Multimedia in Denmark

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Multimedia are developed and used in four main fields in Denmark:

1. Computer-aided learning, mainly developed in private enterprises and institutions for skills training;
2. Advertisement and presentation;
3. Museum exhibitions;
4. Communication research, developed in research institutions at university level.

Training

Multimedia are to a large degree used for skills training of semi-skilled workers. Just a few examples include: Skills training centers have developed multimedia programs for simulating use and maintenance of advanced technology in industry. The economy of the programs is based on the possibility of saving investments in expensive real equipment and a reduction of risks for untrained users. The Danish Railways have developed a training simulation environment of new security systems where the economy is secured by reducing training hours (travel, stay, etc.). And the association of employers in the transportation sector has developed a system for training long-distance truck drivers; money is saved by exploiting the resting rules for truck drivers.

Another growing area for use of multimedia in learning environments is the training of immigrants. The effectiveness of multimedia in this area is due to the different backgrounds of the students combined with the possibility to integrate language training with social competence.

In these cases, the penetration of multimedia in Denmark is not directly linked to normal market conditions, but derived from specific aims in well-defined learning environments. The main area is the combination of vicarious experience and controlled learning. Controlled learning is central to the tradition of computer-aided learning, but multimedia provide better conditions for simulated experience through three-dimensional graphics, animation and movies. The success stories from skills training environments are built on this didactic principle.

Advertisement

Recently, advertisement agencies have begun developing multimedia product presentations on a commercial basis. Since the agencies must secure the consent of their (sometimes conservative) customers, there seems to be a tendency to take the point of departure in known media, like slide shows and folders, and cautiously add interactive multimedia features to them. One firm originally specializing in 3-D graphics began by exchanging paper with a computer screen and producing electronic folders. Then small animations were added illustrating a product functionality that was hard to explain by still pictures. They plan to keep enhancing the functionality, eventually turning the electronic folders into computer models that can be experimented with.

Museums

It has primarily been the cultural-historical museums that have used multimedia for pre-
sentation; this is due to a law from 1986 that defined the National Museum in Copenhagen as an active cultural center whose information should be accessible to the whole population.

The demand for accessibility was combined with a total registration of the archives of the museum, partly in order to secure conservation, partly in order to support exhibitions. By registering objects, photos and archives in a database, security problems caused by exchanges, wear and tear and so forth, could be alleviated, and exhibitions would require less space since it would be possible to store the information in the computer.

It is this double purpose that is reflected in the first multimedia of the museum.

The Museum of Liberty first allowed the public access to an electronic visual database of the exhibits of the museum. Eleven thousand still pictures and nine films totalling 30 minutes were collected on the videodisk, *The liberation war in Denmark, 1940–45*. Sixty-five hundred exhibits were scanned, so the disc could work as a visual catalogue of the collection; only duplicates were not included. Via a pressure-sensitive screen, visitors can choose a topic, each of which contains a series of pictures. To each picture is associated a set of keywords, divided into topic, time, and place. From here it is possible to jump to another topic (i.e., picture series) or the user can select keywords in the accompanying text, which describe essential elements of the topic, and use them for searching. Thus, the main idea is to allow the user to jump from picture to picture via associations emerging on the way.

Since the search system is a tool for the public as well as the museum, "presentation gaps" sometimes occur. For example, for reasons unknown, the museum stores a pair of underwear, which is consequently recorded in the system. So the user may get a picture of this garment with the accompanying text, "underwear,"—a result of preferring a complete registration to a smaller sample with more detailed text.

The next multimedia system was implemented when the Ethnographic Department at the National Museum was renewed. The purpose of the modernization was to create a "compact exhibition," meaning that showcases should show as many objects as possible from the magazines that normally would not be accessible to the public. The objects should primarily speak for themselves without the space demanding information that usually accompanies exhibits.

For particularly interested visitors, a computer with pressure-sensitive screen was installed in each room, enabling the guest to seek information about the objects of the room. First the visitor points to a showcase on the screen, then on the object of interest. The resulting text can be used for word search. For example, if the picture is a comb, the user can search information about other combs, haircut, hygiene, and so forth.

The third system was *The World of the Vikings* from 1992. It was developed in cooperation with York Archaeological Trust. The system contains 3,500 still pictures and 20 minutes of film, and is mainly designed like its predecessors.

In recent years, several provincial museums, as a supplement to the normal exhibition, have begun to experiment with search systems covering their material in store. The art museums have been more skeptical of the value of multimedia systems. However, in 1993 the National Museum for Art published a CD-ROM with a collection of the paintings of Lundstrøm which could be bought at the museum.

Universities

At the University of Aarhus, the Department of Information and Media Science runs several experimental multimedia activities.

*Wodan's Eye* is an interactive multimedia system that is currently being designed and implemented for Ribe Museum. The topic of the system is the Viking age and its theoretical purpose is to develop a new metaphor for multimedia: not the book or the film, but the force field. The system uses pictures, sound and speech, and digital video. The basic component of the system is map-like pictures with a built-in dynamic—"enchanted" maps. The term *dynamic* means that the map contains forces that pull and push pictorial elements. In Figure 1, a force pulls the view object (it could