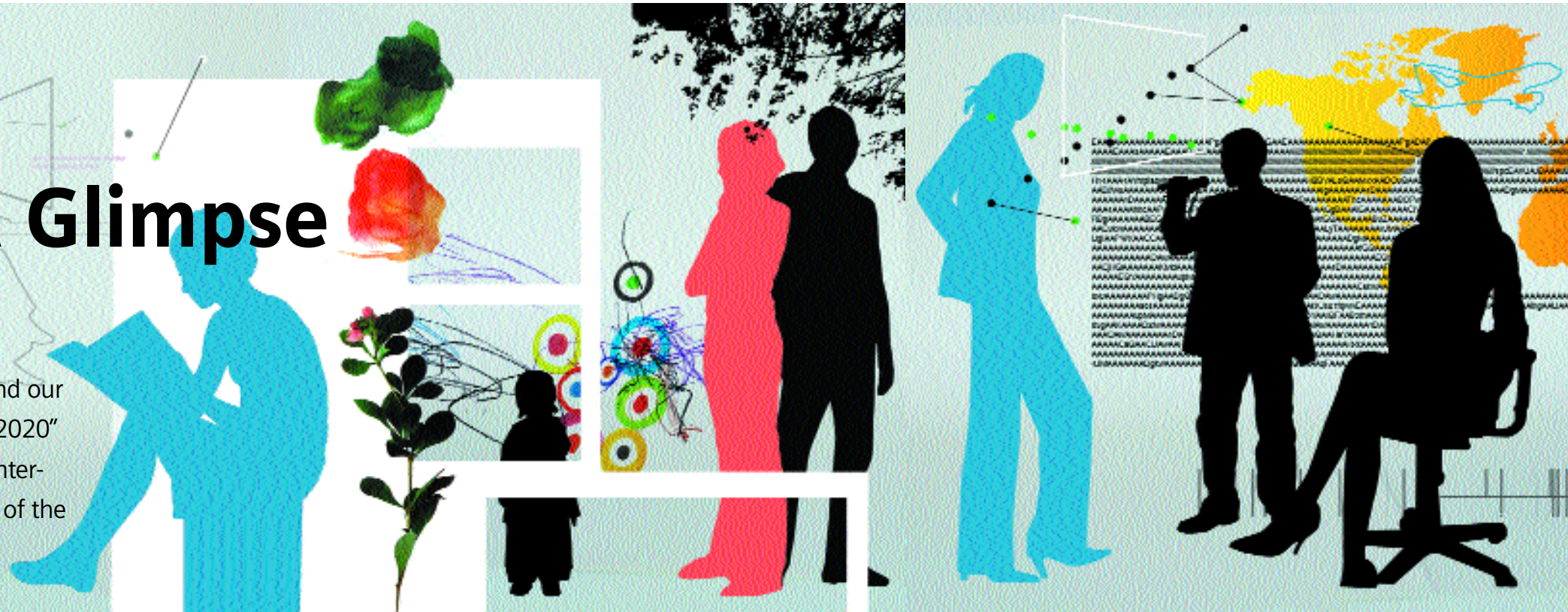


Horizons2020 — A Glimpse of Things to Come

What developments will characterize our society, our economy and our political system in the coming ten to 15 years? With its "Horizons2020" scenario — the result of a comprehensive questionnaire sent to international experts — Siemens hopes to stimulate public discussion of the issues involved and help formulate appropriate solutions.



In the theater, the props and the stage setting traditionally define the framework within which a certain scene will unfold. The Greek term "scenarium" originally referred to a plot summary, and its meaning was later expanded to mean the director's overview of the dramatic production. The modern word "scenario" has been borrowed from stage terminology to mean the framework within which future developments will evolve. For example, Siemens uses Pictures of the Future scenarios to illustrate the most important technological trends in the company's business areas. But on what kind of stage will the developments of the coming years and decades take place? What social, political and economic frameworks are involved?

To find the answers to these questions, Siemens commissioned TNS Infratest Munich, a business research company, to conduct an initial study throughout Europe. Since 1947, TNS Infratest has conducted thousands of studies for clients from the public and private sectors, including a number of studies of future scenarios. The company is part of the London-based Taylor Nelson Sofres, one of the world's leading market research companies, which has more than 14,000 employees in 70 countries. The study which was commissioned by Siemens, entitled Horizons2020, will be presented to the general public for

the first time during the "Science Days" in Munich at the end of October, 2004.

"Horizons2020 is not about political scenarios such as those that were developed by the RAND Corporation during the Cold War, nor is it about strategic scenarios that companies can use to forecast probable future developments," says Dr. Joachim Scharioth, CEO of TNS Infratest Business Research, who was already working out scenarios at the Battelle Institute in the 1980s. "Instead, it develops a so-called communication scenario. With Horizons2020, we depict several possible futures that are consistent in themselves and together describe the entire range of possible developments. In other words, they are like the stage settings in a theater because they show us how much scope we will have to shape the future." The aim of communication scenarios, he adds, is not to forecast future developments and the likelihood that they will actually happen. Rather, the goal is to clearly visualize a variety of possible futures and their internal relationships.

The client — Dr. Barbara Filtzinger, head of Public Relations at Siemens Corporate Communications — adds: "Through Horizons2020 we aim to initiate a dialogue with interested parties in the general public about possible developments, the challenges facing us and conceivable solutions. We've chosen a timeframe of 15 to 20 years, which is far

enough in the future not to be a simple continuation of today's situation but is also not so distant that our ideas would be only wishful thinking or science fiction without any connection to reality." How long 20 years can be should be clear to anyone who thinks back to the way things were in 1984. In those days, who would have dared to predict the collapse of the Eastern bloc or the eastward extension of the EU? And who had any idea of the coming Internet? Mobile phones were as yet unknown and hardly anyone had a personal computer.

Alternative Developments. In order to find out how experts view current trends in specific areas, TNS Infratest developed an extensive questionnaire together with Siemens and an international advisory board and sent it to several hundred experts throughout Europe. The areas involved covered economics and politics, technology and the environment, and culture and society. "The group included many experts at universities who reflect on the future of their respective research areas as well as company CEOs and European political leaders," says Scharioth. The questionnaire contained many descriptors — that is, two alternative descriptions of possible future developments. The 116 questionnaires returned in the first round were processed and the "non-critical" descriptors — in other

words, the areas where most of the experts were in agreement — were filtered out.

The remaining descriptors were divided into "critical" descriptors — here, the experts split into two opposing camps — and those marked by a wide diversity of opinions. For the latter group, a new questionnaire was sent out, and this time the experts were informed about the opinions that had been expressed by their colleagues throughout Europe. "This made the responses more definite," explains Scharioth.

As a result of the two questionnaires and the meetings of the advisory board, TNS Infratest identified a total of 76 critical descrip-

tors, 32 non-critical descriptors and 10 megatrends (see box below). "That makes this Siemens study one of the most comprehensive and complex ones I know of," says Scharioth. Normally, he adds, research companies are commissioned to carry out much more specific studies. For example, automakers such as BMW or VW wish to find out about the future of mobility, and companies like Shell are interested in trends in the energy supply sector. "So far, I haven't heard of any other companies commissioning a study that examines every area of people's lives and works with as many as 76 critical descriptors," he says. "Of course, one reason for this is that

Evaluating Europe's Future. Scharioth's team therefore investigated which alternatives the experts judged to be especially important, how often they were mentioned and the extent to which they were correlated with a "positive future index." To this end, the experts were asked their opinions about how positive the future would be in their respective regions and fields of expertise. A total of 38 percent of the experts believed that living conditions in Europe in 2020 would be very good or excellent, whereas only 16 percent expected good economic conditions in 2020, and a mere seven percent believed the social climate would be positive. By contrast, 56 per-

**HORIZONS2020:
TEN MEGATRENDS**

- Increasing globalization
- Increasing longevity
- Fewer children
- Greater significance of women in business and society
- Free choice of lifestyle
- Growing significance of virtual communities
- Networking of communication media
- Growing mobility ("delocalization")
- Growing migration to Europe
- Acceleration of technological knowledge creation and product cycles

Experts from all over Europe reviewed developments in all areas of life.

such broadly conceived scenarios do not serve purely economic corporate goals, since they cannot make reliable predictions about the likelihood of these scenarios actually taking place," adds Scharioth. After all, in purely mathematical terms, 76 critical descriptors yield $2^{76} = 75 \times 10^{21}$ (75 billion trillion) possible futures. It wouldn't make much sense to carry out a statistical evaluation of that much data.

cent of the experts expected cultural life in Europe to be exciting in 2020. "All in all, we received 38 different descriptor impressions that are likely to have a positive impact on the future," says Scharioth.

In order not to arrive at one purely optimistic and one purely pessimistic future scenario version, TNS Infratest used a strategy that, according to Scharioth, has rarely been used in previous studies. "We put about the

same number of positive alternatives for the descriptors in Horizon1 and Horizon2," he says. "That was the only way to ensure a meaningful discussion; otherwise everyone would have welcomed the one scenario ver-

sion and rejected the other one." Additional input came from the Pictures of the Future scenarios, as worked out by Siemens experts from Corporate Technology and the Groups. These deal with the most important techno-

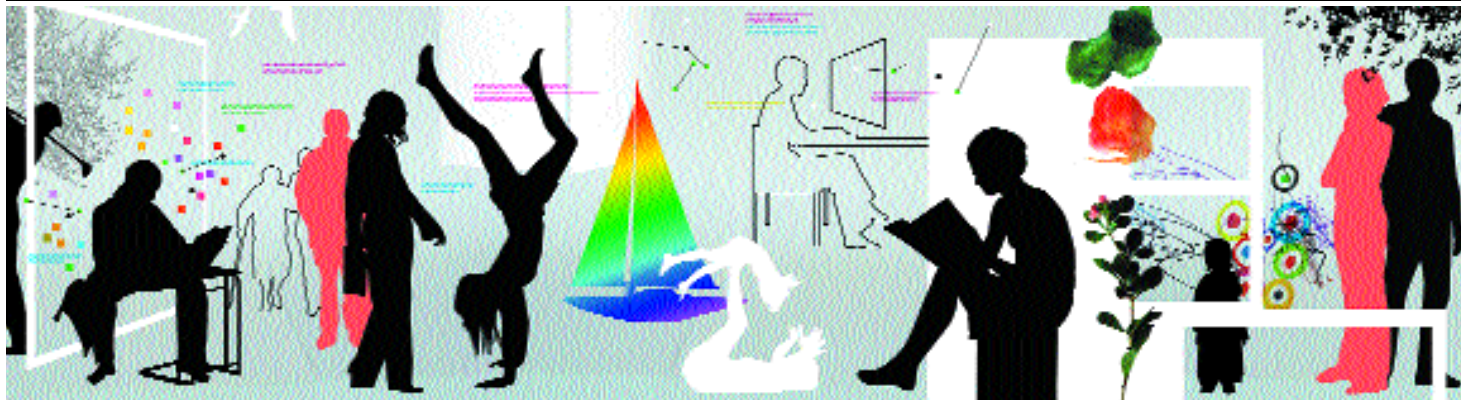
logical trends of the future. Horizon1, the first scenario version, describes a development very much in the European tradition: a relatively strong state and a society that values solidarity and sustainability. Such a society is

willing to accept a modest rate of economic growth — along with the associated consequences for its social services system. The other scenario version, Horizon2, which is also logically consistent, sketches an economically

dynamic society shaped by markets and global competition. In addition to being very flexible, such a society must be prepared to accept a high level of individual responsibility and greater social risk. Horizon1 and 2 taken

together define the framework within which Europe will most probably develop between now and 2020. The reality will certainly lie somewhere in between. ■ Ulrich Eberl
www.siemens.com/horizons2020

HORIZON 1: THE DECELERATED SOCIETY



In the first version of the Horizon2020 scenario, by 2020 European national governments, political bodies and societies have developed sustainable solutions to the problems of health care, education and old-age care. They have also found ways to ensure legal security and protect their citizens effectively from terrorism. A "35-state Europe" has still not completely evolved, but Europe is nonetheless a peaceful island floating in the chaotic global ocean, in contrast to other associations of states and economic blocs. Europeans generally trust their governments, political parties and trade unions. Their basic attitudes are conservative, and they tend to hold on to tried and tested institutions. They are skeptical about major changes and immigration by non-Europeans.

In this society, a socially responsible market economy is highly valued, as are top environmental quality and the shared European cultural tradition. Companies, organizations and individuals are judged according to their fairness, consideration for others and sense of responsibility. People feel responsible for the generations that will follow them. Environmentally friendly technologies are very popular, and sustainable economic planning is desired and actively promoted.

With regard to the ethical applications of genetic engineering and biotechnology, Europeans have agreed on a common denominator that allows industry to establish secure legal claims in these areas. Security is so highly valued that people are open to new technologies for surveillance and personal identification. However, any innovations that might lead to outside scrutiny of their behavior as consumers are roundly rejected.

People focus on their private spheres, old people are well integrated in society and children represent one of the very highest values. The proportion of patchwork families and other non-traditional lifestyles continues to increase, but it is relatively easy to combine families and careers. Thanks to modern communication media and the growing trend toward the information, knowledge and service society, people are increasingly doing a large proportion of their professional work at home. The smart home, with special zones for me-

dia, work and rest, is gaining in importance — and people's lives are once again centering on their homes.

These overall developments represent a trend toward "deceleration" in large parts of Europe. People are putting a brake on their demands, partly as a necessary response to global competition and partly as a matter of free choice. Economic growth is slow, and as a production location Europe cannot keep pace with the up-and-coming countries of Asia. In central and northern Europe, the service and information sectors are well developed; in eastern Europe, traditional industry is strong, and in southern Europe the strongest sector is tourism.

The amount of disposable income in private households is declining, partly as a result of the growing proportion of self-financed healthcare, pensions and security. In addition, the cost of mobility is growing, because an increasing proportion of the transport infrastructure is being privately financed, from toll roads to local public transportation and parking fees. As a result of declining incomes, consumption is no longer a status symbol and the trend is toward careful shopping. In the private sector, do-it-yourself services are gaining in popularity. Cars and other major investments are often shared, cultural tourism is on the increase, and hotels are selected for their flair, as the aim of travel is in many cases meditation, carefully chosen pleasures and closeness to nature.

People's lives are becoming more deliberate, quiet and socially secure, because the differences in income between rich and poor are gradually shrinking. There is a large variety of work models to choose from, and they permit new combinations of earning, learning and leisure time. Many people are striving to achieve the right balance between work and leisure, even if they need to hold down two or even three jobs, and they try to schedule "out times" so they're not continuously accessible. For many individuals, relaxation and retreat into private comfort zones, enjoyment of life and a holistic focus on health are more important than professional success.

HORIZON 2: THE PERFORMANCE-ORIENTED "ME" SOCIETY



In the second scenario version, a dynamic market economy is the distinguishing feature of Europe in the year 2020. National states now define only the regulatory framework and restrict their services to minimal state-supported social security — even in areas they had in the past regarded as essential. Because government attempts to reform the areas of education, health care and retirement provisions have failed, these areas have been increasingly taken over by private companies. This has led to the creation of international education and healthcare companies, and an increasing number of private firms are responsible for such matters as citizens' safety from terrorists and network saboteurs. The healthcare and security sectors are the strongest engines driving the economy.

Hand in hand with the retreat of the state goes an emphasis on individual responsibility, motivation to achieve and flexibility. Self-realization is regarded as the highest goal, and consumption is a value in itself. Change is viewed as positive, and citizen initiatives and self-help groups have gained significant ground. Companies as well as individuals strive to further their own interests. Lifestyles in this society are characterized by rampant competition and little commitment to permanent structures. Private as well as professional partnerships are quickly formed and just as quickly dissolved.

Many plans are very short-term, and private networks fluctuate greatly. Some friends are for evenings at the theater, while others are for vacations. The world has become a village. It's nothing unusual to have friends and acquaintances all over the globe who are easily accessible, thanks to increased mobility and more powerful communication technology. Meanwhile, the traditional family is losing significance and being replaced by a wide variety of relationships. Only affluent couples find it easy to combine children and careers.

On the whole, all these developments are leading to an increase in social problems. People who are "time poor and money rich" stand in contrast to those who are "time rich and money poor." A well-educated elite dominates economically and culturally. There is conspicuous consumption, multifunctional adventure vacations and luxury brands as well as poverty, no-frills vacations and dis-

count stores. It is also easier to move from one social class to another, and social advancement is easy for high achievers — at least in principle. A variety of educational institutions compete with one another, and most new jobs are being created in the areas of information acquisition, processing and communication. Thanks to the development of the knowledge society — especially in the core states of Europe — a moderate but constant rate of economic growth has been achieved. Consequently, the average amount of disposable income has risen and there is still some leeway for private consumption in spite of the pressure to privately finance individual healthcare, pension plans, mobility and security.

E-commerce has become part of everyday life, as has the use of the Internet and multimedia communication. All the devices that surround us daily are intelligent and networked, and autonomous systems (robots and software agents) help us with our everyday tasks and professional work. Constant accessibility, even when we're traveling and during our leisure time, makes it possible to delocalize the workplace — people can do their work anywhere in the world, and that makes it easier to form ad hoc teams for a variety of projects. That's why more and more companies are working with a small core team of employees and a large number of cooperative arrangements and flexible contracts with freelancers. At the same time, this means that companies are making greater efforts to keep their valuable employees for a longer period of time. On the other hand, workers feel less loyalty to their employers.

Every generation is its own top priority, and as a result, overarching issues that affect more than one generation are seldom addressed. Global competition for resources — energy, water and food — is in full swing and is causing shortages outside of Europe. Environmental protection receives lip service as an important value, but most people are not prepared to pay a higher price for it. With regard to biotechnology, genetic engineering and medical therapies, every country has its own ideas about what should be permitted — and therefore medical tourism is on the rise as wealthy patients travel to other countries in order to take advantage of advanced therapies.