

## ***Summary of background study 20***

### **TO LONG FOR THE ENDLESS IMMENSITY OF THE SEA**

#### **Report of the foresight committee 'Knowledge for the Network economy'**

#### **Summary**

Information and communication technology (ICT) has become a key factor in the modern economy. An intensive, practical and innovative use of knowledge in the sphere of ICT is a precondition for economic success, both for individual companies and for national economies as a whole. But in the Netherlands there is a *lack of proper interaction* between on the one hand the public knowledge infrastructure, where much ICT knowledge is generated (in this case the universities and other research institutes), and on the other companies and other profit and non-profit organisations, where the economic benefit of ICT has to be realised in practice. For this reason, the Advisory Council for Science and Technology Policy (AWT) assigned an independent Foresight Committee the twofold task of naming *priority knowledge themes* for the next ten years based on a vision of the significance of ICT in the Dutch economy, and of making recommendations for the *organisation and arrangement* of the ICT-related public knowledge infrastructure in the Netherlands.

The Foresight Committee sees naming knowledge themes in advance as a trap into which it has absolutely no desire to fall. Not only is ICT developing too fast to do this, but it is developing too unpredictably as well. This applies to the technology as such, and to the distribution, application and use thereof.

Innovation in the new, ICT-driven 'network economy' is taking place in a fundamentally different way to the past. Research, product development, implementation and market cultivation take place simultaneously, in relatively short cycles of feedback and redevelopment, with the perspective of the end user literally and metaphorically being of prime importance. *Innovation thus becomes a cyclic and interactive process*, and the difference between fundamental and applied research is becoming outdated.

Improving the relationship between the ICT-related public knowledge infrastructure and companies and organisations is particularly necessary in the *services sector*. Here especially there is no natural link between companies and knowledge institutes, and here especially lie the biggest opportunities for developing innovative ICT-related applications.

However, the Foresight Committee is firmly convinced that it is impossible to force a better, more fruitful relationship between on the one hand the knowledge infrastructure and on the other companies/organisations using 'structural solutions'. Establishing knowledge themes in advance and from above only has the effect of reducing motivation, of paralysing and is accompanied by the big risk of having bet on the wrong horse. Stronger guidance on direct demand articulated by businesses also only works counter to the creativity and dynamism needed in research and development. The real solution therefore lies elsewhere: in achieving a *change of attitude*.

*To long for the endless immensity of the sea* The Committee chose this phrase of Antoine de Saint- Exupéry's as its motto. It intends the phrase to express that both the type of research and knowledge formation for which there is a need and the way in which that knowledge finds its way to those that apply and use it can only come into their own if they are driven by authentic feelings, in all those concerned, of enthusiasm, inquisitiveness, ambition and a desire to explore the - as yet - unknown. This demands not only a different mentality in the people and

organisations concerned, but also, and primarily, a different way of dealing with knowledge institutes and companies: *there needs to be more sparks flying* between these two the Foresight Committee feels.

As already stated, the Committee sees in the first part of its assignment a trap it wants to avoid. Its concrete advice therefore focuses on the second part of the problem defined: the organisation and arrangement of the ICT-related public knowledge infrastructure. The Committee sees the core of the problem as *the fact that mutual contacts* (between knowledge institutes and companies) *are not seen to be normal*. Much needs to and can change in this respect, and a substantial adjustment needs to be made in government policy.

For this reason, the Foresight Committee makes five concrete recommendations.

#### **1. Putting money on excellence**

Funding research needs to be focused more explicitly on the support of excellence -in people and groups that have won their spurs - instead of on guidance on specific substantive themes and 'distributive justice'. In order to counter fragmentation in research the Committee advocates broader funding for longer periods. It sees an important task for the Netherlands Organisation for Scientific Research (NWO) here, provided NWO modifies its current assessment procedures and criteria.

#### **2. Good, encouraging accounting mechanisms**

The Committee advocates a system in which researchers and research groups selected as excellent and having financial support render account on the basis of mainly process indicators. Of particular importance in this is that a substantial contribution should be made to an ICT-related innovation network of knowledge infrastructure and companies.

#### **3. Encouraging person-related interaction**

Because everything comes down primarily to the personal efforts of individuals, more personal interaction should be encouraged between knowledge institutes and companies. This can be effected, for example, through the provision of advice by knowledge institutes, via the employment of academics in business, via special professorships for people from the business community, and via full-time and part-time secondment between the two.

#### **4. 'Peddling' knowledge via patenting and *high-tech* starters**

The Committee is in favour of actively 'peddling' ICT knowledge developed in public knowledge institutes and encouraging its actual utilisation. It advocates flexible assessment procedures tailored to specific situations in the framework of a knowledge protection and exploitation policy pursued by public knowledge institutes. This requires clear procedures. The Committee further advocates policy to encourage public knowledge institutes starting up high-tech ICT companies.

#### **5. Extra funding for ICT research**

Although more money will not solve the deeper attitude problem of inadequate interaction, the Foresight Committee nevertheless advocates substantial increases in budgets for ICT-related research. In our inflexible academic system, the rise of an important new area of science like ICT does not appear to be followed swiftly and substantially enough by research monies. Moreover, large additional investments in ICT research in other countries have a big international pull on ICT research talent. For this reason, additional budgets are also needed in the Netherlands in response to the increasingly international nature of the competition in both research into and the application of ICT.

