out which game features or functions could be applied in practical devices for everyday use. I say that as a software designer, as someone who knows how easily these things can work. Let's consider navigation systems, for instance. Voice-recognition controls would be ideal. If these systems had touch screens or could be controlled with gestures, they could be used intuitively. It would be possible to just point to a region, or a city or street, and continuously zoom in. But unfortunately industrial designers are often technicians, and they think along the lines of their training — instead of thinking about the human beings who are supposed to eventually use a device. Good design adheres to a philosophy that treats the customer as the central factor. I think it's best when my customers can start up a game without having to read the instructions.

Are there any examples of industrial designers learning from game designers?

Edmondson: A few telephone companies have contracts with the game industry. But it's unfortunate that the companies are only loading little games into their cell phones — instead of studying the games to learn how cell phone use could be made more attractive for customers.

How important are feelings in usability?

Edmondson: For games they're essential. But they can also have a detrimental effect with everyday devices. There were a few notable technical hybrids that were conceived with the idea of using the emotional factor to make boring objects exciting. For instance, we had the refrigerator with an integrated television. Only no one could figure out what it was good for. You can't load your customers up with things that they just don't want. When I open my refrigerator, it should be keeping my food cold. And my washing machine should ensure that I've got my customers up with things that they just don't want. When I open my refrigerator, it should be keeping my food cold. And my washing machine should ensure that I've got my food cold and my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got my food cold. And my washing machine should ensure that I've got.

Interview by Andreas Kleinschmidt

Technologies should be designed to meet user needs. The decisive factor in usability is user interface (UI) design. A good user interface often determines whether a product becomes a success or a failure.

User interface experts must be integrated into the development process from the start. They can interview and observe users, analyze products and conduct usability tests, gaining insights into the way they should design a user interface. Another important factor is the interactive work conducted by various disciplines, from psychologists to designers and from anthropologists to engineers. (pp. 59, 62, 68)

At Siemens Corporate Technology, about 40 employees in Munich, Princeton and Beijing are focusing on usability. They are working on all phases of user interfaces — from concepts to prototypes to final implementation. They are conducting their efforts in close cooperation with usability experts from other units, like Medical Solutions and Automation & Drives. (p. 62)

The future will create new challenges for usability. The operation of devices will become multimodal, meaning they can be controlled through voice, gestures, keyboards or remote controls. This will require development of new operating interfaces. (p. 59, 62, 68)

The fun factor is playing a growing role in product acceptance and eye appeal. Personalized features are also becoming a major trend. Users can shape their interfaces to a limited extent to suit their individual tastes. (p. 59, 73)

In the future, virtual characters will be able to perform routine tasks and intuitively direct the user. Starting in 2004, avatars will be included in new Siemens cell phones. (p. 73)

Handicapped and older people have special needs that developers will increasingly have to take into consideration when they design products. Helpful devices that are easy to operate enable aging people to remain in their own homes. (p. 70)