

# **E-service – knowledge services, entrepreneurship, and the consequences for business customers and citizens**

## **1. Aim of the project**

This project focuses on the role of knowledge services (all firms producing knowledge services whether service or manufacturing firms) in the knowledge based society and how knowledge services develop new entrepreneurship and research and development (R&D) forms. Particular emphasis will be placed on the introduction of ICT-networks as a production and delivery instrument (e-service) and customer involvement as catalysts for development of new entrepreneurial forms.

The project should fulfil the following objectives:

1. Investigate how the most advanced knowledge service firms develop new forms of entrepreneurship (establishment of new firms and corporate entrepreneurship (cf. Pinchot 1985) within existing firms). This may include more formalised R&D activities.
2. Investigate which role the possibility of developing e-services by using ICT-networks (information and communication technology) plays in the development of new forms of entrepreneurship in knowledge service firms.
3. Investigate which role the knowledge service firms' customers - citizens and firms - play in their entrepreneurship (or innovation) process and how new knowledge services affect the customers' functions.
4. Investigate which networks the knowledge service firms use in their innovation or entrepreneurship activities.
5. Investigate service infusion in manufacturing companies and the entrepreneurial activities that could cause.
6. Create one or more scenarios about the role of knowledge services in the future knowledge society.
7. Be the basis for NewInsight to develop a new advisory product, a scenario instrument that can be used by knowledge service firms using ICT networks as a production and delivery tool.

The project is composed of three parts, which will be coordinated:

Part 1. State of the art and theory development: Literature survey to investigate what is already known about this topic and further theory development.

Part 2. Case studies in knowledge service firms and their clients.

Part 3. Creation of future scenarios of knowledge service's and ICT-networks' role in the future knowledge society. The scenarios will be based on the case studies and the literature survey. These three parts will be described in the following sections.

## **2. Project Partners**

The project will be carried out by two research institutions, Center for Information and Communication Technologies (CICT) and Center for Service Studies, who together cover an interdisciplinary field, and a consultancy firm, NewInsight. The partners have a long tradition for cooperation, among others in the project "Service development", financed by the research councils 1996-99 and the European "SI4S" project 1996-98. A major part of the project will be carried out by a PhD scholar thus education of a new, young researcher is also included.

### 3. Major concepts

To clarify the idea of the project, this section defines the major concepts that are used.

#### *Knowledge and knowledge services*

A knowledge service is knowledge or information that is provided on the market. Our definition of knowledge service firms includes both those which provide such services either as their only product or as an addition to other products. This includes manufacturing firms, manual service firms and public institutions that offer knowledge services on a market basis (pricing the services and competing with firms).

The exact definition and delimitation of knowledge services is a complicated issue that requires comprehensive theoretical discussion and analyses of empirical examples. Clearly services such as accountancy, and those provided by lawyers, management consultants, engineering consultancy etc. are all included. However, one can discuss whether, for example, software production, facilities management and logistics or banking and related transmissions should be included. As a point of departure they will be included in this project, however, a task for the project group is to develop a more exact definition and delimitation of the concept of knowledge services.

In former studies (e.g. Haukness 1999, Miles et al. 1994, Sivula et al 2001), knowledge services have been defined as business services (KIBS - Knowledge Intensive Business Services). These services are characterised by being delivered by professional service providers who have a great deal of tacit knowledge. The KIBS are often process consultants as well as information providers. They contribute to increased productivity and to developing innovations in manufacturing firms. Moreover, they sell most of their services to other service firms (Illeris 1996 p. 60), and thereby contribute to increased productivity and developing innovations in them. This stresses the fact that the economy has, to a large degree, become a service economy where the knowledge service sector is a motor of economic development, including job creation.

The provision of knowledge services to private citizens has been less common, among other reasons because of the price of knowledge services, which has been quite high for private consumers. One may assume that this is changing, not least because of the new developments in ICT-networks such as the Internet. Provision of knowledge services to private customers should therefore also be included in the project.

Because provision to private customers is included, 'knowledge services' is a more comprehensive concept than KIBS. The concept is also different from, and more precise than, other concepts such as knowledge intensive or knowledge based services because probably all firms would claim that they are knowledge based or even knowledge intensive; knowledge is of course required for any production.

The introduction of e-business has given rise to a discussion of the difference between information and knowledge. A major statement is that primarily information is transmitted through the ICT-networks and e-business, while development of new knowledge requires interaction between the provider (in this case the knowledge service firms) and the receiver. We do not want to go into depth about this discussion since our aim is not knowledge creation as a pedagogical or philosophical field, but entrepreneurship in knowledge service firms. In relation to entrepreneurship, we emphasise interaction with customers and science institutions thus this entrepreneurship is knowledge based.

Knowledge services have traditionally been a mixture of codified knowledge that can be described explicitly, and tacit knowledge (cf. Nonaka and Takeuchi 1995). The provision of knowledge services has demanded that the service worker was personally involved in the customer's process. The development towards knowledge services as e-business and perhaps self-service may change the entire knowledge services set up. Knowledge may become more explicit and thus more standardised.

This raises the central issue of whether knowledge services as e-business are transformed into information, which is not that much help to the users, and how far person-to-person knowledge provision can be substituted by standardised information. E-business could also become a mixture of standardised self-service and person-to-person knowledge exchange, and virtual knowledge provision may even increase t

he need for personal advice. The nature of this development, and what is the best for the customers cannot easily be answered, but will be a core issue in this project.

#### *ICT-networks and e-services*

We use a general definition of ICT-networks that emphasises that it is information technology units, which are connected to each other, also out of the firm. They include phenomena such as the Internet, and mobile phone based service deliveries. An exact definition of ICT-networks is not easy to formulate, particularly not in a project that runs for three years as the forms of network are developing and it is impossible to say which new networks could be launched within the next three years. We will not restrict the concept of ICT-networks to existing practical systems since new ones may appear in the future and this project is future oriented. Through the project we will find and define the networks that are most relevant for knowledge services.

E-commerce (shopping on the Internet) and e-business (all kinds of business transactions happening on the Internet) are concepts that have been widely used in recent years to characterise the fact that goods or services are sold via ICT-networks. Specialised terms such as e-services to classify services delivered by ICT-networks have also been developed. By e-service, we mean that a knowledge service is produced and sold via an ICT-network. This makes the ICT-network an even more active instrument than in the manufacturing and distribution of goods, where normally it is only the instrument for selling, and not for customer-operated production. We will use the term e-service as synonymous with the phenomenon of knowledge services firms use of ICT-networks to produce and deliver the service.

#### *Entrepreneurship*

Entrepreneurship is considered as being related to innovativeness (cf. Sundbo 1998a). This is also the idea of one of the classic authors of theories of economic development (Schumpeter 1911). Entrepreneurship is new business activities that increase turnover or profit in innovating firms. Entrepreneurship produces new commodities or services or new organisation, market behaviour, processes that may increase productivity in the innovating firm.

Entrepreneurship can be the phenomenon where one person or a small group of people establishe(s) a new firm on the basis of an innovative idea, but it can also refer to initiatives in existing firms, so-called intrapreneurship (cf. Pinchot 1985, Kanter 1983). The latter is particularly important in services since innovation there has not traditionally been based on systematic, science based R&D, but on ideas and initiatives from employees (Sundbo 1998b, Gallouj 2002). Both forms of entrepreneurship will be included in this project.

#### **4. Arguments for the topic's importance**

Understanding the knowledge services sector is a prerequisite if we wish to comprehend the knowledge society. Knowledge services account for 6-10% of GNP and is the most rapidly growing sector. Knowledge services are central to the knowledge society, as they produce, store and transmit knowledge between firms. They thus contribute to strengthening the knowledge base for production and innovation (cf. Haukness 1999). They are therefore an important factor in growth and industrial development. Knowledge services are also of great benefit to citizens (e.g. legal services, education etc.).

The Danish economy is very service intensive, and the Danish service industry is also highly internationalised in comparison with most other economically advanced countries. It is, to a large

extent, the transport sectors, which greatly contributes to the high degree of internationalisation of Danish service production. Danish business service firms, including knowledge service producing companies, are generally less internationalised than their international neighbour. This emphasizes the necessity of examining the level of advancement, the entrepreneurship and the usage of e-services among the Danish knowledge service producing companies.

Knowledge services such as education, consultancies, lawyers, information services (e.g. libraries, news services) and practical information services (e.g. information about how to repair one's house, environmental services) are becoming still more important as the knowledge society is developing. Citizens use knowledge services to an increasing degree to solve problems in their daily life (such as how to use one's computer or when to plant a specific tree in the garden) as well as for more strategic welfare issues such as how to invest pension savings or information about health. Firms use knowledge services for analysing their market or organisation etc. and knowledge services become an input to their innovation process (cf. Haukness 1999). The need for information and knowledge is to an increasing degree fulfilled by market-based firms offering knowledge as a service. This group of firms does not only include traditional, specialised knowledge service firms such as accountants, software firms or news services, but also, to an increasing degree, manufacturing firms and manual service firms such as guards or retail firms. Information and knowledge become additions to goods, and the purchase of a commodity or a manual service (such as cleaning or repairation) is followed by the purchase of information about how to use the commodity or how one can make small repairs later and other issues. Goods become components in service concepts or total service offerings. Information becomes a competition parameter to manufacturing and manual service firms. Even public institutions such as libraries, research and education institutions or news services (radio, TV) become increasingly market based knowledge providers since citizens have to pay for them and these services are competing with services from private firms. According to recent studies there is a strong need for research and action in the mentioned fields above (Ganz 2002).

Entrepreneurship and innovation within knowledge service firms are also important growth factors as they create economic growth, employment and strategic advantages to the innovating knowledge service firms.

The networked ICT technology (such as the Internet) can have a dramatic effect on how knowledge services are innovated, designed, produced and distributed. The development of ICT-networks such as the Internet leads to new possibilities for distributing knowledge services and to the development of new types of services. It may also lead to new ways of procuring and using knowledge for citizens and firms. They may, for example, use ICT-network based knowledge services more and become more dependent on the satisfactory functioning of these services. The new possibilities may lead to a more efficient and equal distribution of knowledge among citizens, but may also lead to a more unequal distribution if citizens and firms sufficient competencies to utilise them. They may be an advantage to manufacturing and service firms' innovation and efficiency effort, particularly to SMEs'. They may also change the way customers or users experience service functions. For example in the case of hospital services "relational times" (person-to-person relations) are increasingly replaced by "technical times" where people are moved from a technical system to another. ICT-networks seem to be a catalyst to a renewed use of knowledge services. The discussion about e-business demonstrates that there are many possibilities for developing a knowledge society, however, there are also some barriers. The barriers could be overcome by developing new forms of knowledge provision, which require innovation in the knowledge providing firms and the involvement of customers in this innovation process.

One feature characteristic of knowledge services is that customers are per se more involved in service delivery. Concerning this customer interaction, there are different types of knowledge services ranging from customer interaction with less standardised service components to customer interaction with standardised service components (self-service). To guarantee that customers'

demands are best served by the provided services, the level of customer interaction has to be reflected in the entrepreneurship or innovation management process of the company.

This development could lead to a self-service society (cf. Sundbo 2002, the idea of self-service was launched by Gershuny 1978 and Gershuny and Miles 1983) where the customers produce knowledge and information by using ICT-networked knowledge bases. Such a development could dramatically change the nature of knowledge or information, which could be more standardised and need comparatively less understanding or knowledge.

The new ICT-networks are not only a catalyst to customers, but also to knowledge service providing firms. The possibility of using ICT-networks as a production and delivery instrument and creating e-services may inspire them to think along new trajectories and develop new forms of entrepreneurship.

A tendency to develop e-businesses and standard services may lead to a reorganisation of knowledge service firms. The number of professional personnel may be reduced, or they may have their work tasks transformed from production (in interaction with customers) to innovation and development activities. It might also influence the distribution of men and women in the work force because it changes the competence requirements.

Knowledge service firms also have to face new challenges to core business factors, which have an impact on a firm's absorptive capacity (Van den Bosch et al 1999) and they may introduce new business models. Changes may come in customer relations (service encounters and quality), in organisational forms, (e.g. introduction of virtual organisations), improved management of intangible resources, and customer driven innovation (cf. Edvardsson et al. 2000).

The number of knowledge services may be increased whilst, simultaneously, there is a dramatic decrease in price. This can give more actors admission to advanced knowledge, not least ordinary citizens and small firms that previously could not afford to buy such services.

The new e-business possibilities demand more, and are more systematised, innovation in knowledge service firms. Earlier research (Sundbo and Gallouj 1999) has demonstrated that many service firms are not very innovative, and they do not have a tradition for systematically organising innovation activities. More recent research (e.g. the CIS survey) has demonstrated that service firms are probably as innovative as manufacturing firms, however they innovate in another way, which needs to be investigated thoroughly. The development of better innovation systems and tools in knowledge services is necessary if European knowledge service firms should be able to compete with others.

This new entrepreneurship is necessary if the knowledge service firms should grow, create more employment, and participate efficiently in the development of a European knowledge society. Further, ICT-networks make the knowledge service market more global and if European knowledge service providing firms should strengthen their competitive advantage, new entrepreneurship within European knowledge service firms is required.

Knowledge services could benefit from being science based. Social sciences and humanities could as well as natural sciences be a basis for developing new knowledge services. However, research (Haukness 1996, Sundbo and Gallouj 1999) demonstrates that innovation of knowledge services is not science based to the same degree as the innovation of new goods. The new entrepreneurial forms may change that and thus contribute to an integration of social sciences and humanities in the development of new knowledge services. This project will focus on an important issue which is often underestimated: the role of social sciences and humanities in R&D activities and more generally it will investigate the need for a new definition of R&D in services in order to take into account the complex association between innovation, ICT and organizational engineering.

## **5. Part 1: State of the art - literature survey and theory development**

A review of the state of the art will be carried out through a survey of the literature done by the PhD scholar. As is common in social science research projects the PhD scholars will use databases,

academic journals, dissertations, books and research reports to put our research issues into perspective and relate or research questions to the research front. The focus should be on (1) key concepts, models and theories, (2) research methods and (3) empirical results. However, a degree of freedom to formulate the survey should be left to the PhD scholar.

This forms an important basis for the case studies and for the scenario part of the project.

However, the aim is not solely to sum up and replicate existing theory but also – on the basis of the combined theoretical and empirical work in the project – to contribute to the theoretical development of the studies on knowledge services and their importance for the economy and social development in general. The total group of researchers will contribute to this work. We will concentrate the theory development on three concepts: (1) entrepreneurship, (2) knowledge and (3) innovation (EKI) in service firms and cover three areas. First, the theory that deals with e-services and e-commerce focusing on the role of knowledge creation and knowledge use. Second, the theory that deals with entrepreneurship, innovation and service development in knowledge service organizations. Third, the futuristic forecasting's concerning the knowledge society, focusing on the role of services. It is important to distinguish EKI *in* service firms and EKI *through* service firms, i.e. the role of service firms in their client's innovation process.

The *first* part of the theory development will focus on e-services and e-commerce, especially on the role of knowledge creation and knowledge use. We will focus on the new forms of producing knowledge services by using ICT-networks (e-service). We will cover both consumer services, e-government, business-to-business context and different types of services e.g. standardized, knowledge intensive and internal services. The main questions to be focused on are: (1) What type of knowledge services may be “converted into” e-services and what are the drivers behind the development? (2) What is the role of knowledge and technology in the development and use of e-services and e-commerce? (3) How are different customer groups adopting and using e-services?

The *second* part of the theory development will focus on – entrepreneurship, innovation and service development. Some research has been done on innovation and entrepreneurship in services within the last decade. This has been investigated, among others, by some members of the research consortium (Miles et al. 1994, Sundbo 1998b, Haukness 1999, Boden and Miles 2000, Gallouj 1994, 2002, Edvardsson et al. 2000).

In service development research, customers represent an important resource, or even the very basis of service innovation (Martin and Horne 1995, Lilien et al. 2002). Service research has clearly brought a customer oriented perspective to science in the business world. The reason is that earlier characteristics of knowledge services, where perhaps the simultaneous production and consumption of a service, has worked as the strongest factors that distinguish services from goods (Fisk, Brown, and Bitner 1993; Grönroos 1990; Normann 1984; Parasuraman, Zeithaml, and Berry 1985).

In many cases, it is even argued that the development process is in fact initiated by an innovative idea that is derived from a customer (Cooper and Kleinschmidt 1986; Prahalad and Ramaswamy 2000; von Hippel and Katz, 2002). Within service research, the later view is in line with conclusions from research on service quality, for example the theories of “design for quality” and “built-in quality”. It is argued that one key aspect of achieving service quality is through listening to the needs of the customer and involving customers during in the development process (Garvin 1998; Zeithaml, Parasuraman, and Berry 1990; Edvardsson 1997). Those findings have to some degree directed service development research. New service development and the customer's role in new service development are, despite their significance, underdeveloped research areas (Fitzsimmons and Fitzsimmons 2000; Grönroos 1990; Johne and Storey 1998).

In this part of the theory development, we will focus on how customers and other partners may be involved in the development of new and innovative knowledge services. This will concentrate on (1) modes for customer and partner involvement, (2) what type of knowledge they contribute, (3) the role of this input and entrepreneurship in knowledge service development and (4) how this knowledge is being used in and during the service innovation process.

The *third* part of the theory development will focus on the futuristic literature forecasting the future with respect to the knowledge society focusing on the role of services in tomorrow's society. We will use the literature on development trends in different countries in Europe and especially the role and effects of knowledge services within the EU.

The results of the theory development will be published in international scientific journals.

## **6. Part 2: Case studies**

The method to study the main objective - how does the possibility of using ICT-networks as a production and delivery instrument and customer involvement create new forms of entrepreneurship in knowledge service firms - will be case studies.

### **The cases**

Some of the most advanced knowledge service firms will be selected. By advanced we mean firms that are most entrepreneurial concerning developing new knowledge services, new business models, new forms of R&D, including customer involvement, or new forms of service production by using ICT-networks. Which firms that actually may be assessed on the basis of a criteria-catalogue. By means of these criteria newspapers, journals etc. should be evaluated and industry experts (trade associations, unions etc.) should be interviewed to find the most advanced knowledge service firms. The case studies should investigate the drivers and impediments of the most entrepreneurial knowledge service firms as well as the consequences of these new forms of entrepreneurship. The case studies thus will demonstrate best practices. Since the PhD scholar will carry out most case studies, a certain degree of freedom should be left to the PhD to design his or hers case studies. However, the other members of the research consortium will supplement with other case studies.

### **Case study method**

The selected firms should be studied in depth. Several interviews should be carried out in each firm, documentary material will be analysed, the firms' use of databases with information about their customers and their interaction with customers via ICT-networks should be included in the data sets. There should also be studies of the selected knowledge services firms' clients (firms as well as private customers) – how they participate in the innovation process in the knowledge service firms, their needs for and use of knowledge services. This should include interviews with the clients, observation and writing of diaries. There should also be interviews with external actors, including universities and other research institutions that the firm is interacting with through external networks.

### **Selection of cases**

The cases will be selected to represent best practice companies in different types of knowledge service providing firms. As has already been stated, this includes specialised knowledge service firms (e.g. consultancies, news services, financial services, R&D laboratories, accountants, web information services). It also includes other service firms (which may be termed manual service firms, cf. Sundbo 1997), manufacturing firms providing knowledge services, and public institutions providing knowledge services on a market basis (i.e. services that the users have to pay for and which thus are competing with services provided by private firms). All these categories will be represented among the selected cases. In each of the categories firms can provide services to business customers as well as private customers (citizens). We will ensure that both incidences are represented in all categories. The categories are presented in the scheme below:

	Business services	Consumer services
Specialised knowledge service firms	x	x
Manual service firms	x	x
Manufacturing firms	x	x
Public institutions (market based)	x	x

About 16 case firms and public institutions will be selected.

### Research questions

The main research issues to address will be the following:

- Description of use of ICT-networks (e.g. internet, mobile solutions) in service production and delivery.
- Description of the form and the degree (based on existing characteristics and value parameters) of entrepreneurship.
- Analysis of drivers and impediments behind the new ICT-based forms of entrepreneurship.
- Analysis of the firms' strategies concerning entrepreneurship and the use of ICT-networks in their service production and provision.
- Analysis of customer involvement in innovation and entrepreneurship activities.
- Analyse of the use of external networks, particularly with research institutions and universities, in the entrepreneurial activities

Other issues will be developed throughout the project if found in the case studies.

### 7. Part 3: Future scenarios

Part 3 will be carried out by NewInsight. However, the other members of the research group will participate in the planning and provide input to the scenarios. They will also participate as experts in the scenario writing process.

The goals of the future scenario part are:

- To explore the long-term development in knowledge service and
- To develop a tool for knowledge service businesses that will help the single company to explore their own long-term future development in and with knowledge services when ICT networks is a production and delivery instrument.

The aim is to use the general monitoring of the development in the future driving forces of knowledge service as input and eye opener for the businesses and to let the information obtained from exploring the futures of single businesses flow back into the general monitoring of the future development of knowledge services if ICT networks will be a production and delivery instrument. The scenario project will thereby be able to work both as a tool for single companies but also as a "forefront listening post" for new developments in knowledge services.

### Method

The future scenario consists of three parts:

1. Driving forces analysis and monitoring
2. Scenario development
3. Reality check

" Driving forces analysis and monitoring " is developed as a tool to find, describe and evaluate the content of the driving forces behind the future development in knowledge service

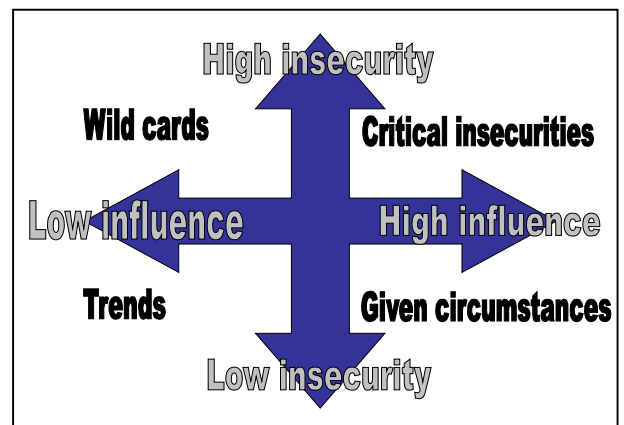


– and most importantly as a tool to make these driving forces “visible” for both companies and researchers. "Scenario development" is developed as a tool for knowledge service stakeholders and businesses to explore the implications, threats and possibilities in knowledge service. The tool is developed both as a strategic tool but also as a tool for business development and product innovation. "Reality check" is a tool for businesses or for researchers to have their ideas or findings from a scenario development process tested and validated in a broader forum.

### Driving force analysis and monitoring

The scenario development method used is developed particularly with the focus on allowing for alternative futures to be explored and for stakeholders and experts to bring together and combine their knowledge in systematic ways. The focus in the scenario development will not be on creating the most likely scenarios. Instead four plausible and different scenarios will be developed with the focus on highlighting uncertainties, explicating relationships, assessing robustness of policies and developing new ideas and strategies.

This part of the future scenario part is an attempt to create a framework for systemising, discussing and evaluating these factors. The different factors affecting the future will be discussed and evaluated within the framework of the matrix created in the figure. The insecurity axis represents to what extent we feel that we know the effects of a certain factor. The influence axis represents to what extent we feel that we will be able to influence the development and/or effects of a certain factor.



- The "wild cards" are the factors that can have at sudden and drastic influence on the development of knowledge services.
- The "trends" are factors that are in general long term in their impact, and to some extent can be predicted.
- The "given circumstances" are the factors that work within a given framework, factors that we know and to some extent can affect by our actions.
- The "critical insecurities" are the factors that can be shaped, developed and worked with – but also the factors where the outcome of the actions are unknown or at least uncertain.

In the project this model will be the basis for the development of a tool for collecting important driving forces in relation to ICT-network based knowledge service development. A monitoring system will be developed, in which the driving forces can be discussed and evaluated by a wider forum of key actors in the area of knowledge service – in what at this point can be called a "future panel". The main objective of this panel is to put certain verification to the driving forces and their characteristics. This way it can develop into a monitoring tool for actors with an interest in knowledge services – a tool for spotting the latest development in knowledge service.

The input to this analysis will be results from part 1 and 2 of this project - state of the art analysis that the PhD scholar will carry out and case studies that all the involved researchers carry out or have carried out in other projects. Besides, NewInsight will also collect empirical data that are relevant.

### Scenario development

The scenario development consists of two parts.

1. The development of a set of scenarios for the general development of knowledge services and ICT-networks. The aim of this scenario development is to inspire actors and to show how different choices/strategies can affect the development knowledge service.
2. The development of a scenario concept for businesses working with and in knowledge service. The aim of this scenario concept is to partly inspire companies to work with knowledge services and ICT-networks, partly to develop a strategic tool for companies that wants to work strategically with the development of knowledge service and ICT-networks.

The method of developing scenarios is a method that NewInsight has worked with for several years.

### **Reality check**

The reality check is an option for the businesses to have their scenarios and/or their strategic options tested in a wider forum. This forum can be the "future panel" and the researcher and scientists from the project. The method for the "reality check" evolves around the scenarios – testing if, when and how certain products, services or business models will be attractive. The results of the "reality check" feeds back into the scenario development and might lead to smaller or bigger revisions of the scenarios and/or the strategic decisions based upon the scenarios.

## **8. Organization and time schedule**

### **Organization**

The following researchers will be involved in the project:

From CICT: Professor Knud Erik Skouby, Associate Professor Anders Henten, Associate Professor Morten Falch and Hanne Westh Nicolajsen.

From CSS: Professor Jon Sundbo, Professor Jan Mattsson, Associate Professor Lars Fuglsang, Associate Professor Ada Scupola, Assistant Professor Peter Hagedorn-Rasmussen.

The main part of the project will be carried out by the PhD scholar who will be placed at CSS, but will participate in the PhD program at both institutions and get a supervisor from each institution. The PhD scholar will do the state-of-the-art work and most of the case studies (part 1 and 2). He/she will deliver a basis for the scenarios and can use the scenarios in the PhD project. He/she will also participate in the theory development. The PhD project will be announced openly within the project framework to attract the most interesting projects and applicants.

All the involved researchers will participate in development of theoretical work. The researchers from CICT will do some case studies and the researchers from CSS will deliver data from case studies carried out in other projects. The researchers will also participate as specialists in the scenario writing.

The consulting firm, NewInsight, is a specialist in scenario work. They will use the project as basis for developing a scenario method to assess development of ICT-network based knowledge services, which will be an advice product for the firm. Manager, MA Peter Plougmann and consultant Peter Lindstrøm represent NewInsight. NewInsight will invest development capital in the project besides the applied grant.

The three parts of the project will be coordinated and all project participants will collaborate closely. Associate Professor Anders Henten, CICT, will be the leader of the project. Professor Jon Sundbo,

CSS, and manager Peter Plougmann, NewInsight, will be members of the project management group.

The project will organize one international research workshop and a conference for Danish firms and practitioners where the results will be presented.

### **Relation to the institutions' research strategies**

The project fits well into the research strategies of Department of Social Sciences at Roskilde University and CICT, which both emphasize IT and service development. The PhD scholarship fits into the PhD programs that each institution has. The project will thus contribute to the future research development. It will also contribute to the development of IT-oriented knowledge service products in NewInsight.

### **Time schedule**

The project will run for 3 years from 1. February 2004 to 31. January 2007.

#### **Milestones:**

- 1 year: State-of-the art analyses  
Case studies
- 2 year: Case studies  
Theory development  
International research workshop  
Scenario writing
- 3 year: Theory development  
Scenario writing  
Conference for practitioners