

The innovator's dilemma revisited:
The Home Communication Concept (HCC)¹

Arne Stjernholm Madsen, Novo Nordisk A/S, Denmark, and John P. Ulhøi,
The Aarhus School of Business, Denmark²

Abstract

The case described in this article is based on an innovation project at Ericsson Denmark. The project has been called the home communication concept (HCC), and represents the response of a major ICT manufacturer to the reshaping of the telecom market, paved by internet technology. The project is described from its start in summer 1997 to the end of 2001. This is a unique case study in more than one respect. The first author followed the project very closely during his employment in a new business development department (BDD) at Ericsson Denmark. Secondly, the study covers all phases and aspects, from inception to field trials. Thirdly, it represents a radical innovation based on a disruptive technology (Internet technology), which transcends the traditional business of the company in question. The paper describes the entire project, and tries to present it within a framework capable of analysing the actual events. In this respect, it not only demonstrates the classical dilemma of management during disruptive technological development, but also illustrates the internal problem of allowing a creative BDD to become 'sectarian', i.e. blindly believing in itself and suspicious of the rest of the world. Using the framework presented in this paper, several

¹ The contents of this article do not in any way reflect the opinions of either of the authors' employers, but are entirely those of the authors. The first author has obtained the necessary permission of his former employer, Ericsson Denmark. The usual disclaimers apply.

² Please direct all correspondence to the second author John P. Ulhøi, The Aarhus School of Business, Fuglesangs Alle 4, DK-8210 Aarhus V, Denmark, phone: +45 8948 66 88, fax: +45 8615 7629, e-mail: jpu@asb.dk

fundamental concerns regarding existing research are identified and discussed. In closing, implications for research and management are addressed.

1. Background

The commercial breakthrough of the Internet in the mid-1990s posed a serious challenge to the telecom industry. To meet this, Ericsson initiated a major corporate strategic project called “The 2005 scenarios”, the aim of which was to thoroughly analyse the future of the market. The implicit challenge was the so-called convergence of three industries, made possible by Internet technology: The IT industry, the telecom industry and the media industry. Below is a quotation from these years illustrating the situation,

“We are talking about a convergence between one industry, the “telecom industry” shaped by a hundred-year-long tradition of monopoly protection, a history of long term planning, an industry that traditionally has been obsessed by excellence in technology and which has been driven by technology and another industry, the “computer industry” that is much younger, has never been regulated, has been business driven with a lot of innovation and entrepreneurialism, an industry which is extremely competitive, is moving very fast, already has been through a number of transformations and where the concept of “Winner-takes-all” is commonplace. That’s where the combatants come from and they are fighting for a dominant position in what is now emerging as the New Telecoms World. And that’s just the beginning. The media industry is about to join the other two and that’s where the next battle ground will be!”

Following the comprehensive strategic research of the corporate “2005 scenarios”, a new department for Business Development was established at Ericsson Denmark, the focus of which was future orientation and end-user understanding. As a result of the work of this department, a general market understanding was built up, describing the chasm between two end-user segments, which, according to Moore’s terminology (1999) consisted of early

adopters and pragmatics/conservatives. These segments were mirrored in a description of the cultures of the two industries: The IT industry and the telecom industry. The exposure to a new device, which seemed to bridge the two worlds, was like a spark that lit a vision. After less than a month, this vision was documented in a so-called Business Opportunity Specification.

The director of the Danish market unit stated the aim of the new department in two slides, from which the following quote is taken³,

“My vision: The Business Development department is offensive, innovative and future oriented. We want to create a department, which has knowledge about and is in touch with the market, and which can transform this into business opportunities for Ericsson Denmark”.

“*Why establish the new department? What do the end users want? – We don’t know! Which expectations do our customers have to the market? – We don’t know. Are market trends visible via our customers? – We don’t know*”.

An interesting feature of this new department was that it should both carry out *market analysis* and suggest *solutions* or actions, functions which in most companies tend to be physically separated. It is worth noting the very general, open-ended scope of the new department, as formulated by the market unit director, allowing freedom for an explorative approach.

³ Recorded November 11, 1997. (Translated from Danish).

2. Theoretical framework

Creativity, technology, innovation and entrepreneurship are intertwined and interlinked in several respects. The intentional use of knowledge and skills to extend the limited capabilities of human beings is normally referred to as technology. To further expand such learning into useful replicable methods, processes and/or products requires some creativity and innovation.

It has been argued that creativity is an intellectual capability associated with imagination, insight, invention, intuition, inspiration (Henry, 1991). Moreover, creative individuals are known to be problem-sensitive, imaginative, tolerant of ambiguity, and risk-taking.

Put another way, creative individuals produce new ideas, whereas innovative individuals spot new ideas and develop and/or transfer these to new and useful outcomes (e.g. patents and new products). Entrepreneurs then take new patents and other outcomes into the marketplace and/or into practical implementation. Rigid as such typologies are, the borderlines remain blurred across different types.

In the field of R&D-oriented research, Amabile (1988) reported that persistence, energy, curiosity, and intellectual honesty were crucial for creativity. Based on an exhaustive review, Barron and Harrington (1981) found aesthetic qualities in experience, broad interests, attraction to complexity, high energy, intuition, independence of judgement, autonomy, self-confidence, etc., to be associated with a creative personality. Others have portrayed the creative individual as less authoritarian, suspending judgement and accepting one's own impulse (Steiner, 1965).

In the literature on key factors of innovation management, interest has focused on two major trajectories. One line of inquiry has focused on the influence of organisational structure (Burns and Stalker, 1961; Lawrence and Lorsch, 1965; Becker and Stafford, 1967), while another has focused on key persons (Allen, 1970; Chakrabarti, 1974).

Two commonly cited definitions of innovation are those by Thompson (1965: 2) and Zaltman et al. (1973:10). The former defines innovation as the “generation, acceptance and implementation of new ideas, processes, products or services”, while the latter similarly sees it as any “idea, practice or material artefact perceived as new by the relevant unit of adoption”. At first glance, these may seem obviously equivalent. However, while the former focuses on the “generation”⁴ of innovation perspective (investigated mainly by economists and technologists), the latter also allows for the “adoption” (mainly investigated by organisational technologists and sociologists) perspective (Gopalakrishnan, 1996:20), investigating how innovations socially diffuse (Rogers, 1995).

Following the research trend towards interactive process perspectives (Van de Ven & Rogers, 1988; Slappendel, 1996), West & Farr (1996:9) have attempted to combine these views by presenting innovation as the “intentional introduction and application within a role, group or organisation of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organisation or wider society”. In his article from the same book, West (1996:324) posits that “all systems are a product of and subject to innovation”, implying that the system, and aspects of the system, can be seen as continually going through an innovation cycle. Furthermore, innovation is presented as a

⁴ Rogers (1995) labels this the “innovation-development” process, a somewhat arbitrary sequence of need/problem recognition, research, development, commercialization, diffusion and the generation of consequences.

cyclical social process encompassing observation, initiation, implementation and stabilisation. In this process, observing refers to the identification of a gap between the existing and something feasible for adoption and/or further development, e.g. idea generation and/or identification of opportunities to adopt an existing innovation or generate something new. Initiation houses a communicative phase where the observation is transmitted to others in a social system.

Depending on acceptance, the material or immaterial artefact can be commercialised and thus systemically implemented. In the case of rejection, the innovation may be abandoned or looped back for refinement, resulting in recurring cycles of observation and initiation. Standardisation occurs when a successful implementation of an innovation has diffused to relevant areas of application and become fully routinised (West, 1996). Here, therefore, in contrast to individualists' and structuralists' views (Slappendel, 1996), innovation is not portrayed as linear, stepwise or symmetrical, but as an embedded continuous, bi-directional and dynamic social process involving social structuration and diffusion, as well as material and immaterial inputs and outputs. This is also in line with Schumpeter's (1934) thoughts, where dynamic changes in resource combinations underlie the continuous process of creative destruction and economic innovation.

Much of the innovation literature tends to be inherently biased towards success. However, there is another side of the coin – innovation failure. Superficially, failure can be defined as the inability to successfully market an innovation. It can then be asked whether the failure was due to shortcomings in the innovation or the innovator or innovating team. Undoubtedly, radical innovations can be so intrinsically flawed, either in terms of customer perception of their utility, performance or cost, that no organisation could successfully market them.

It is equally true that, for a given innovation, company B or C may succeed where company A fails. The definition of failure is more subtle, however, though some important clues can be derived from these simplistic extremes with respect to understanding various aspects of the innovation success/failure continuum. While it may be important at the time, the judgement of failure or success is due to an inherent induction in the innovation process, i.e. the introduction of a new and radical product invention is not the end, but rather the beginning of the innovation process. Although, as pointed out by Snee (1991), the distinction between incremental and radical innovation is difficult, as there is no absolute measure for intrinsic newness. Intrinsic newness relates to the scientific knowledge component of technology, whereas architectural refers to the organisational component (i.e. how knowledge, artefact and auxiliaries are organised and combined in a new way that changes existing patterns). Henderson and Clark's concept of architectural innovation (1990) may be a more appropriate means of separating innovations with fundamental or radical potential from the rest.

We call product innovation architectural (Henderson and Clark, 1990) when the degree of product newness is high and it changes or seriously challenges existing patterns (in production and/or in use).

3. Methodology

The overall empirical research design follows the general rules laid down in the participative action research methodology (for an overview of this methodology, see Hult and Lennung, 1980). This methodology has the advantage of also being able to explain how innovations emerge from the social interaction of the participants, rather than from the failure of the organisation to adapt to the requirements of its environments. It puts the focus on actual

social actions in specific contexts. The focus on human actions was introduced into social science research more than three decades ago (c.f. Silverman, 1970).

This study has been grounded in an interpretative methodology that recognises the importance of social interaction and the socially constructed nature of social reality. Specific outcomes of such interactions cannot be properly described or explained without a detailed knowledge of the subjective logic that led to the institutionalised meanings of the organisations in question. Subjectively meaningful courses of social action must thus be systematically related to the structures of social interaction in which they were undertaken (Reed, 1985). This method is based on the view that social individuals co-create their reality through participation, experience and action (Denzin and Lincoln, 1994). As stressed by Tandon (1989), this methodology produces knowledge based on social actors' agenda-setting roles, participating in data gathering, and analysing and controlling the use of the outcomes.

The case material was gathered in the following way. The first author was directly involved in the project between October 1997 and September 2001. However, although this makes the case study partly an in-depth eyewitness report, it is not based solely on this author's subjective memory.

The project team recorded the most important events in a project logbook, which covers the project from the beginning in 1997 until September 1, 1999. All official project documentation from 1997 to 2001 has been analysed by both authors, together with a comprehensive archive of e-mails from 1997 to 2001. Nine personal, A4 notebooks written by the formerly employed author also cover the entire period.

For the sake of confidentiality, no individuals from the case, except the first author of this paper, are identified by name. The case information is introduced successively in chronological order. For a more detailed account of the strategically significant events, see annex 1.

4. The case

Ericsson is one of the world's leading manufacturers of telecom infrastructure equipment, a market which was shaken by the commercialisation of the Internet in the mid-1990s. Ericsson, which was founded in Stockholm, Sweden, in 1876, is a global end-to-end telecommunications supplier. During the period covered by this case study, the firm had an average number of more than 100,000 employees, of which approx. 23,000 worked in R&D. Ericsson accounted for 16% of Swedish exports. In the same period, Ericsson Denmark had approx. 1,300 employees.

The HCC is a systemic approach to providing end-user solutions, service-provider solutions, operator solutions and business concepts in what Ericsson named "The new telecom world". HCC suggests improvements to all elements of the industry's value chain, and describes specific solutions. In the period of the case study, however, HCC was more a vision than a new product and was introduced by a creative team at Ericsson Denmark's business development department (BDD).

The inherent assumption in this paper is that, on the one hand, the passion of "fiery souls" is the main driver of radical innovation, while, on the other, the inevitable resistance from the mainstream organisation tends to place such teams into a position of being almost

missionaries or even fundamentalists. From such a position, the team has even less chance of persuading the mainstream organisation; the team gets trapped by its own passion.

As mentioned above, the innovation process was started immediately after the formation of the Business Development Department (BDD). The department was staffed with five persons of diverse backgrounds: (i) a department head, who was an Ericsson veteran with an engineering background; (ii) a young technical specialist with an IT background; (iii) a young economist with a consultancy background; (iv) a secretary with economics and linguistic training; and (v) the first author of this paper, trained in graphic design and marketing, and with a consultancy background. The department head had deliberately selected people with different profiles, in order to ensure divergent and convergent thinking, and analytical skills, as well as a talent for synthesis. He formed the department during summer 1997.

4.1 Searching for knowledge

Focus-group interviews were used to get a first-hand understanding of the end users. Groups of 5-10 people spent a day with the BDD. These groups were either male or female, and always of the same age. Half the day was spent discussing means of communication and information technology; the other half on discussing quality of life — happiness, dreams, sorrows, hates, and so on. The aim of the latter was to discover unarticulated needs with regard to means of communication, from which requirements for the new technologies could be derived. The corporate strategic project, called the “2005 scenarios”, also served as inspiration. Basically, these scenarios described three different roads to the future market, depending on which of the three industries would benefit most from the industrial convergence.

4.2 Two sets of values

The main finding from the focus-group interviews was the impression that there were two distinct psychological user segments: (1) early adopters, and (2) pragmatics and conservatives. In a slide presentation called the “IP scenario”⁵, the two segments were described as follows (October 1997),

Insert Figure 1 about here

There were also large differences in the focus groups between male and female values with regard to attitudes to technology. The male values tended to coincide with the above description of early adopters, while the female values corresponded closely to the pragmatic segment.

Inspired by this finding, BDD also related these values to the value networks of the computer and telecom industries⁶,

Insert Figure 2 about here

⁵ IP stands for Internet Protocol and is used as a synonym for the whole range of Internet technologies.

⁶ Here translated from a Danish presentation dated January 28, 1998.

BDD found that the values of the pragmatic mass market seemed to be much more related to the values of the telecom industry than to the computer industry, which was gratifying.

4.3 Bridging the gap

The following quotation, from a much later document (May 1999), concludes the above findings very precisely,

“Ericsson Home Communication Concept is a proposal to carry these Quality-of-Service values from the common telephony into the New Telecoms World. HCC addresses both End Users, offering solutions to bridging the mass market, offering a total business concept for the Service Providers”.

4.4 The roles of the new marketplace

In the above-mentioned “IP scenario”, BDD also described the main applications of the Internet technologies and presented a technological road map for development over the next few years (1997-2002). Furthermore, BDD defined the “IP roles” as comprising: (i) the End User of communication and information services; (ii) the Service Provider, which also includes the important sub-role of information Gatekeeper; (iii) the Content Provider, who supplies the information to the Gatekeeper; and (iv) the Network Operator, who makes the traffic of information possible.

The so-called “IP scenario” was presented for the first time to a strategic manager from a very powerful Ericsson business unit on October 22, 1997. We will refer to this manager as “Mr. Strategy”. On October 30, the head of BDD also presented their work to an innovation manager from the same business unit. We will refer to this person as “Mr. Innovation”.

On November 18, 1997, a young Ericsson engineer returned from Silicon Valley with a photograph of a new device, a so-called “web phone”, from a company called InfoGear. The photograph is shown below. BDD regarded this device, a combined telephone and Internet computer, as a true bridge between Internet technology and “old telecom”.

The image of this new type of device fuelled BDD’s imagination about all kinds of services that could be offered to private homes. This was visualised in the poster shown below. BDD called the service concept vision “HomeNet”. This name was adopted as an internal project title later on. Both the visualisation and a basic business model were created less than 24 hours after BDD had seen the photograph of the InfoGear terminal.

The HomeNet vision was presented to Mr. Innovation as early as November 21 – three days after seeing the photograph of the web-phone. He responded positively; saying that BDD’s idea might be a candidate for a venture project. It seems, however, that he did not promote the idea – at least, no venture project was started up.

On December 3, parts of the idea were presented to the Business Development team of Ericsson’s main customer, TeleDanmark⁷. They responded positively and suggested collaboration in a small-scale field trial. Based on available information, however, the project needed more time to develop the idea.

⁷ The main national telecom operator in Denmark (now called TDC).

4.5 The HomeNet Business Opportunity Specification (BOS)

Since the Business Opportunity Specification from December 15, 1997, is the first concise description of the HomeNet idea, we will quote some central parts of it below.

The title of the document is “*HomeNet™ The future Infocom system for the mass market*”. “Infocom” was the word used internally at Ericsson to describe the convergence of the industries. The fact that the business development department had placed a “TM” after the name HomeNet is symptomatic; there was no such trademark, and, when BDD later examined the possibilities of getting a registered trademark, Ericsson found itself up against the American company @Home.com. Claiming a non-existent trademark could be interpreted as symptomatic of an offensive and self-righteous attitude.⁸

The preface describes the “Chasm” to the mass market,

“...the IT/Internet solutions, offered today, are primarily addressing the Early Adopters of technology, and are now facing the Chasm to the Pragmatics.

In order to pass the chasm and fulfil the needs of the mass market (Pragmatics and Conservatives) many of the existing system components, solutions and the business logic must be changed.

⁸ However, we keep the “TM” in the following in the interest of correct quoting, as it has not been possible to re-establish the original trademarks held by @Home.com.

HomeNet[™] is a complete Infocom solution covering all aspects of the 2005 [scenario] value chain, from Content Provider – Packaging – Distribution – Presentation to the End User Device. HomeNet[™] comprises the full range of Infocom applications”.

The document then describes the market segments and the Infocom applications (Communities, Commerce, Content, Personal and Device Communication).

To give a better idea of what HomeNet is, we quote from the description of the end-user solution,

- A Personal Communication solution - next generation telephony with voice, videophone and “videomail”
- An Infocom solution providing Community, Commerce and Content
- A HomeNet Surveillance[™] solution providing surveillance of family members, premises and mobile units like cars, caravan, boats etc. Surveillance covers areas within security, burglary, fire, etc.
- HomeNet Metric[™] solutions for home automation like meter reading
- To fulfil the values of the Pragmatics and Conservatives the terminal must be designed to fit into the home or the application must be integrated in existing terminals like the TV. In the figure below is an example of an Infocom terminal – an evolution of the traditional telephone set.

4.6 A new business paradigm?

The Business Opportunity Specification also presents a value system for the new market,

“In order to describe the business and the value of HomeNet™ an adapted Michael E. Porter Value System has been developed. The HomeNet Value System™ is divided into three levels of Value Chains: Meta Chain, Primary Chain and Support Chain:

Meta Chain describes the Value Chain of the HomeNet™ business concept, i.e. to make business of the business idea itself. *Primary Chain* describes the Value Chain of providing the HomeNet™ applications and services to the End User. *Support Chain* describes the Value Chain of supplying all equipment to fulfil the HomeNet™ concept, e.g. telecom networks, terminals, servers, etc.

The Meta Chain consists of the following Value Chain Players:

Global HomeNet Corporation™ is the owner of the HomeNet™ concept and is overall administrator and developer of the concept.

Regional HomeNet Company™ is the administrator of a HomeNet Service Region™ responsible for Meta marketing i.e. selling of HomeNet™ concept to Franchisees as well as the regional promotion and advertising. The operational part of the Regional HomeNet Company™ handles Regional Content Providers, Support to HomeNet Service Providers™ and O&M of the regional Data Server.

HomeNet Service Provider™ is a franchisee of the HomeNet™ rights for a specified HomeNet Service Area™, providing the HomeNet™ application to the End User within that area”.

Today, this might appear extremely ambitious, considering that it came from a small Business Development department in a local market unit. Not surprisingly, the business development department ran into resistance from the mainstream organisation. Ericsson, which is based in Stockholm, has a Swedish corporate culture, which in our view implies subdued, safe-playing attitudes – not exactly those displayed in the above text.

The above quote displays some central themes. Firstly, it describes a value system consisting of three levels of value chains, of which only the third (the support chain, i.e. delivering equipment for the telecom operators and service providers) was part of Ericsson's core business. Secondly, it refers to *franchise* models for selling a *concept* – in 1997, Ericsson still focused on selling equipment, and the idea of franchise models was alien to the telecom company (BDD's idea had, in fact, been modelled closely on McDonald's franchise concept).

This new thinking – the abstraction of the business idea from selling equipment to a level of business concepts and the alien franchise concept – was precisely the greatest hurdle in the later internal communication. In fact, it is debatable whether any serious attempt was made to get management acceptance of these two cognitive quantum leaps.

The mainstream logic of the Ericsson organisation was shaped from an industrial paradigm of selling equipment. At the time, there was much focus in internal strategic discussions on providing not only boxes, but also solutions. But the idea of selling business concepts was unheard of.

Gary Hamel's "*Leading the Revolution*" (2000) introduces similar thinking as industry revolutionaries taking the entire business concept, rather than a single product or service, as the starting point for innovation.

One interpretation of the HCC case is to see the BDD team as "industry revolutionaries" and the mental wall they hit as the lack of "mind-stretch". The approach taken here resembles the new paradigm of business concept innovation described by Hamel (2000) in his description of the concept of innovation from Industrialism towards the Knowledge Society.

4.7 Still only a vision, not yet a product

The Business Opportunity Specification continues describing the three levels of the value system in detail and presents a brief business case. It then continues with a more detailed description of the end-user solution, the required installations in the home, the access and network requirements, and the elements of the business concepts. All of these cornerstones were to be developed; the only thing that was ready was a rough, web-based demo of the end-user software solution, i.e. the content and the user interface. So the "invention" was more a vision than a prototype. To realise the vision meant tremendous development of all elements in the entire value chain, as described above: *"from Content Provider – Packaging – Distribution – Presentation to the End User Device"*.

During the first half of 1998, the HomeNet concept was presented to numerous Ericsson entities and external partners. At the same time, BDD worked on further development of the concept, e.g. the business case, and BDD used "skunk work" support from enthusiastic engineers to create a much more refined software demo. However, BDD made no real

progress in finding a sponsor for real-life development of the concept. On reflection, it felt like an exercise in futility; cf. “The Innovator’s Dilemma”.

One Business Unit was called Home Communication. This unit focused on terminals and equipment for homes or small offices; it therefore represented a central part of the value chain (i.e. access, end-user devices and the presentation to the end user). The portfolio of the Home Com unit represented new business areas - it was a very small business unit which was itself struggling up-stream. Another potential Business Unit sponsor for the HomeNet concept was called Public Networks and it covered the “packaging” and “distribution” parts of the value chain. Public Networks represented the traditional core business of Ericsson, and both Mr. Strategy and Mr. Innovation belonged to this powerful unit. Other possible units would have been those dealing with mobile communication – it would have been relatively easy to link the HomeNet concept to mobile services and then apply for sponsorship this way.

4.8 The innovator's classical problem

The problem was that BDD’s concept did not match any single business unit, because it was not based on single products or technologies. It was a holistic concept, in the sense that BDD tried to meet the needs of end users throughout the value chain “*from Content Provider – Packaging – Distribution – Presentation to the End User Device*”. One could say that Ericsson’s infrastructure was not built to handle systemic concepts, but only to handle ideas within the existing product categories and business units.

On January 22, BDD held a meeting with the manager of the Home Com business unit. We refer to this manager as “Mr. HomeCom-1”. BDD was told that the venture approach was out of question, and that the decision about sponsorship was Mr. HomeCom-1’s alone. A new

meeting was scheduled for February 4. In the meantime, Mr. HomeCom-1 would examine the technical requirements for developing the HomeNet concept while BDD would develop the business case further. Nothing was achieved at this new meeting. According to the head of BDD, this was because Mr. HomeCom-1 had not done his “homework”, and, furthermore, he had to go to the dentist.

In retrospect, bringing the head of BDD and Mr. HomeCom-1 together was doomed to fail. Using the personality characteristics of Herrmann’s “whole brain” theory (1989), the head of BDD was an extremely “yellow” person (i.e. curious, visionary, intuitive and abstract, rule-breaking, not caring about details), whereas Mr. HomeCom-1 could be characterised as an extremely “blue” person (i.e. analytical, critical, realistic, quantifying, detail-oriented). The failure of their meeting can to some extent be explained by the mismatch of their personalities.

BDD presented the project to Ericsson Denmark’s CEO on February 18. He was sceptical about the idea of doing business at the concept level, and he did not like the idea of the franchise model. He saw no point in that kind of business.

Even BDD did not have a sponsor; they made a PowerPoint presentation about the scope of a HomeNet field trial, describing the purpose, the applications, the technical specification, the project activities, a budget, and suggestions for partnership (with TeleDanmark as a central player). A refined, web-based software demo was completed at the same time. On March 11, Mr. Strategy was introduced to the concept, which he mostly listened to without comment. Mr. Strategy was a very reflective type, almost a philosopher.

On March 16, BDD presented HomeNet to a Business Development manager from yet another business unit. He was very interested and realised that his business unit could be responsible for the development of parts of the equipment required for the HomeNet concept. However, he returned on March 24 with a negative response; his business unit was only interested in “volume sales” and did not want to be involved in that kind of new development.

On April 1, the head of BDD presented the concept to Ericsson’s “CyberLab” in Silicon Valley, who, according to the former, seemed to like the idea. For whatever reason, this connection was not utilised until later on in the process.

On April 7, BDD finally received an e-mail from Mr. Strategy inviting them to a meeting in Stockholm with both Mr. Strategy and his people and Mr. HomeCom-1 and his people. The following quotes are taken directly from this e-mail,

“ ... the premise behind the meeting is that we see this as a very interesting and promising initiative that should be supported and exploited by Public Networks and that fits very well with the general direction and intentions of the Home Com initiative”.

Naturally, this e-mail was received with satisfaction and optimism in BDD. The meeting in Stockholm was not a success, however. According to BDD’s HomeNet logbook, nobody seemed able to make a decision. The official result was that BDD was to make a more detailed business case and that Mr. Strategy would try to find seed capital for building a realistic demo.

BDD was frustrated by the meeting and felt that the whole problem could be traced back to their colleagues from the Home Com unit, who in BDD's view had absolutely no idea of visions. One colleague from the Home Com unit put it this way, "*I believe only in what has been sold!*" If this were to be the 'rule', then it was no surprise that BDD had problems in seeing how to develop new businesses.

BDD worked out the required business details by June 23, and sent them to Mr. Strategy and Mr. HomeCom-1. On August 7, 1998, Mr. HomeCom-1 replied in an e-mail⁹,

"Thank you for the HomeNet documents [the Business Opportunity Specification and the business case]. I have read them with interest, and I think it looks so good that we must do this. I have not yet seen the budget proposal [for building a realistic demo in a lab], but I would like to participate in the funding and resource support".

The e-mail went on to describe some other activities of the Home Com unit which Mr. HomeCom-1 thought might be of interest to BDD. The response from the head of BDD is symptomatic – he only mentions these other activities, not reacting *at all* to the positive offer of support.

4.9 Transition into a project for CeBIT

On August 13, 1998, Mr. Strategy visited BDD together with a corporate marketing manager, who was responsible for Ericsson's participation in commercial fairs like the CeBIT fair in Hanover. We refer to this person as "Mr. Marketing". BDD presented the concept and ran the demo. Mr. Marketing found HomeNet so interesting that he considered displaying it at the

⁹ Translated from Swedish

CeBIT fair in March 1999. He requested a budget for development of a more mature demo for the upcoming CeBIT fair in Hanover.

During the following months, BDD had several meetings with people from the Home Com unit, but without results. BDD apparently became more and more interested in the contact to Mr. Marketing. The Home Com Unit (HCU) was suspected of having a hidden agenda by the BDD team, who believed that HCU would “steal” the innovation.

From September 1998, BDD had several meetings with Mr. Marketing and Mr. Strategy about the CeBIT project (as it was provisionally called). Mr. Marketing suggested a joint exhibition of HomeNet, a device from the Home Com unit and a concept for safe e-commerce and electronic billing from the Finnish market unit. Mr. Marketing recognised the synergy between these projects.

The joint demo project was first called “Ericsson Family Infocom Solution”. At a meeting on January 12, 1999, the name “Ericsson Home Communication Concept” (HCC) was chosen.

The HCC demo was given a relatively large, and also very central, place at the Ericsson stand. An interesting detail was the application form for space to Ericsson’s central CeBIT committee - the more devices or “boxes” you wanted to display, the more slots would be available. It was not envisaged that a business concept or end-user software solution could be displayed.

4.10 Acquiring a partner for a field trial

Among visitors to the BDD stand at CeBIT were Business Development “colleagues” from TeleDanmark. The CeBIT demo made them keen on co-operation, and BDD had the first post-CeBIT meeting with them on April 27, 1999. These Business Development people were from the TeleDanmark R&D unit. Co-operation would require a buy-in from the management of this R&D unit, and in order to approach this, BDD held a series of meetings with ever-broader representation from the R&D unit. Finally, the BDD “colleagues” succeeded in getting both the relevant R&D managers and TeleDanmark’s R&D director to come to a meeting on August 9, 1999. At the meeting, BDD spent two whole hours presenting the HCC concept, from background to demo. After this presentation, the R&D director expressed his surprise that BDD had showed him a business concept instead of the usual technology and boxes he had expected to see. He found the BDD concept exciting, because of its focus on the content element. He ended by expressing his willingness to co-operate in a mutual development project with Ericsson. At the end of the meeting, the road to a contract was outlined.

The negotiations with TeleDanmark, including the specification of a joint field trial, continued during autumn 1999, regardless of the events described below, and ended with the signing of a contract on December 20, 1999.

After a long time, Mr. Innovation suddenly paid BDD a visit on August 26, 1999. In the meantime, he had been promoted to an even more central position as director of business innovation at Ericsson.

A meeting was held between the head of BDD and Mr. Innovation, who told him that Electrolux had contacted Ericsson. Electrolux is the world's largest manufacturer of household appliances and, like Ericsson, it is based in Stockholm. Electrolux had invented the *ScreenFridge*[™], which was a refrigerator with a built-in Internet computer on the front, operated by a touch-screen interface. Electrolux had contacted Ericsson in order to improve the communication aspects of their new invention.

After discussing the application from Electrolux, Mr. Innovation remembered BDD's HomeNet concept, which BDD had shown him first, shortly after the Eureka experience in November 1997, and which he had seen again at the HCC stand at CeBIT 1999. It struck him that there could be a link between Electrolux's device and the BDD concept.

4.11 The formation of a joint venture with Electrolux

During the following weeks, Mr. Innovation arranged a series of top-secret meetings between the BDD team, representatives from Electrolux and from Ericsson's management. These resulted in a new 50-50% joint venture between Ericsson and Electrolux, announced at a press conference on October 7, 1999.

The slide presentation used at the press conference had the slogan "Networking your home". The following quotation is from this presentation, "Electrolux and Ericsson are establishing a joint venture to develop and market complete solutions (Plug-and-Use) for electronic services to the household". The joint venture had the working title "E2", and the official company name ended up as "E2 Home AB".

4.12 Facing the real world

E2 Home took up the contract on a field trial in Denmark, which was signed between Ericsson and TeleDanmark December 20, 1999. By August 2000, the project was ready to start the field trials. 49 families in Ballerup, a suburb of Copenhagen, were given a ScreenFridge™ and access to a package of electronic services via an ADSL broadband connection. The service package included, among other things: (i) information services: Internet, news, traffic information, weather forecasts, TV, radio; (ii) communication services: E-mail, IP-telephone, address book, phone directory; (iii) family management: Calendar, to-do list, post-it notes, voice messages; and (iv) food management: Recipes, own cookbook, daily menu, meal plan, shopping list, tailored e-commerce.

The field trial attracted a lot of media interest. However, a lot of press attention was in the ScreenFridge™ itself, not so much in the concept. This is perhaps not so surprising, since the device was both new, tangible, and represented the “front end” of the concept, as seen from the end user. Furthermore, all content and the user interface were tailored to this device, thus creating a genuine new kitchen media.

During the field trial, TeleDanmark's R&D unit, which was responsible for the project, was closed down in a major restructuring of the company, which changed name to TDC. Under the new organisation, the service-provider function and the traditional network-operator function were hived off into two independent divisions within the same legal company, called “TDC TeleDanmark”¹⁰. The ScreenFridge project was allocated to the unit for servicing private end users, and although the core team of the project was transferred to the new

¹⁰ TeleDanmark was divided into seven companies: TDC Tele Danmark, TDC Mobile, TDC Internet, TDC Cable TV, TDC Publications, TDC Switzerland and TDC Services (internal services aimed at the rest of the corporation, e.g. IT services).

organisation, the project as a whole was in danger for a while. TDC would, of course, carry out the field trials specified in the contract, but the management of the new “home & owner” in TDC knew nothing about the idea behind the concept. They could easily have decided to regard the project as being outside the strategic agenda. However, after a crucial meeting with the entire management of this unit (November 22, 2000), the idea was accepted for further investigation.

At the end of the field trial on May 1, 2001, 46 families were still participating (the rest had moved out of the area). The following information is from the notes to the PowerPoint presentation to the press: “*Screenfridge Project - A joint field trial - Analyses and results from the field trial group*” from spring 2001. Asked what they thought about the general concept, the “ScreenFridge idea”, 32 out of 45 responding families replied “very interesting” (= the highest score).

Thus, it seems that the assumptions behind HCC were confirmed by the meeting with real-life end users.

During the field trial, different Ericsson units developed further solutions in the area of the intelligent home. At the same time, a handful of strategic projects were launched by TDC’s new service provider unit at the beginning of 2001, one of which was called “Intelligent Home”. Since they had asked BDD for input to their strategic project, it became clear that not only the ScreenFridge field trial, but also Ericsson’s product development, fitted very well into TDC’s visions. This opened a door through which the Home Communication Concept finally had a chance of entering into Ericsson’s mainstream business.

4.13 Restructuring of E2 Home

At the end of 2000, Ericsson became another victim of the general market recession. The company responded in spring 2001 with plans for major reorganisation and concentration. E2 Home was also involved in these efforts and underwent restructuring in June 2001. Below are quotations from an official letter from Ericsson to TDC,

“In order to strengthen the Ericsson world-wide broadband offering, Ericsson has decided to cover all aspects of the market needs from applications, service delivery platforms to network infrastructure. This gives Ericsson the possibility to supply the market with true broadband opportunities and solutions.

Ericsson and Electrolux have therefore, after careful review of the strategy of e2-HOME, decided that the company in future will focus on application development for the construction industry. Ongoing business and dialogue with Network Operators and Service Providers will be directed to Ericsson. This will strengthen the relationship between TDC and Ericsson concerning the intelligent home activities”.

While this reorganisation might have been a hard blow to E2 Home, it opened the doors for the Home Communication Concept to a “home & owner” within the Ericsson organisation without the need for being so closely linked to the ScreenFridge™ device, however interesting it might be in itself. HCC was developed with a broader perspective than one device; it was a general concept for electronic communication solutions to the mass market of end users.

5. Discussion and conclusion

Let us return to the typology of radical and incremental innovation and dwell a little on the procedural dimensions of this dichotomy. There is yet another dichotomy, corresponding to the conceptual dichotomy of radicality and incrementality. An innovation process can thus be characterised as a rational analytical process as well as (at the other extreme) an anarchical process. While the former tends to be characterised by fairly clear and stable goals, ample information about alternatives, etc., the latter typically has ambiguous or ill-defined goals, few or no alternatives are taken into consideration, and few consequences are analysed, leading (at best) to a satisfying solution as opposed to an optimal solution.

A conceptual model of the former is by no means unknown to management theory. Lindblom's study (1959) of the political decision processes in the USA, and Klein and Meckling's (1958) studies of R&D in the American defence industry, led to the general recognition of "muddling through processes", which Hirschman and Lindblom (1962) summarised in their "ten statements". Despite criticism for being too conservative (and thus preventing more radical innovation) and for the tendency to lead to a competence trap, as a result of the built-in step-wise and sequential learning during the "muddling processes", it still seems reasonable to pay attention to the related problem of tacit knowledge and intuition, since innovators often face problems when trying to convince others about their ideas.

When approaching the architectural (Henderson and Clark, 1990) and/or radical end of the innovative continuum, the relatively high element of creativity and newness prevents or excludes a purely rational-analytical or purely anarchical process. When viewed in retrospect, the overall lines of the innovation process seem to fit into a crude model with phases, though

this does not change the fact that a lot of anarchy and “muddling through” takes place at the specific innovation level.

This simplistic model of the innovation phenomenon is inadequate, however. We propose instead a structurationist approach (Giddens, 1976), in which planning and/or innovation strategy is seen as a structural feature of the organisation and the institutional context of action and innovative activities, continuously shaping and being shaped by these.

Thus, planning cannot be seen as an independent and objective structural component, but is continuously being reconstructed and reaffirmed by the practices of the actors. Seen in this light, planning becomes the product of institutionalised and collective meaning and practice, guiding future action and resulting in creation. The chaotic-planning paradox reflects the ongoing interaction between meaning attachment and iterations in earlier phases of innovative activities and the institutionalisation and reification of meaning in planning and structural features.

Looking back, the venture of the Business Development team was both a success and a failure. BDD did in fact “rock the boat” - they had their breakthroughs (CeBIT 1999 and the ScreenFridge field trial) - but they were not so successful in finding a “home & owner” for HomeNet and HCC. The explanations are many, and undoubtedly BDD lacked sufficient political skills, being trapped by their own passion in a position as self-righteous missionaries. However, some more fundamental innovation problems also seem to have influenced the venture.

As Christensen (1997/2000) says, “Perhaps the most powerful protection that small entrant firms enjoy as they build the emerging markets for disruptive technologies is that they are doing something that it simply does not make sense for the established leaders to do. Despite their endowments in technology, brand names, manufacturing prowess, management experiences, distribution muscle, and just plain cash, successful companies populated by good managers have a genuinely hard time doing what does not fit their model for how to make money”.

This might well have been said about the small Business Development team which, as the “entrant firm”, presented a business idea which simply did not “make sense” to the established organisation. Mainstream organisations are designed for thinking inside the dominant paradigm, thus making breakthroughs of profound new concepts difficult. According to the classical dilemma of innovation, the “formula” (for design skills and technological capabilities) which made the company what it is today not only leads to myopia and/or inertia, but, more importantly, will prevent the company from profiting from new disruptive technologies. The present case suggests another dilemma – that of balancing between a free and creative environment, which nurtures the generation of new and radical innovations while at the same time securing mutual trust and respect between the innovative team and the mainstream organisation. In other words, the dilemma is how to encourage creative teams to “think out of the box” and break existing paradigms, while at the same time creating a bridge between these “intrepreneurs” and the mainstream for the beneficial utilisation of the ideas. Inspired by Gordon McKenzie’s book “Orbiting the Giant Hairball”¹¹, this can be seen as finding a balance in which the innovative team stays in orbit around the

¹¹ Gordon McKenzie: “Orbiting the Giant Hairball – A corporate Fool’s Guide to Surviving with Grace”, Viking Penguin, 1998, New York.

organisation - with the necessary distance to think outside the established “formula”, but close enough to bring in value to the organisation. Put another way, it is necessary to prevent the innovative team from sliding too far away from the rest of the company and/or turning into a ‘religious fundamentalism’ where it only sees ghosts everywhere.

6. Implications

Managerial implications: relying on technological competencies to boost innovation and create new market needs, while at the same time being confronted with a disruptive technology such as the Internet, presents enormous challenges for management. Under such circumstances, management will have to (re)define customers and a “winning” design while at the same time defining the technological basis necessary to produce it. Moreover, management will have to allow space and autonomy for creativity while at the same time ensuring that creative business development does not stray completely and uncontrollably from the existing strategic direction.

In most organisations, assets and mental modes are far more context-specific than most managers are inclined to acknowledge. Organisations often develop particular capabilities to perfection, which they can then bring to bear in certain markets. However, when they need to introduce new technology to markets in different ways, they are often blocked by internal inertia and lack of appropriate capabilities. These typically include the capability to tolerate risks and failure and to address present and future potentials with a new “formula” (instead of reusing the old formula time and again).

Staying within the domain of disruptive technologies (Christensen, 1997/2000), there is always the risk for any new innovation that it will most likely not be viable. Rather than

learning to live with failure as a natural and unavoidable feature of innovation, organisations should focus on how to make the most of the learning process and realise that the commercial success of a new disruptive technology would not have been possible without the experience gained from past mistakes.

Implications for research: one of the important findings of this in-depth study is that there seems to be a lack of trust and mutual understanding about the value of different managerial functions in a company. A future follow-up study needs to address what leads to “fundamentalism” in the creative/innovative function of a company. Apparently, the meaning of the HCC case differed significantly according to the actors and their roles in the company. There is a need to focus more on meaning in shaping technological innovations, along the lines of Orlikowski (1992), and to consider whether actors conform with the meaning boundary or act otherwise, thus changing the structural features. This is where structurationist theory (Giddens) might come in, which various authors have introduced into innovation theory (Bijker, 1987; Woolgar, 1985). This line of reasoning would direct attention towards how shared interpretations and meaning are developed and institutionalised around technological innovations and/or artefacts.

The theory of innovation is beset with paradoxes and contradictions. Technological innovation is more a dialectical and continuously evolving process than a linear or rational-analytical process, as it is often portrayed in many textbooks on innovation strategy. It is a process that involves the “interpretive flexibility” of technological innovations, and with it processes of social construction and meaning attachment through institutional and structural boundaries. Research is needed on the dialectics between social action, such as innovation and the structural properties of the social environment in which innovations take place

(organisations), and the interpretative flexibility of actors. More research is also needed concerning the role of communities-of-practice (Brown and Duguid, 1991) and how situated arrangements affect the structuration process.

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Annex 1:

Timetable of the innovation

The project went through the following stages: (i) Crystallisation of the concept (June - December 1997); (ii) Communication and concept development (January – July 1998); (iii) Transition into a project for CeBIT (August 1998 – April 1999); (iv) Partnering up for a field trial (May – December 1999); (v) Conducting a field trial in Denmark (January 2000 – April 2001); and (vi) Integrating into mainstream business (May 2001 -).

The crystallisation of the “HomeNet” concept: June - December 1997

June: Establishment of the new Business Development department at Ericsson Denmark.
November 19: A photograph of a web-phone is the trigger for a Eureka experience - “HomeNet” is born. December 15: A Business Opportunity Specification (BOS) for HomeNet is written.

Communication and concept development of “HomeNet”: January – July 1998

January 12: The BOS is presented to the Strategic Decision Council at Ericsson Denmark.
January 22: HomeNet is presented to the manager of the Ericsson Home Com business unit.
March 11: Presentation to a strategic manager from a very powerful business unit.
April 22: Meeting in Stockholm about “the way forward” for HomeNet - results in frustration.
June 23: A detailed business plan is sent to the strategic manager and the Home Com BU.
August 7: The Home Com BU offers support - which is never responded to.

Transition into a project for CeBIT, named "HCC": August 1998 – April 1999

August 13: The strategic manager arranges a meeting with a corporate marketing manager.

January 12: A joint demo for CeBIT is named "Home Communication Concept", HCC.

March 18-24: The HCC demo has a central place on the Ericsson stand at the CeBIT fair.

Partnering up for a "HCC" field trial: May – December 1999

April 27: The first meeting after CeBIT with business development people from TeleDanmark.

April 28: Meeting with corporate + BU top management in Stockholm - no result.

August 9: Presentation of HCC to the director of R&D at TeleDanmark.

August 26: The Ericsson director of business innovation visits BDD to tell them about ScreenFridge.

October 7: The Ericsson-Electrolux joint venture company "E2 Home" is announced to the public.

December 20: The contract with TeleDanmark regarding development and test of HCC is signed.

Conducting a "ScreenFridge" field trial in Denmark: January 2000 – April 2001

February 3-4: Official kick-off for the mutual development of the project called "ScreenFridge".

August: The field trial begins in Ballerup, Copenhagen, with 49 families testing ScreenFridge.

October - November: TeleDanmark is restructured, but Ericsson gets a buy-in for the project from the new TDC managers.

April 30: The field trial ends and is, in general terms, regarded as successful.

Integrating into mainstream business as “Intelligent Home”: May 2001 -

May: TDC starts a dialogue with Ericsson about “Intelligent Home”.

June: Mutual interests are mirrored and seem to fit into the mainstream development at Ericsson.

September: TDC CEO tells the press about TDC visions of the intelligent home.

Figure 1

<u>Early adopters</u>	<u>Pragmatics / Conservatives</u>
Freedom above all	Freedom to a certain limit
Problems are welcome	Quality is a prerequisite
Chaos is a challenge	Order and clearness
Crime is a part of it	Security
Fraud is a possibility	Security
Nonsense is OK	No nonsense
Complicated operation	Simple operation
Complicated and expensive terminal	If visible it should have a nice design
Revolutions are exiting	Inexpensive terminal
	Evolution
<i>The few, therefore socially</i>	<i>The many, therefore socially important</i>
	➔ <i>Regulations,</i>

Figure 2

IT culture

- Market-driven
- “We’ll fix it tomorrow”
- Fast money
- Venture capital
- Private funding
- Turbulence
- Technology focused
- Play, games and fun

Masculine values

Telecom culture and values

- Regulation, standardization
- Reliability
- Long-term investments
- Public funding
- Stability, order
- Social spirit
- Responsibility

Feminine values