make sure that the user requirements and the intentions of the decision-makers were truly respected in the software and database programming. This was realized on the basis of the visual briefing documents (see below: KVis level 1). Then it was the task of the Dialogarchitect® to design the interface of the system accordingly to the underlying information network and to the navigation structure facilitating the utilization process (Fig. 4–6) (see below: KVis level 2). The transparency at all content levels and the result of harmonizing the internal system structure and the structure of screen and navigation (see below: KVis level 2) have turned out to be an important factor for the success of the MIS.

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## 7 Conclusion

The aim of the project was to create a Management Information System (MIS). The MIS was conceived as a tool for strategic decision-making, for sharing experiences, as a knowledge and information repository, and as a dialogue platform. It was demonstrated how IVis and KVis can join together to form a unity in one continuous process instead of being isolated activities. The crucial linking factor for creating this synergy was the active involvement of users who were highly motivated because they recognized a personal interest through this process. The application of KVis tools in the dialogue between IVis and KVis created high energy concerning the visualization process. Operational models became visible and enhanced effectiveness for continuous learning, for working with information and for generating new knowledge as well as for communication between different interests and views. Visual continuity and sustainability were of central interest. The Management Information System was implemented in 1997. Its structure was still in use at the time when this article was written in February 2005. Its utilization during the past seven years with the same basic structure is a rich experience concerning the synergy between IVis and KVis and a sign of success in the context of quick change in the software world. During the development and the utilization process of the system we have learned that participation and dialogue with the users is a crucial factor for success. This process reaches a new level of quality in achieving concrete, visible and materialized outcomes which were realized through the use of visualization tools.

Several qualities make this project sustainable. These are:

- openness, transparency and goodwill in a process of visualized dialogue making users and decision-makers really part of the project
- introduction of a lot of relevant knowledge and experience available in the company by the involvement of the people concerned
- similarity (in German: “Selbstähnlichkeit”) of methods, processes and qualities at different levels of the project:
  - the development process visualized as a “Project Memory”,
  - the MIS tool itself and the utilization process continuously using the same spirit of intercultural dialogue,
  - the same quality of overview and transparency offered by the visualizing methodology in all work steps and their results
- the flexibility of the system for incorporating feedback, improvement ideas and new user needs
- the continuity of dialogue, involvement and participation which is especially important when people leave their position and when new people join.

An important potential of knowledge visualization is to generate new knowledge and to transform masses of information into meaningful content. Profiting from these possibilities and its potential for facilitating dialogue visualization can become a key driver for designing and realizing the space between different cultures, different professional fields and different interests. Visual dialogue can make the discipline of visualization the core of change processes in industry, public services, politics and global life. The tools and methods of the Dialogarchitect<sup>®</sup> offer new operational ways to realize this perspective. This leads to a relevant positioning of information and knowledge visualization facing more and more urgent needs for change in our world.

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