

# The Odyssey of the Hansen Family

## A case story of disruptive innovation

Arne Stjernholm Madsen, Business Developer, Ericsson Denmark

### Introduction

This article presents an innovation case story in the framework of the disruptive technological change, which the invention of Internet technologies meant to the telecom industry. The article is an eyewitness report from a venture, which began in 1997 with the establishment of a new department for Business Development in Ericsson Denmark.

The purpose of the article is both to share the experiences with other innovators and to discuss the problems, we encountered, in perspective of Clayton M. Christensen's famous book, "The Innovator's Dilemma".

### Background: The disruptive technological change of the Internet

Ericsson is an global end-to-end telecommunications supplier based in Stockholm, in Sweden. Founded in 1876 by Lars Magnus Ericsson the company has been a part of the telecom industry right from the beginning. Today we are more than 100.000 employees in 140 countries.

As we began our work in our new Business Development team back in 1997, we were facing a major challenge for our industry: The Internet technology. It is no exaggeration to say that the Internet represented the challenge of a truly disruptive technological change. The challenge involved the so-called convergence of three industries:

- Our own telecom industry, which was shaped by a hundred-year-long tradition of monopoly protection, and a history of long term planning.
- The other industry, the "computer industry", was much younger and had never been regulated, so it had always been business driven. As an industry it was extremely competitive and innovative, and it was moving very fast.
- Furthermore, the media industry was joining the other two on this new common battleground.

Below I have inserted a corporate Ericsson slide from that time illustrating the "convergence" challenge (fig. 1).

*Figure 1: A corporate Ericsson slide from 1997 illustrating the new "battle ground" of Convergence following the invention of the Internet technologies.*

### First step: Understanding the challenge

We were seeking a first hand understanding of the end users and their interest in the different Internet applications. We therefore invited focus groups of 5-10 people to spend a day with us. The groups were either male or female, and always persons of same age. Half of the day was spent discussing means of communication and information technology; the other half on discussing life quality. This second part was perhaps more important than the first part, since you cannot rely on the end users' articulated needs, when it comes to disruptive technologies. Instead, you must try to find the unarticulated needs and the psychological values in order to identify the relevant applications of the new technology.

The main finding that we derived from the focus-group interviews was the impression that there were two distinct psychological user segments: (1) early adopters, and (2) pragmatics and conservatives. We described their respective values as follows (fig. 2):

<p><b>Early adopters</b></p> <ul style="list-style-type: none"> <li>• Problems are welcome</li> <li>• Fraud is a possibility</li> <li>• Complicated operation</li> <li>• Technical design</li> <li>• Information: Nonsense is OK</li> <li>• Price: Expensive terminal</li> </ul> <p><i>Fascination of technology</i></p>	<p><b>Pragmatics/Conservatives</b></p> <ul style="list-style-type: none"> <li>• Quality is prerequisite</li> <li>• No cheat, no registration</li> <li>• Simple operation</li> <li>• Beautiful design</li> <li>• Information: Relevance is required</li> <li>• Price: Inexpensive terminal</li> </ul> <p><i>Fascination of use</i></p>
--	---

Figure 2: The characteristic values of the two segments of end users, whom we faced in our focus groups.

We saw the pragmatic or conservative segment as representing the true mass market, compared to the relatively small market of early adopters. We then related these values to the value networks of the computer industry and the telecom industry (fig. 3):

<p><b>IT culture and values</b></p> <ul style="list-style-type: none"> <li>• Market driven</li> <li>• "We'll fix it tomorrow"</li> <li>• Fast money</li> <li>• Private founding</li> <li>• Turbulence</li> <li>• Fun and play</li> </ul> <p><i>Masculine values</i></p>	<p><b>Telecom culture and values</b></p> <ul style="list-style-type: none"> <li>• Regulation, standardization</li> <li>• Reliability</li> <li>• Long term investments</li> <li>• Public founding</li> <li>• Stability and order</li> <li>• Responsibility, public spirit</li> </ul> <p><i>Feminine values</i></p>
---	---

Figure 3: Our description of the value networks of the two industries of IT and telecom

It was a positive finding for us 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.

We analyzed further what it would mean to satisfy the values of the pragmatics/conservatives in the field of information services to residential households. We described this enterprise in a five-element value chain (fig. 4):



Figure 4: Our value chain model for the home information business.

The recommendations for each of the five elements were then derived from the pragmatic values:

- **Content** should be edited to be of relevance to the end user. Much of the content that we had seen on the World Wide Web had far too much nonsense, and it was often time-consuming to find relevant information.
- **Packaging** (that is transformation of content into bits and bytes) should be done in a way so that information could be retrieved instantly. The normal Internet packaging sends away the information in a way that allows interruptions and delays. This technology is not designed for what we call *real-time processing*.
- **Distribution** (that is the network and the access to the homes) should include a Multi Service Network with reliability, speed, and multi-functionality. The Internet as an infrastructure has multi-functionality, but again the requirement for real-time processing is not fulfilled, and the reliability compared to normal telephony or to TV broadcasting is poor.

## The Odyssey of the Hansen Family

- **The terminal** (the end-user device) should be easy to use and should be dedicated for the relevant application. Internet was normally accessed with a PC, but PC's really are designed for office work. Also, the PC-Internet dial-up connection did not fulfill the requirement of being always on, always up.
- **The presentation** should happen in a user interface with ease-of-use and attractiveness. Much PC software and most web pages had a complex user interface.

Since we saw that the current Internet solutions were far from fulfilling the requirements of the pragmatic end-user values, we defined it as our mission to *bridge the gap* between the Internet technologies and the yet unexploited pragmatic mass market. In the vocabulary of "The Innovator's Dilemma" we wanted to bridge the disruptive technology with the traditional market or customers of the telecom industry.

### Next step: Developing for the Hansen Family

The general understanding described above was developed in our Business Development team during the fall of 1997. In late November the understanding exploded into a vision of a new concept of telecommunication, which we gave the work title "HomeNet". The trigger for this explosion was a photo of a new "web-phone", developed by a company called InfoGear. The photo is showed in fig. 5. Being a combined telephone and Internet computer we saw this device as a true bridge between Internet technology and "old telecom".



*Figure 5. The picture, that trigged our imagination*

As a tool for development of such a new concept, we needed the sparring from end users. As we wanted the possibilities of immediate feedback, we created a "concept family." It was an imagined Danish middle-class family, called the Hansen family. I made posters of each family member, carefully describing their personal interests and values. We also described the roles between the family members. (Fig. 6).

*Figure 6: The "Hansen family" - a concept family, used as a tool for the innovation process (illustrations by the author)*

It turned out that the Hansen family was an excellent tool in the development process. We used the family as "a wall to toss balls at." Every new idea was tested with the question: "Does this fit into the values of the Hansen family?"

The family was, in a way, created in our own image. It was based on both the focus groups and how we knew our own families. The Hansens represented the pragmatic end-user segment. Since the family was visualized and almost seemed alive to us, it was easy *to feel* if we were going in the right direction. By doing so we did in fact use the artist's way of working, guided by our hearts and intuition, rather than the normal way of economists and engineers.

## The Odyssey of the Hansen Family

The concept, we developed, comprised:

- **The story** of the end-user values and the gap to the pragmatic mass market, as briefly described above.
- **A new business model** on how to earn money on this new "battle ground" of Convergence (which was, and still is, a major problem for the World Wide Web based enterprises). We invented a new business concept, which I unfortunately cannot share with you, but it suggested a business approach, which was alien to organizations like Ericsson.
- **A technological road map** describing the needed improvements throughout the entire value chain of fig. 4.
- **A demo end-user solution** including a graphical user interface.

We should, perhaps, have named our concept after the Hansen family, but, as mentioned, we used the project title "HomeNet". Later on it was renamed into the *Ericsson Home Communication Concept*. Before the end of 1997 our HomeNet concept was described in a so-called Business Opportunity Specification. The management at Ericsson Denmark approved our concept, but because of its profound nature, it was necessary to find support within the Ericsson group in order to develop the vision into real business.

## The Innovator's Dilemma

We then ran into some fundamental organizational problems. Ericsson was organized in business and product units according to the technical nature of the products. The power to support new ideas was bound to the management of these units. The problem we encountered, was that our concept was not based on single products or technologies. It was exactly opposite. Facing a disruptive technological change, which melted together three industries, we tried to meet the values of the Hansen family throughout the entire value chain of the new business. It was a holistic concept, and it was disruptive for Ericsson in the way that it spread out across all organizational borders. One can say that the infrastructure of Ericsson was not built to handle basically cross-functional or disruptive concepts; it was more adequate for handling ideas within the existing product categories. Looking back this perhaps is not so surprising; allow me to quote some sentences from the book, "The Innovator's Dilemma":

*"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 could have been written about our small Business Development team as the "entrant firm" presenting a business idea which simply didn't "make sense" according to the established organization. I wish I had read "The Innovator's Dilemma" when it was published back in 1997!

Another fact made the problem even worse: Our concept was based on understanding end users rather than technology. Ericsson historically was a technology driven company, and almost all managers had a background in technology. The language we spoke was different from theirs, being of a more psychological nature.

## Approaching the first results

During the summer of 1998, a marketing manager, to whom we presented our vision, invited us to demonstrate our concept at the *CeBIT Fair* in Hanover, March 1999. We established numerous contacts during CeBIT, but it was difficult to make a proper follow-up on these contacts, since no Ericsson business unit had taken over responsibility of the concept. The organizational boxes couldn't catch a holistic or disruptive approach. And as long as all the horses stay in their boxes, there will be no new foals. We certainly couldn't get the horses out of their boxes.

## The Odyssey of the Hansen Family

The first real progress was made, when a corporate innovation manager during the summer of 1999 had attention enough to see a link between our concept and an invention from Electrolux. Electrolux is the world's largest manufacturer of household appliances; and it is based in Stockholm, just like Ericsson. Electrolux had invented the *ScreenFridge*<sup>™</sup>, which is a refrigerator with a built-in Internet computer in the front, operated by a touch-screen interface. Electrolux had contacted Ericsson in order to improve the communication aspects of their new invention.

The Ericsson innovation manager arranged meetings between the two parties. As result, a new joint venture, named "E2 Home" was announced October 07, 1999, and it had the purpose to develop and market solutions for electronic services to residential households. The first activity was to conduct a field trial in a suburb to Copenhagen (Denmark) in co-operation with TeleDanmark (our national telecom operator). August 2000, 50 families were each given a *ScreenFridge*<sup>™</sup> including a package of communication services. The field trial ended May 2001.

Compared to the five-element value chain (fig. 4), the field trial was focused on the "front end" device itself - the *ScreenFridge*<sup>™</sup>. All content and also the user interface were tailored to this device, thus creating a genuine new kitchen media. The field trial was a success in regards of end-user acceptance. Amongst the most popular applications of the new media was - to great surprise for some, but not for the inventors of the "Hansen family" - the electronic family organizer. In the traditional Hansen family, the life of the family is organized inside the head of the mother. Using the *ScreenFridge*<sup>™</sup>, the family organizer is immediately visible and in control of all family members entering the kitchen, which in our culture is the center of family life. So the family organizer adds value to the daily life of the Hansens.

## Coming home

As you may recall, our HomeNet vision was inspired by the confrontation to the photo of a "web-phone", shown in figure 5. Our original idea therefore was linked more to similar devices than to the *ScreenFridge*<sup>™</sup>, which on turn gave us the opportunity to tailor the services for a very striking type of new appliance. But we still kept the more broad vision in our minds, recapturing that the *ScreenFridge*<sup>™</sup> was only one of more possible devices.

After the field trial, E2 Home has been refocused to concentrate on the construction market; in new buildings, one of the competitive features are systems for intelligent home control, and *ScreenFridge*<sup>™</sup> fits well in here. The service provider activities of E2 Home are brought back into Ericsson, who addresses telecom operators and service providers in their core business.

The later years, much progress has been made during various product units of Ericsson, each of them dealing with specific elements of the value chain: So-called backbone systems for the Multi Service Network, service management systems, broadband access equipment, new terminals like "web-phones", Internet radios etc, and even packages of plug-and-play services, such as remote home control applications etc. This evolution has emerged as product development within the different product units without an all-embracing Home Communication Concept, such as the one from our Business Development team.

On this background, it suddenly does make sense to the old Ericsson enterprise to deal with the holistic visions of the *Home Communication Concept* as a tool for integrating the various products into the business of Service Provisioning. So our Odyssey of disruptive innovation finally has a chance of landing in our "home land" after years of sailing between foreign islands.

## Conclusion

The invention of the Internet technologies meant a disruptive technological change, which forced the telecom industry to either cope with the reshaped market conditions or staying out of the future. This shock gradually has opened the mindset of the corporations towards new business concepts. As an example, our holistic Home Communication Concept that once seemed alien to Ericsson management

## The Odyssey of the Hansen Family

now begins to make sense. This mental transition does not happen with the same speed as in small start-ups like E2 Home. But when ready for it, the muscles of an end-to-end supplier (and global market leader) give a much stronger basis for exploiting the new business opportunities.

Our Home Communication Concept was disruptive to Ericsson in many regards:

- Based on future technologies
- Introducing a business model of alien nature for a telecom supplier's enterprise
- A holistic or cross-functional approach, addressing the value chain as a whole and therefore not fitting into any single business units of the organization
- Wrapped in an unusual language of psychology, as compared to the normal language of technology.

However, one should not forget that our concept deliberately was forged within the value networks of Ericsson (or, for that matter, of the telecom industry). Without this coherence, our Home Communication Concept might never have been brought into the organization.

So the conclusion must be that old organizations need time to "digest" disruptive changes. But even an innovation which is disruptive in several perspectives, as our Home Communication Concept, has the possibility to be "digested", if it links the historical value networks with the future business opportunities.

Arne Stjernholm Madsen, July 2001.