THE SONY-ERICSSON ENDEAVOUR1
PART I

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[2] This working paper was prepared while Visiting Professor at the Institute of Innovation Research of Hitotsubashi University in Tokyo which provided superb conditions for my research interest on structural changes in the sector of Information and Communication Technologies (ICT) in Japan. I am greatly indebted to staff of the Sony Strategic Institute (SSI) who supported my work on the Sony Ericsson joint venture. In particular I want to thank Mr. Hiroyoshi Furutachi, Mr Takayuki Fujikawa, both of SSI, and Professor Seiichiro Yonekura who introduced me to SSI. This version should be seen as a preliminary entry for an in-depth case of Sony Ericsson Mobile Communications, and all errors and lack of understanding of this complex joint venture remain solely with the author.

Abstract
Two losing teams in mobile telecommunications entered into loose talks in the summer of 2000 to join forces – for Ericsson to cut its dreadful losses and for Sony to re-enter the global arena in mobile handsets. Serious discussions followed by the end of the year, although real planning for a full-scale joint venture started only after a Memorandum of Understanding had been signed in April 2001. The two companies brought together complementary resources and made bold statements at the start on October 1 2001. This paper discusses the background and partially covers the implementation process. Sony has been able to considerably broaden its platform for mobile communications which it considers of great significance for its future presence in advanced electronics consumer products and systems. Ericsson has simultaneously departed from consumer products and focused its strategy on mobile infrastructure.

JL: L21, L22
Keywords: mobile telecommunications, Sony, Ericsson, joint venture, technology strategy, supply-chain-management (SCM)

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Summary

This paper is a first attempt to analyse the creation of Sony Ericsson Mobile Communications that was established on October 1 2001. The paper incorporates different strands of information. The objective is to understand not only the process as such but also preconditions and the momentary outcome for this joint venture.

Two losing teams in mobile telecommunications entered into loose talks in the summer of 2000 to join forces – for Ericsson to cuts its dreadful losses and for Sony to re-enter the global arena in mobile handsets. Serious discussions followed by the end of the year, although real planning for a full-scale joint venture started only after a Memorandum of Understanding had been signed in April 2001. The two companies brought together complementary resources and made bold statements at the start on October 1 2001. Managers from both companies stated that Sony Ericsson Mobil Communications would become a market leader and regain the marker shares that Ericsson has disastrously lost in the preceding years. They also stated that the new company would become profitable during its first year of operation. Despite the explicitly stated goals the company did not become modestly profitable until the end of a two-year period – and only after the parents had contributed another US$500 million.

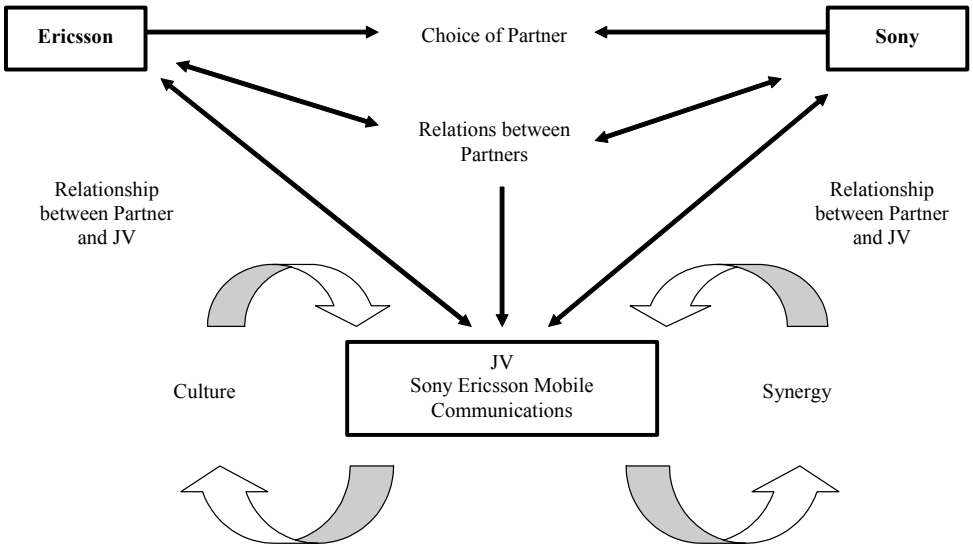
The working paper details the background of the two companies and their earlier perspectives on handset business and also provides partial information on the creation process and the following stages of implementation and consolidation. Available information indicates that the joint venture required considerable time to handle cultural gaps such as differences in corporate values and differences in business orientation. Such cleft appeared in divergence on key issues such as supply-chain-management, possibly accentuated by Ericsson late-in-the-day transfer of large manufacturing facilities to Flextronics, and in the domain of technology transfer. These issues are now in the process of being fully sorted out. In looking at the present situation of Sony Ericsson Mobile Communications tentative conclusions include the following ones. First, different types of cultural gaps must be addressed an early stage. Second, considerable time is required to identify mutual shortcomings and hidden agenda. Third, stated goals must be matched with available resources. Fourth, stated goals must be supported by relevant strategies.

In sum, Ericsson has been able to release itself from a loss-making activity and can concentrate on its future in mobile infrastructure for which it will benefit from the joint venture being deeply and directly involved in a demanding and rapidly changing market for advanced consumer products. Sony has been able to considerably broaden its platform for mobile communications which it considers of great significance for its future presence in advanced electronics consumer products and systems.

Creating a Successful Joint Venture

The formation of Sony Ericsson Mobile Communications was from both sides influenced by strategic, organisational and financial considerations, which strongly affected the organisation of the joint venture and the resources that were transferred from partners. The choice of partners in a major way influences the relations between partners. Various considerations also continued to influence relations between partners and the joint venture. See figure.

Sony Ericsson JV Relationships



Adapted from Gabriel, Jessie & Svedlind, Maria, Ettlyckligt äktenskap får sin bekräftelse i det gemensamma åldrandets endräkt – En fallstudie av Sony Ericsson Mobile Communications, Södertörn University College, May 2002

There are a number of reasons for partners to establish a joint venture. They include both stated and observed goals such as technology exchange, risk reduction, international expansion, and various financial goals. Resources transferred to a joint venture include both tangible and intangible assets, as well as organizational capabilities. The first ones include physical and financial means while intangible assets technical knowledge and patents, company reputation and brand name, and also organizational morale. A major advantage of JVs is the pooling of resources the responsibility of which has barely been addressed in the empirical literature as a critical feature of success. However, there is no doubt that the flow of resources from partners constitutes a critical dimension of JV performance.

Both sides in the Sony Ericsson endeavour strongly perceived a complementarity, with significant synergy effects, would be created by establishing the joint venture. It is natural that there exist greater possibilities of success when resources, management capability and other resources are matching. The initial success of collaboration can be judged by different criteria such as strategic positioning, matching resources, and matching management styles.

First, the potential partners must initially have a good mutual understanding of strategic goals of their collaboration, which requires an understanding of both short- and long-term objectives, although it is not necessary that partners have identical aims. Second, each partner must contribute, aside from financial resources, knowledge or other resources that complement each other. An obvious beneficial relationship is where one partner provides technological competence while the other contributes with marketing skills. Third, there must exist a common understanding on both sides that their management styles are not exclusive.

Ericsson was not only in dire need of good sales people but also top managers who understood customer preferences and needs. Not being able to mobilize management for a recovery of the handset division within Ericsson a joint venture with Sony was seen as an attractive solution, as Sony was the customer company par preference in electronics. However, the joint venture was forged by two trailing teams. Sony had failed in handsets on two earlier occasions and was under pressure to find a new hopefully successful approach. The equal partnership between the two companies may not have been ideal, as it may have created uncertainty about which partner makes decision on critical issues. Compounding this uncertainty was the creation of a new brand name and a logo which it took long time to become recognized in important markets.

Many joint ventures fail or have to be transformed and the reasons are manifold of which the cultural dimension is only one factor. Initially both companies allocated staff that would be responsible for cultural integration, while in early 2002 this duty was fully taken over by an Ericsson staff member that approached three issues – cultural awareness, cultural change and managing the JV culture[3].

Management styles show differences in culture even for companies within the same nation, and differences become more pronounced when partners originate in different countries, even if companies are as internationalised as Sony and Ericsson. Thus the partner in a transnational joint venture have to adjust not only to corporate differences but also to national differences which requires exceptional attention on how handle these disparities once the partnership has been established. Success would require not only strategic complementarity but also cultural similarity which must be achieved in an early phase of the partnership.

It has been important to create a feeling among all staff at Sony-Ericsson that they have a common goal and the vision should be to move upwards from a market position of number six – to five – to four and eventually become a number three supplier in the global market for mobile handsets. This strategy is very different from the earlier Ericsson handset division where the ambition and vision was to be at the very front – at least on technology development. The temporary ambition of Sony-Ericsson is to be a follower in a market where its global share still remains close to 6 per cent. The company would also become a close follower of Sony in introducing camera functions and games.

Joint ventures offer partners the prospect to pool their resources to achieve jointly what neither of them could do by themselves. However, a recent assessment made in 2001 indicates that the success rate is at 53% only slightly higher that it was a decade earlier[4]. A number of studies have drawn attention to well-known reasons for failures which include wrong

[3] Gabriel, Jessie & Svedlind, Maria, Ettlyckligt äktenskap får sin bekräftelse i det gemensamma åldrandets endräkt – En fallstudie av Sony Ericsson Mobile Communications, Södertörn University College, May 2002
[4] Bamford, James & Ernst, David & Fubini, David G., Launching a World-Class Joint Venture, Harvard Business Review, February 2004, pp 91-100

strategies, incompatible partners, unbalanced or unrealistic deals and weak management. These issues remain serious challenges although more than 5,000 joint ventures have been started worldwide during the past five years[5]

An early study of manufacturing joint venture established during the 1980s showed that balanced-partner responsibility eases the development of the synergies that the partners look forward when creating the joint venture[6]. It will also add to cooperation, trust and commitment. However, a serious dilemma may still be faced by partners who may share a range of resources under a balanced-partner responsibility scheme. The associated expectation of high goal achievement and a high level partner involvement in the joint venture also offer the seeds of conflict. It is obvious that a joint venture will lessen the individual partner control and that the intricacies of joint management may not only be costly but also time consuming.

Managerial perception of partner satisfaction, or partner goal achievement, has become the most frequently used measure of JV performance, as objective financial measures are problematical alternatives[7]. However, the success criteria of one partner are often different from the other partner, and independent measures of success cannot be the principal measure. In order to achieve objectives a joint venture may often be characterized by the fact that decision-making and control of JV resources is shared between partners and with JV management.

In the creation of the Sony Ericsson Mobile Communications a number of partner objectives were explicitly stated while others were only implicitly understood, and in all likelihood agreed upon. Stated objectives included market leadership, a substantial share of the global market for mobile handsets and joint venture profits already during the first year of operation. While none of these objectives were realised within the time frame given other partner objectives have been realised. Ericsson has through the joint venture cut is serious losses, retained a noteworthy market position. Furthermore, attractive design has become a hallmark of Sony Ericsson handsets. Simultaneously Sony has gained access to important markets outside Japan and also access to needed technology, although uncertain if this latter expectation has been fully realized. See table..

However, scanty evidence indicates that supply chain management issues caused serious problems which are understandable given the fact that Ericsson shortly before signing the Memorandum of Understanding with Sony transferred basically all handset production facilities to Flextronics. Further problems was caused by failure to reach stated objective of global market share, with associated plans, that later on caused a serious slackness in the use of available resources in product development.

[5] ibid.
[6] Pearce II, John A. & Hatfield, Louise, Journal of Business Venturing 17 (2002), pp 343-364
[7] ibid.

	Sony	Ericsson
Partner objectives		
- market access	important outside Japan	
- market retention(capture)		important
- reduction of losses		important
- attractive handset design		Important
- technology access	Important	
Partner stated goals		
- market leader	X	X
- market share	X	X
- time frame for profits	X	X
Forgotten issues		
- supply chain management	Overlooked	
- technology transfer	Not completely worked out	
- resource slackness	Result of not reaching stated goals	Result of not reaching stated goals

It is too early to make a full assessment of the results of Sony and Ericsson pooling their resources in handset business, as both explicitly and implicitly stated objectives must be addressed[8]. Identifying the conditions for success in establishing a joint venture – by drawing on the Sony-Ericsson experience - remains elusive as many important factors are not yet known. However, timing and knowing your partner are essential factors. A renewed strong leadership could have recovered control of Ericsson handsets. With this possibility ruled out a better joint venture outcome could have been achieved if initial contacts between the two companies had resulted in an earlier partnership and also given more time to identify more clearly the advantages and shortcomings of each other.

[8] At the time of finalising this working paper in early April 2004 an article in the Business Week suggested that "Sony Ericsson has found its groove". The same article reported that "quantum leap in features and aesthetics helped London-based Sony Ericsson sell 27 millions phones last year, up from 23 million in 2002. The company announced its first profit, a modest $72 million, in the third quarter of 2003. For 2003 as a whole, Sony Ericsson booked sales of $5.9 billion, up 12%." (Andy Reinhardt, This High-Tech Marriage is Working, Business Week, April 12 2004)

Introduction

The business landscape abounds with failures in capturing synergies and financial rewards from mergers and acquisitions. Creating joint ventures from pooling existing resources and integrating management structures from two different partners is no less challenging. A number of studies have revealed the difficulties and how to solve the problems in creating joint ventures. Almost all such studies and based on samples of joint ventures and have attempted to measure the outcome by using different types of methods.

However, few studies exist which attempt to describe the process stages of forming a joint venture and how resolution of differences and conflicts is done. This paper is a first instalment in understanding the situation at Sony and Ericsson before Sony Ericsson Mobile Communications was created in 2001 and its subsequent development for which only fragmentary information and insights are presently available.

The following case study is not a piece of theoretical research but an empirical study of a number of activities and views, primarily within Ericsson, that shed light on the background on creating Sony Ericsson Mobile Communications on October 1 2001, and its subsequent challenges in meeting its stated objectives. It is the expectation of the author that not only will this working paper explain some of the intricacies of constructing the joint venture but also inspire for further research and possibly an in-depth case study of the Sony Ericsson JV[9].

The ambition is to highlight two different perspectives. First, my discussion highlights the adjustment of two major companies who want to remain key actors in a rapidly evolving global market for telecommunications equipment and services. Second, the investigation also shows that the two partners although soon realizing that initially stated objectives were not fulfilled are possibly achieving long term strategic objectives that were only implicitly clarified at the time of joint venture creation. However, this initial case study of Sony Ericsson Mobile Communications also offers an important lesson as it suggests that the two partners did not carry out due diligence and/or did not have the time to fully realise the immediate constraints in their joint endeavour.

Early contacts between Sony and Ericsson were set in motion in mid-2000 to explore the possibilities of joining forces in mobile communications. Ericsson and Sony have been facing serious strategic challenges in the early 2000s. Ericsson assumed that 3G mobile telecommunication would rapidly replace the 2G systems without any downturn in operator demand for new equipment. However, the reality turned out to be very different at a time when Ericsson had already suffered great losses in its mobile handset business. Subsequently Ericsson attempted a turnaround for its handsets by a major outsourcing of production but was forced to find a partner for its handset division in order to concentrate its forces on the restructuring of the company with a distinct focus on mobile infrastructure.

Sony was at the time facing fresh changes for its consumer products where the company at the time suffered from a drastic reduction of profits. At approximately the same time Sony also realised that the company had ignored the rapid evolution of flat display TV sets and the importance of having a more direct control of semiconductors that were used in Sony

[9] The working paper is based partly on published sources, although much information and insights is extracted from a number of interviews in Sweden and Japan for which most of the sources remain anonymous.

products. However, Sony recognized that mobile communications would become increasingly important and was looking for ways to establish a firmer basis than its earlier soft alliances with Qualcomm and Siemens.

Sony Background

Sony Corporation has been one of Japan's most prominent manufacturers of electronics products, mainly audio and visual equipment, that have become well known all over the world. Sony became at an early stage the most globalised firm among Japanese companies and set up a number of manufacturing plants abroad. The globalisation process started at an early stage with overseas sales, after which followed international manufacturing and international finance.

The Sony Group consists of Sony Corporation and a large number of subsidiaries and total employment world-wide is 160,000 people. Aiwa is one of the largest subsidiary active in audio and video equipment. Another important subsidiary is Sony Music Entertainment and one of the strategic aims of Sony is to exploit the synergy between the audio-video equipment business and the entertainment business of entertainment business and audio-video software.

By 1990 Sony's production abroad had already reached 30 per cent of the company's total production. Subsequently, Sony started to expand its overseas R&D facilities, at first only to complement development activities and later on also establish platforms for exploring original technologies both in Europe and in the US. Major development activities outside Japan started in the 1980s, although only in the 1990s was research been done outside Japan, e.g. for digital TV in the US.

From an early start Sony has been strongly committed to research and development which has given the company the reputation of being a pacesetter in the electronics equipment industry. Sony was in 1994 allocating more than 13 per cent of its sales to R&D. Sony has been in the forefront of electronics makers to support early acceptance of its hardware products through providing ample and early introduction of software. Thus, Sony has established its presence in the music and image-based software markets through Sony Music Entertainment Inc. and Sony Pictures Entertainment, formerly Columbia and Tri-Star film studios. Sony pursued an aggressive strategy of internationalisation with Mr Morita, the co-founder, himself serving as president of Sony Corporation of America for more than a decade, from 1960 to 1971. By the end of this period more than half of Sony's sales were outside Japan.

Sony in 1983 formulated three key strategies, partly to overcome organisational difficulties - diversification; rationalisation; and globalisation. In the same year the company established the target that consumer products should constitute no more than 50 per cent of the company's business by 1990. The subsequent strategies led to major investments in a series of new product areas which included workstations, various computer peripherals paramount importance to semiconductors and a number of high-technology components used in compact disk and computer peripherals. It may also be assumed that it guided the company in acquiring CBS and Tri-Star Studios

Sony in 1989 acquired the Columbia and Tri-Star Studios from Coca-Cola and its partners for 3,400 million dollars. The studios were at the time among the most productive ones but the acquisition has caused a number of serious problems for Sony. One of the problems has been caused by the difficulty of incorporating such a major acquisition which contained not only American corporate culture but also artistic culture that may not have been altogether congenial to Sony Corp.

An equally challenging problem resides in the integration between the company's software and hardware businesses. Technical expertise for hardware development has resided and still mainly resides in Japan whereas the centre for software including artistic production of films and video software is clearly in the US. Many analysts, shortly after the acquisition, emphasised that the long-term success of Sony's ambitious strategy rested on the company's ability to promote synergy between the two areas. Although Sony initially took a cautious approach in integrating its two major business areas it is evident that the acquisition of the film studios has caused the company serious and long-lasting problems that were replicated at other companies in Japan, such as Matsushita and to a lesser extent for Toshiba.

At a somewhat later stage Sony in its electronics division realized that that the company needed presence and control for two important hardware categories – semiconductors and flat panel displays.

Mr Nobuyuki Idei in early 2000s made the following argument[10].
"In regard to flat panel displays, I believe that Sony needs to develop a technology that is unquestionable superior to CRT (cathode ray tube) televisions, is of high quality and is able to produce light on its own. Not having PDP and LCD production capabilities is strength of Sony and is the reason why we did not invest in them".

Mr. Kunitake Ando at the same time added that: "Hardware does not add value on its own. …. In terms of our device strategy, people outside Sony sometimes ask whether the fact that we do not manufacture LCDs and PDPs for TV use in-house is a weakness. However, we plan to ensure a reliable long-term supply of these two display panels."[11]

However, Sony announced in April 2003 that the Group will invest 200 billion yen during a period of three years, ending in March 2006, to manufacture advanced semiconductors to be jointly developed by IBM and Toshiba[12]. Sony Computer Entertainment Inc. (SCE) will start production of microprocessors for next generation game consoles that will integrate two chips to save power consumption and production costs[13]. Presently Sony produces only some 20 per cent of its total annual consumption of about 1,000 billion yen.

[10] Sony Annual Report 2002, p. 11
[11] ibid.
[12] Sony unveils huge chip investment plan, The Japan Times, April 22, 2003
[13] In October 2003 the Sony Board of Directors decided to make Sony Computer Entertainment (SCE) Inc. a wholly-owned subsidiary as part of the company's measures to promote growth through the convergence of group resources and technology. The press release announced that "(B)y making SCE a wholly-owned subsidiary, Sony aims to accelerate this growth strategy by creating new markets through the convergence of electronics and game technology and by strengthening Sony's semiconductor development". Source: Press Release, November 28, 2003

Sony during the second half of 2003 agreed with Samsung Electronics to jointly produce LCD panels in Korea starting from 2005 – after having already utilized Samsung panels for Sony TV sets. At the same time the company resigned from a project to develop large LCD panels with low power consumption, supported by the Ministry of Economics, Trade and Industry (METI). The reason given was that its agreement with Samsung did not match the goal of METI of promoting LCDs made in Japan and Sony will, it was reported, concentrate its management resources in this field on the alliance with Samsung[14].

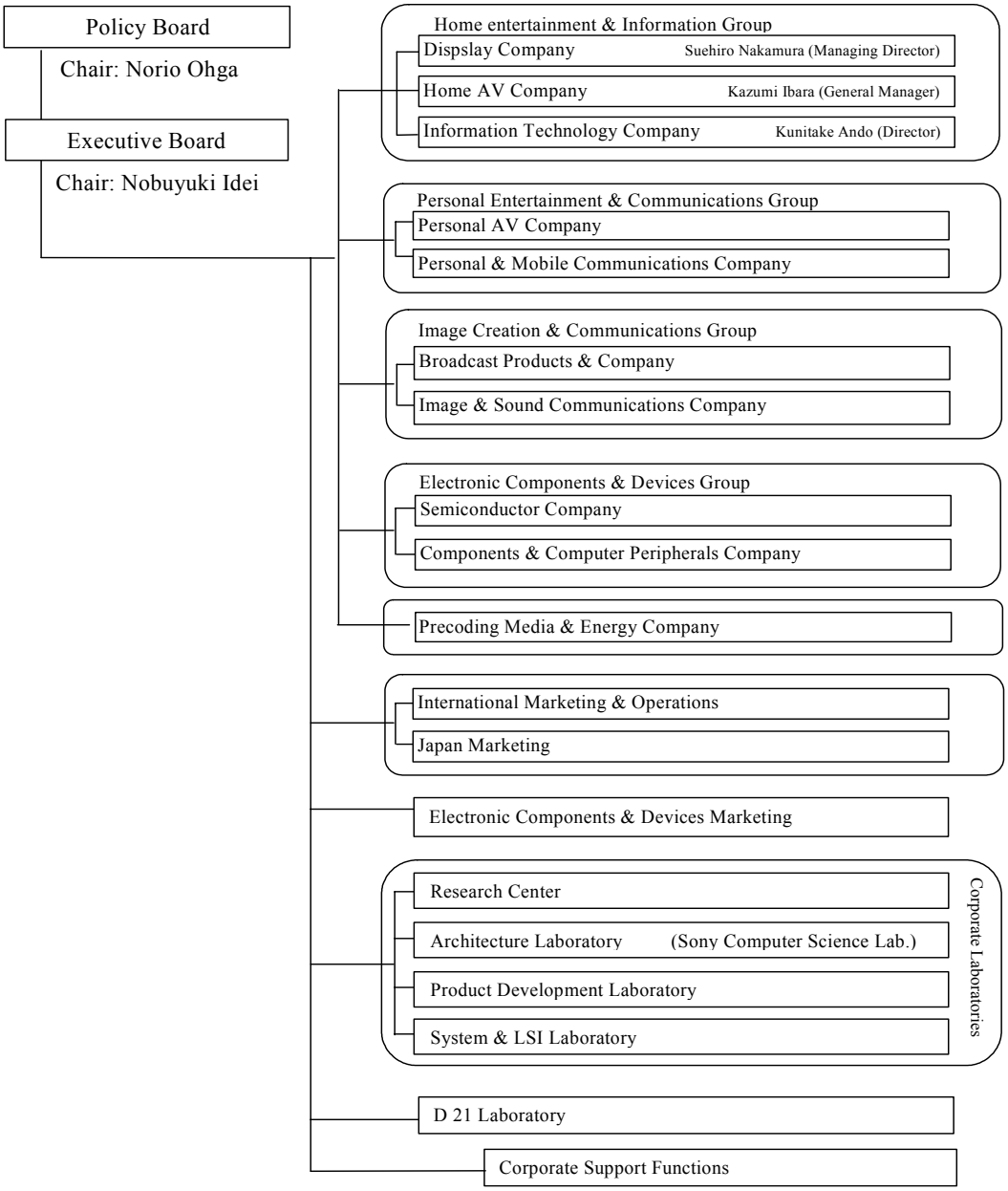
Mobile handsets initially used to be a hardware product which was the case when Sony entered into a soft alliance with Qualcomm in the US to get access to technology. In due course it became evident that mobile communications in which the handset as such was an integral part would incorporate more and more functions, and contents would become increasingly important. After another soft alliance with Siemens in Germany that ended in 1998. Sony was eager to find a more solid partner for its future advances into mobile communications.

Major changes in organization

Sony has since the mid-1990s undergone four major organizational changes – five if the Transformation 60 of October 2003 is included. A first major change of Sony **organizational structure was carried out in 1994** – introduced by Mr Oga, then CEO of Sony. This was a first step from a division structure to company system, with Music remaining outside. Before this change divisions had been responsible for production, sales, supply chain management, etc. A second step in Sony **organizational structure was done in 1966[15]** by Mr Nobuyuki Idei, CEO of Sony. This created a new company system when the sales office(s) were integrated into Sony. At the same time Corporate Laboratories were united. See figure.

[14] Nikkei Interactive, Sony Backs Out Of METI-Led Next-Generation LCD Project, January 26 2004
[15] Sony Press release, January 16, 1966

Sony Organization (April 1, 1996)



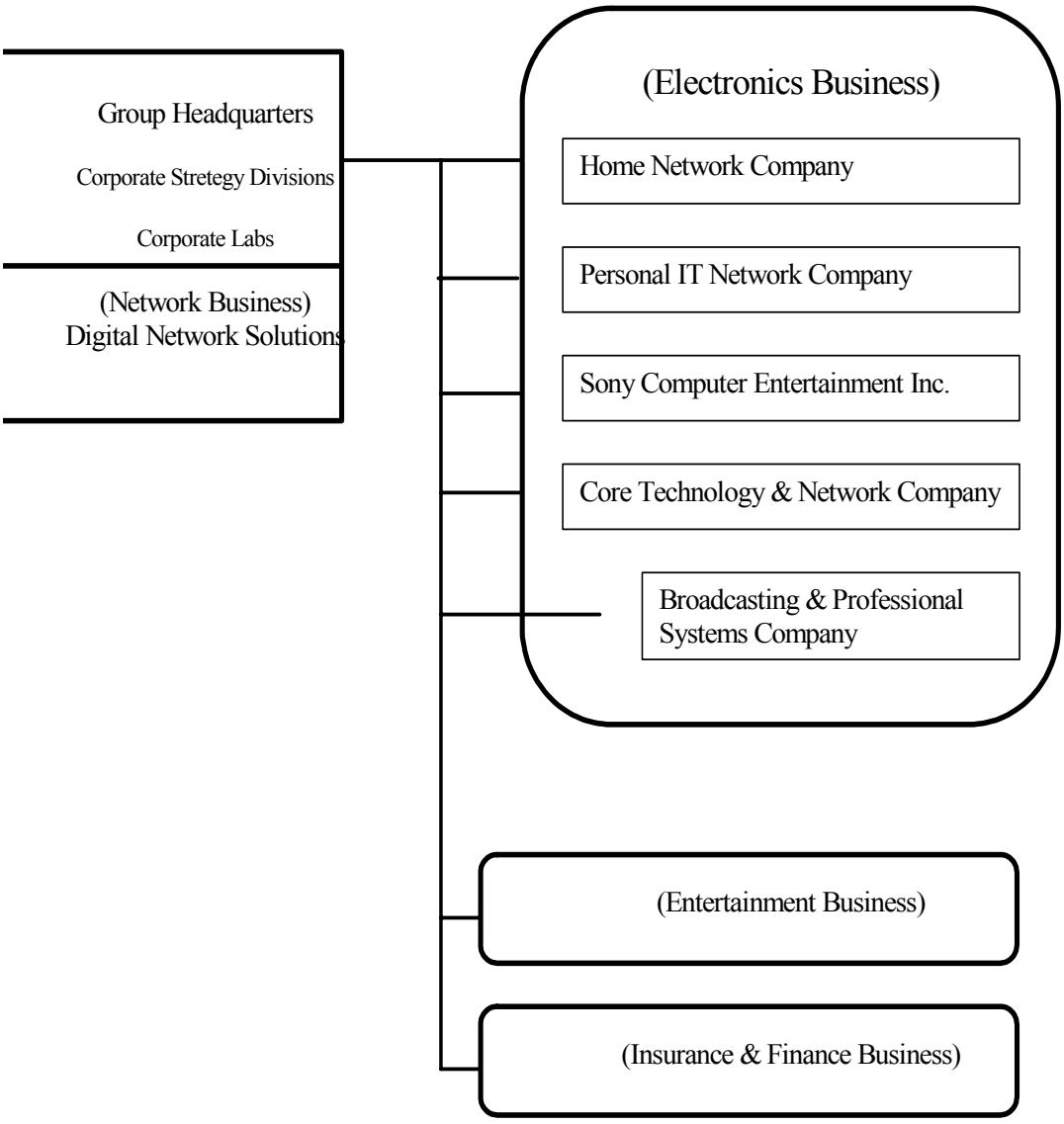
Major changes included the creation of new companies and groups for entering into IT and telecommunication businesses in order to merge audio-visual (AV) and computer technologies, the consolidation of market functions and the establishment of Corporate Laboratories for new business development. The new structure included a total of ten companies of which the following were the significant ones Display Company, Home AV Company, Personal AV Company, Information Technology Company, Personal & Mobile Communications Company

Furthermore, certain marketing divisions were consolidated into the Japan Marketing Group and its corresponding International Marketing & Operations, with the Electronics Components & Devices Marketing Group responsible for worldwide marketing of semiconductors, and components and computer peripherals. At the same time the Research Centre and other R&D divisions of each company were restructured into three new laboratories, with the Research Centre remaining as an independent entity: 1. The Architecture Laboratory, responsible for R&D of software, network and other IT-related technologies; 2. The Product Development Laboratory, to oversee R&D for product development in AV business; The System & LSI Laboratory, to conduct R&D for LSI and system design.

The next **strategic organizational change was introduced in 1999** – with four main gateways for hardware – TV combined with contents, Games, also combined with contents, PCs, and Mobile phones. Aside from these four gateways Sony also integrated its manufacturing, mainly into one entity – Engineering Manufacturing Customer Services (EMCS). Other important changes involved a change of status for the following companies to become wholly owned subsidiaries: Sony Music Entertainment (Japan) Inc., Sony Chemical Corporation, and Sony Precision Technology, Inc. See figure.

Sony Group Organization

April 1, 1999



The reform in 1999 had the threefold objective to strengthen the electronics business, privatizing three Sony Group subsidiaries and strengthen Group management capability. The

announcement at the time stated that[16] "The new Group architecture will have self-contained, autonomous business units and headquarters with a strong coordination role". As a result the Sony Corporation division companies were grouped into three main business units with computer entertainment positioned as the fourth pillar of electronics business: Home Network Company; Personal IT Company; Core Technology and Network Company; and Sony Computer Entertainment, Inc. The statement for organizational reform at the time said the following on R&D.

> "To enable each network company to operate autonomously, essential support functions and R&D laboratories will be transferred from the corporate headquarters to each unit. Authority will be delegated to a Board and a Management Committee within each network company, to allow it to operate independently, while enjoying re benefits of the current company system."

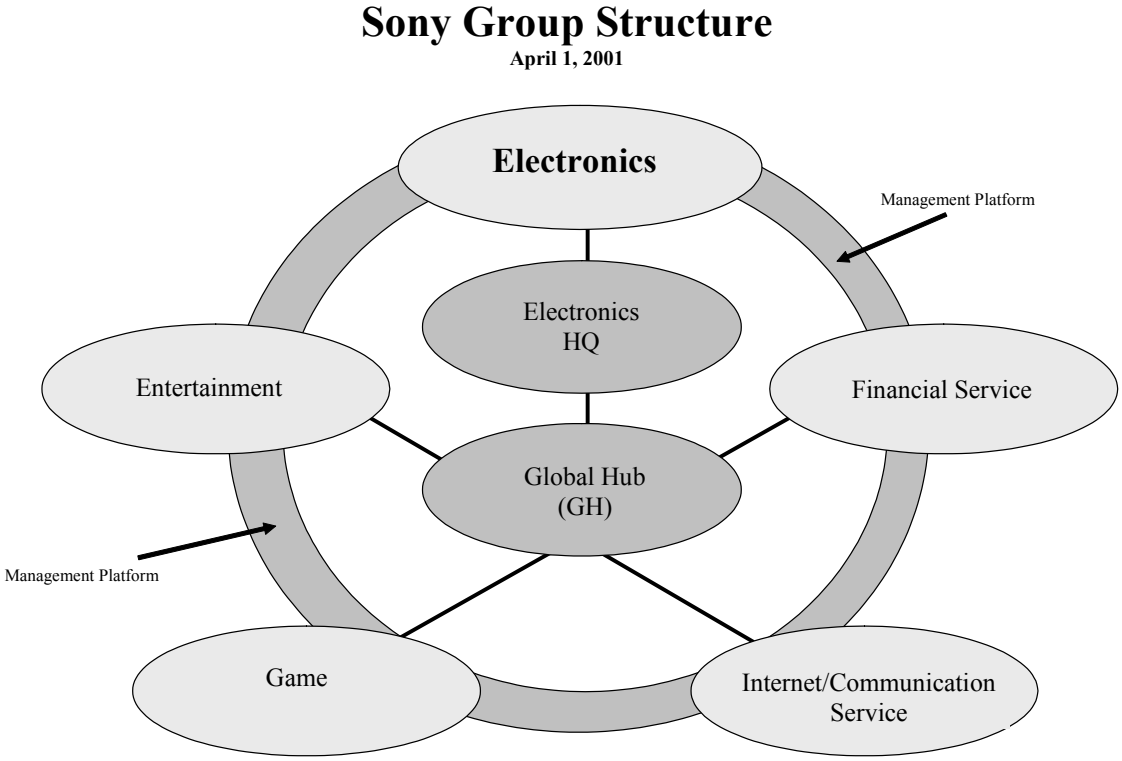
Other important changes included the establishment of Digital Network Solutions directly under Group Headquarters, where it was to create a network business model by charting strategies and developing essential technologies to materialize future opportunities. Sony at the time stated that will reduce the number of manufacturing facilities worldwide from 70 to 55 facilities by early 2003, and at the same time reduce the workforce by 10 per cent.

The reform of the headquarter section in 2001[17] was the next major change which created global hubs and platforms for activities like finance. After the reform Sony had integrated R&D, Sales, and manufacturing. See figure. With this change Sony announced that it would transform itself into a Personal Broadband Network Solutions Company, as a preparation for the "coming broadband network society that is forecast to arrive around the year 2005". The company argued that it has already moved strongly in this direction through its attention to AV/IT convergence, the 4 network gateway strategy and the strengthening of development for semiconductor and devices. In its five pillars of global business – electronics, entertainment, games, internet/communication services and financial services – Sony announced the following major changes.

1. New Group Headquarters to function as Hub for Group Strategy. It stated that in creating value for the entire group GH will manage strategic proposals and far-reaching "think tank" initiatives, which will include the Strategy Platform and its Strategy Institute. The five existing network companies (NC) will be organized into seven "solution-oriented" NCs, after having previously been organized along product categories.
2. Electronics Business: Pursuing a Ubiquitous Value Network. Sony has already laid the foundations for connecting its electronics has already laid the foundations for connecting its electronics hardware to the network. The key broadband gateways will include digital TVs and Set-Top Boxes, mobile phones and PDA, advanced VAIO PCs and PlayStation. Sony stated that "(T)he next goal is to realize hardware which will exploit the benefits of a ubiquitous network which is constantly connected, on-demand with interactive communication.
3. Network-based Content Distribution. Digital distribution of films and music are mentioned as possibilities that will involve Sony Pictures Entertainment in the US and Sony Music Entertainment Inc. Financial services are referred to and "bitwallet Inc." is mentioned as a company that will utilize Sony's contact-

[16] Sony Press release, March 9 1999
[17] Sony Press Release March 29 2001

less IC card technology – FeliCa – which us used to provide the prepaid electronic money service "Edy"



Another **major change took place in October 2003 – Transformation 60**. This reform was prompted by a substantial decline in profitability when Sony realized that downsizing and restructuring would require a considerable reduction in its labour force. A number of other factors are also behind Transformation 60 such as semiconductors where Sony had neglected the growing importance of its own direct control of devices. Transformation 60 (T60), which was announced in later 2003, has the sub-title Conforming Sony's Position as a Leading Consumer Brand in the 21st Century, is an attempt to implement more major changes that earlier transformations as it was forced upon the company. Major reasons were declining profits and lateness in addressing problems such as overstaffing, outdating manufacturing system and neglect of important inputs such as semiconductors and flat-panel displays.

Transformation 60 has its name from Sony ambition to celebrate its 60 Anniversary in 2006 as a company that has regained its former grand position in electronics consumer products. Its twin major objectives are

1. clarifying operational structure and concentrating technology and resources for growth
2. Fundamentally reforming operational profit structure. Sony aims to have a consolidated operating profit margin or at least 10% in early 2007.

The home electronics and mobile electronics sectors, and the semiconductor technology sector that supports them have been designated as Sony core sectors, and Sony will subsequently strengthen its technology base to support these sectors. Sony aims to become a global media content company and will strengthen its position through linkages with electronics by integrating assets in pictures, music and game. The profits structure will fundamentally changed through the reduction of fixed costs by concentrating on strategic

business, reform of the manufacturing and procurement sectors, all of which will lead to a reduction in the size of Sony labour force. T60 emphasizes the convergence in two areas - electronics business and entertainment business

Sony will work out convergence strategies in the home and mobile electronics sector by concentrating engineering resources and exploiting the power of core semiconductors and devices. The Semiconductor Solutions Network Company will be established to direct the semiconductor strategy of the Sony Group. A major objective is to increase the ratio of semiconductors and key devices produced within the Sony Group, thereby adding value to home and mobile electronics products. This includes actions such as a joint venture company to improve access to LCD panels, accelerate in-house development of next-generation display devices, and solidify Sony's position as global leader in imaging devices, based on CCD and CMOS. Sony will accelerate the transition to flat panels for next-generation TV and configure for broadband network. In its T60 announcement it was mentioned that the Sony Group plans to spend a total of 1,000 billion yen (roughly US$10 billion) on the development of semiconductors during a period of three years staring in 2003. Roughly one half of this amount will be capital investment for semiconductors like CELL and imaging devices where Sony envisages major growth prospects. The other half will be allocated to electronics R&D.

Mobile electronics is a very important area in the convergence of electronics business, and the company will in combination with SEMC integrate telecommunications, imaging, AV and computing to create new electronics markets. It will build on its strength in key devices which have already bee incorporated in products like camcorders and digital still cameras. Sony will also integrate its contact-less IC card technology, FeliCa, with a range of company products which will include a joint venture with NTT DoCoMo to create a service platform which integrates FeliCa with mobile phones.

Sony wants to increase the value of its entertainment business by reinforce its entertainment business by integrating its assets for pictures, music, game, electronics and services in more innovative ways – across traditional boundaries – to become a global media content company.

Sony will follow other companies in Japan by making a clear distinction between strategic and mature categories in its electronics business. Thus, engineering and development resources will be concentrated in strategic areas such as flat panel TVs, home servers and mobile products. Mature products such as Trinitron CRT TVs and various analogue systems will have their functions for product engineering and development strengthened within Sony ECMS to allow profit maximization in a shrinking market. Sony realizes that engineering and production technology is crucial to maintain product competitiveness and will reorganise its global operations by integrating distribution functions to achieve advanced supply-chain-management (SCM). A number of Sony factories will become Customer Frontier Centres (CFCs).

Furthermore, the engineering and production system will be reorganized to meet specific needs in various regions. One objective is to reinforce the manufacturing links between Japan, China and other parts of Asia. Japan will become the base for advanced production technology with a focal shift away from assembly manufacturing to production of key devices and semiconductors. Sony production units in China will supply products to a rapidly expanding domestic market with a focus on cost-competitive mass production that will include the manufacture of device and modules. Factories in other parts of Asia will also be engaged in cost-competitive mass production and take on functions as Customer Frontier

Centres (CFCs). Sony units in Europe and Americas will have the responsibility to mass-produce single-category product to meet demand in local markets, aside from CFC functions and a strengthening of regional systems for production and sales. Sony-Europe will integrate the consumer AV marketing groups in a new location in the UK, while electronics headquarters and marketing functions in the US will be re-allocated mainly to the West Coast.

Finally, Sony will strengthen its management of group procurement and make outsourcing functions more integrated. Standardization of components will be given special attention and the number of registered parts will be reduced from the current level of 840,000 to less than 100,000 by early 2006. Among these 20,000 will be designated as Sony-approved and standardized throughout the company. All suppliers of components and raw materials will be assessed according to a number of critical criteria and their number will during the same period be reduced from the current level of 4,700 to about 1,000.

This emerging structure combined with the announced business strategy will have a number of far-reaching consequences. First, Sony expects to reduce by 30% its sites for production, distribution and services with an equal reduction in required floor space. Subsequently, Sony plans to reduce the consolidated number of regular employees by about 20,000 over a period of three years – from a high level of 154,000 at the end of March 2003.

The downsizing and reduction of labour force took place much later at Sony than at Panasonic, Hitachi and Toshiba which suffered huge losses earlier while Sony remained profitable. Furthermore, Sony culture was slow to accept changes and not making substantial changes until a serious crisis hit Sony. In technology Sony has been attached to a development concept which is based in tacit knowledge and continuous development. However, the technology landscape is now characterized by non-tacit knowledge and non-continuous development for which Sony was not fully prepared.

Ericsson Background

Ericsson has traditionally been an engineering company with limited attention to R&D until mechanical switches were replaced by digital ones. Until then research was primarily focused on understanding the traffic systems as such and material research, for example to solve problems in relay contacts. However, the situation gradually shifted from the early 1960s although Ericsson was still a manufacturer of equipment while system integration was carried out by network operators such as the then Televerket – a partnership which constituted a very fruitful symbiotic relationship, as long as operators remained committed to promoting advanced technological development.

The indicated division of labour provided the setting for the creation of Ellemtel in 1970 – the joint venture between the national operator and Ericsson to development digital switches - which greatly contributed to the success of the AXE digital switching system. Ellemtel integrated the competencies from a sophisticated operator with that of an advanced manufacturer of equipment. However, the role of system integration and innovative R&D has gradually gravitated to the manufacturers of telecom equipment of which Ericsson has emerged as a leading proponent. The success of AXE propelled Ericsson to a top position among makers of digital switching systems for fixed-line networks, with important reasons to be found in system modularity and ease of handling – being trailed by earlier leaders. The modular structure of AXE which greatly contributed to its stability also made it possible and easy to decentralize substantial portions of continued and required R&D. This included not only general upgrading but also substantial development of functions to meet requirements of buyers who were the national network operators in various countries.

The digital character of AXE, combined with the extraordinary success in the market place prompted Ericsson, like several other companies active in the manufacture of telecom companies, to seriously consider the integration of telecommunications and computers. This set the stage for a new strategy in the early 1980s - embedded in the Ericsson Information System (EIS) which launched its concept “office of the future”. However, Ericsson may have underestimated the required funding for success and simultaneously overestimated the degree of market convergence, a mistaken perspective that it shared with other companies such as NEC in Japan.

Subsequently, a new corporate strategy was formulated in 1988 with a renewed focus on telecommunications. Ericsson at the time also manufactured cables, defence systems and other products but was basically a producer of fixed-line infrastructure. The success of AXE prompted Ericsson to embark on the AXE-N project – the ATM switch – which was expected to be a general switch that would be able to handle all types of traffic. This project was carried out within Ellemtel in which Televerket remained a partner until the mid-1990s when Ericsson completely took over. Shortly afterwards the AXE-N project was terminated, and a substantial number of engineers were transferred for upgrading the “old” AXE for which development had been neglected.

Already in the 1960s Televerket, like operators in other countries, had been operating a series of non-cellular mobile networks. However, it was not until 1981 that the Nordic Mobile Network (NMT) started to operate in Sweden. Ericsson together Televerket were among the driving actors, although Ericsson was already active in mobile communications partly related to its defence development. Thus, the public sector with Televerket and the defence sector continued to play an important role.

NMT became highly successful in the Nordic countries and at an early stage reached a penetration rate of five per cent, although NMT hardly expanded outside its Nordic origin, a major reason being the national efforts in a number of European countries to develop their own national systems. However, the operators in the US had by this time also achieved a relatively high penetration rate – of some five per cent.

This discrepancy between the US and Europe in general created a great concern in Brussels and among the EU policy makers within the telecommunication sector. Concerned about a recurring technology gap with regard to the US the commission made a bold initiative – after consulting with operators and makers of telecom equipment – to embark on a European project to set joint standards for a digital mobile telecommunications system. The main objective was to stimulate development and manufacturing capability, with a subsequently expected success in the market place.

The remarkable success in the market place, aside from the failure of handset business in the late 1990s, protected Ericsson and its management to seriously tackle its overstaffing problem which existed in many quarters of the company. This had become fairly obvious at an early stage when the manufacture of digital equipment required much less staffing than was the case in the old engineering plants but the change process was rather slow, although traumatic in several Swedish towns where Ericsson had been a dominant employer.

Being a much smaller company and with a narrower product portfolio than previously creates a need to adapt the corporate structure, and a new organization is being implemented from the beginning of 2004. This is the latest of a large number of organizational changes that were carried out during the 1990s. Ericsson remains a significant player in the Swedish industrial landscape despite its drastic restructuring during the recent couple of years. It also remains a Swedish company with very strong roots in the country, which is also accentuated by the fact that two domestic industrial/financial groups still control the company through differential voting rights for equity. A commentator[18] in 1991 noticed that, Ericsson management has remained overwhelmingly Swedish - including almost every member of its board of directors. This situation has not changed dramatically. In the long run, as Ericsson does more and more of its business overseas, this may change. Ericsson is still a Swedish exporting company that organizes half of its development and at least the same share of its research in Sweden.

Two events serve to illustrate the emergence of a radically new structure within the mobile telecommunications sector and of a new R&D configuration within Ericsson itself, which will be less dependent on in-house proprietary technology and will involve greater interaction with partners. First, on 1 October 2001, Ericsson formally established Sony Ericsson Mobile Communications, a joint operation to develop and market handsets. Previously, Ericsson had reorganised its core R&D handset activities and passed them to a separate company, Ericsson Mobile Platforms (EMP). The latter will license its technologies not only to Sony-Ericsson, but also to other actors in the global marketplace. Ericsson had essentially divested itself of all of its production facilities, save those that assemble integrated circuits (IC). Second, in mid-June 2002, Ericsson reached an agreement with Infineon Technologies (of Siemens AG) that allowed it to take over major parts of Ericsson Microelectronics, which produces chipsets for various types of equipment. At the same time, Ericsson played a key role in establishing the Open Mobile Architecture (OMA), which seeks to establish open standards for technology platforms.

[18] Guterl, Fred, Ericsson bets on a cellular world, IEEE Spectrum February 1991, pp. 48-51

The R&D sector of Ericsson posed a less transparent problem as the R&D sector had become a huge and widely dispersed structure with some 80 research/design centres located around the world. However, at the time of creating Ericsson Research attention was also given to the future overall structure and staff of the company's R&D sector. Preliminary findings, supported by consultancy reports in the late 1990s, indicated that the return on investment for Ericsson's expenditure on R&D was low and had been declining since the mid-1990s. However, these findings resulted in no major changes at the time. It was only the combination of very large losses in the handset division in the late 1990s and the drastic downturn in demand for infrastructure from early 2000 onwards that forced Ericsson to dramatically reduce its costs – primarily reducing its number of employees including those in R&D.

Ericsson is today a different company compared with the situation at the end of 2000s. The drastic restructuring which started in mid-2000 has reduced Ericsson directly employed staff from some 107,000 to presently slightly less than 50,000 in early 2004. Simultaneously total R&D staff has been reduced from its peak employment of around 25,000 (35,000 if all consultants were included) to presently around 15,000, and at the same time reducing the R&D budget by some 50 per cent.

Aside from these statistics which indicates a far-reaching down-sizing, although some other telecom companies were even more diminished in stature, Ericsson has also undergone internal changes of a far-reaching nature. These changes started earlier than the downsizing that was forced by disastrous financial circumstances, and includes far-reaching out-sourcing, divesture of mobile handset business and outright closure of manufacturing plants. At the same time services provided by Ericsson, primarily to operator for management of networks, has come to constitute an increasing share of total revenues and now account for some 25 per cent – known inside the company as global services.

Sony Entries into Mobile Communications

Sony in April 2001 introduced a major organization reform, under the guidance of Mr. Nobuyuki Idei, and transferred its earlier strategic companies into Global Hubs which include: Electronics, Entertainment, Music, and Film. Electronics in 2001 still consisted of 60 per cent hardware for which Playstation played an important role. See earlier section.

The Electronics Hardware Global Hub included the following cores: 1. Digital Telecommunications, 2. Semiconductor, 3. Display, 4. Home Electronics, 5. Broadband solutions, and 6. Mobile Telecommunications. Corporate laboratories focus on Internet and Frontier Science. At the time Mr Kunitake Ando expressed the view that without growth within the mobile telephone sector Sony cannot realize growth rates in other business areas[19].

Sony COO, Mr Kunitake Ando, in the Sony 2002 annual report explains in the following words why the company joined forces with Ericsson:
"We have always viewed mobile phones as an integral element of Sony's network strategy. In order to catch up, we pooled resources with a European company, Ericsson, to form Sony Ericsson Mobile Communications (SEMC) in October 2001. As one of the originators of GSM, a transmission standard, Ericsson is known as a company with a high level of vanguard technology and is best in the world when it comes to the technology used for mobile communication base stations. Sony's strength lies in its ability to create new products, particularly in the crucial product-planning and design stages. By uniting this strength with Ericsson's excellent telecommunications technology and ability to set standards, SEMC is seeking to become a global market leader in mobile phones[20]."

Soft Alliance with Qualcomm, and Soft Alliance with Siemens

Sony entered into mobile phones business in the early 1990s as the company considered that the mobile world would become important. Until early 2001 when Sony reached an agreement with Ericsson the company had experienced two soft alliances in mobile communications - first with both Qualcomm and then with Siemens both of which ended in separation. The experience with Qualcomm was a very strenuous one as the two companies jointly developed handsets which could be sold separately under individual brands – thus competing against each other.

The next soft alliance with Siemens was abolished in early 1998, after a period of approximately three years. The former partner played an important role for Sony in building up competence, although originally only adding the Sony shell to the Siemens S1 phone. In later versions Sony made substantial contributions which included the first lithium-ion battery in a handset for the S4 model.

[19] Ando interview in Wall Street Journal (Internet edition), referred in Ny Teknik – Petterson, Peter, Sony and Philips tänkbara partners för Ericsson, March 30 2001
[20] ibid.

Sony by the time recognized that substantial investments were required, as one handset model could require 100 software engineers and another 50 working on hardware – altogether 150 engineers per model. Sony realised that big investment was needed after it had raised its market share in Japan from 5-6 per cent to some ten per cent – while at the same time having only 1.5% of the global market and hardly any presence in the US[21]. This was the starting point for creating its own R&D centre in Munich which was closed in 2003 after having at some time reached a staff of more than 300 who focused on GSM technology. The experience with Siemens was very similar to that with Qualcomm as the two companies developed a telecom platform chipset which could be exploited separately.

Sony in the early 2000s needed a partner for GSM and W-CDMA technologies after having failed in its earlier relations with Qualcomm in developing cdma business. The company also experienced shortcomings in its R&D centre in Munich in its relation with Siemens. One serious issue was that Sony has been severely handicapped by its weak position in handset IPRs where it at one time had to pay Qualcomm, Motorola and Ericsson about 10 per cent on its handset price for using the intellectual property rights of other companies. Then Ericsson came along and solicited partnership in order to get out of its loosing handset business.

Sony had a reasonable good position in Japan but the company was outside the mainstream development of GSM in the rest of the world and was forced to concentrate on the Japanese market. Then in summer of 2000 Sony received a guest from Sweden – The manager Ericsson in charge of consumer products division - to discuss joint development. Ericsson had in its great handset trauma realised that it did not have the necessary capacity and skill for industrial design and had already tried to solve the production problem by outsourcing to various EMS, and in a final stage of desperation major handset manufacturing facilities were in early 2001 transferred to Flextronics. However, Ericsson was still suggesting in the autumn of 2000 that the company – by own efforts – would after another year yield profits, although total losses during last two quarters of 2000 were estimated to reach SEK16 billion (about US$1.6 billion at the exchange rate at the time)[22].

Determined deliberations started already in the summer of 2000 when Sony took the initiative from Ericsson seriously and quickly prepared a counterproposal which covered a full range of activities within an alliance which included the following rationale[23]. Sony was excellent in AV technology, product planning and design, and possessed brand expertise, while Ericsson brought excellence in mobile telecommunications, operator relations, and infrastructure business.

Sony acted very quickly and delivered its proposition to Ericsson only two weeks after having received the initial submission. What is now Ericsson Mobile Platform (EMP) and used to belong to the handset division of Ericsson was excluded in the final agreement of forming a joint venture. An important reason was that Sony was not willing to make cash contribution and Ericsson had deliberately set a high price on EMP. Thus, the development of chipset

[21] Interview with Hiromatsu Aikawa, May 31 2001
[22] Ny Teknik, Ericsson flyttar mobiltillverkningen, October 20, 2000
[23] Interview, January 26 2003

protocol for GSM and UMTS remains with EMP that is at the time of finalising this working paper a wholly-owned subsidiary of Ericsson[24].

After April 1 2001 a new structure was established in anticipation of joint venture with Ericsson. At the time the Sony mobile Business Unit included 600 staff members in Shinagawa and another 350 in Munich working on GSM. Sony also maintained additional manufacturing overseas. Manufacturing was done – after prototypes were ready – by Sony Engineering Manufacturing Customer Services (EMCS), which involves some ten firms, also involved in Sony camcorder production[25]. EMCS also operates in Alsace in France, and Sony kept a small number of people working on mobile telecommunications R&D in the US – in San Diego

[24] The CEO of Ericsson at the time, argued that Ericsson should keep handset technology unless Sony wanted to pay a reasonable price. Thus, Ericsson asked a consultancy company to make an assessment and the figure was quite substantial, considering the IT hype at the time. The CEO of Ericsson at the time ponders that JVs are difficult and most of them fail. There are issues in culture and management styles and it is important to watch all the time that things are moving in the right direction. He was fully ware that state-of-the-art technology existed within the company and the combination of Ericsson and Sony was potentially a very strong combination, although it would takes time to find its own identity. Source: Iinterview September 19, 2003

[25] Production facilities included Semaya for mobile handsets in Japan, and in Minokama for GSM handsets to be exported

Ericsson in Mobile Handset Business

Ericsson in 2000 posted an operating loss of SEK16.2 billion ($1.5 billion) partly reflecting a rapid decline in prices[26]. Thus Ericsson was looking for a possibility to spin-off or to find a buyer for its handset operations, and strength in consumer electronics made Sony an attractive partner. Nikkei reported that negotiations between the two companies started after Ericsson CEO visited Sony in September 2000. The attraction of a joint venture was reported in Nikkei Weekly, with the following words from Ihara, now President of Sony Ericsson Mobile Communications: "(S)ince their operations in the handset business complement each other well, it didn't take long to reach agreement on the venture."

Ericsson in 2000 sold more than 40 million handsets and ranked third in the handset sector with a market share of about 10%. Sony in he same year sold about 7.5 million handsets which corresponded to less than 2% of the global market. Sony maintained a stronger position in the Japanese market. However, suppliers in Japan have to closely follow specifications given by the telecom carriers in designing handsets which had given only limited room for consumer electronics companies like Sony to exploit their strength in design and introduce innovative terminals. The venture with Ericsson promised Sony to call upon its strength in design as a major player in handset business[27].

Early Success in Handset Technology

Ericsson developed three analogues systems – NMT, TACS and AMPS. The first analogue sets were called Kurt, Olivia, and Sandra with the latter one also becoming a GSM telephone. The early digital development of GSM started at the European Telecommunication Standards Institute (ETSI) in 1982. The Ericsson mobile handset development group Lund in 1989 consisted of some 70 people, when the decision was taken to develop a tiny GSM telephone. The early telephones were GH172 and GH192 the former with the nickname Sandra.

Ericsson was ahead of Nokia in making smaller and smaller telephones, with great attention of integrating and miniaturizing the chipset and reducing all empty space inside the shell. Large shares of early deliveries was delivered to Mannesmann (now Vodafone) that wanted guaranteed deliveries of handsets together with expansion of its network – from 1991 and onwards. When Ericsson was making major deals in infrastructure the delivery was often bundled together with delivery of a certain number of handsets which operators required in order to properly test the system before offering it to customers. Mannesmann is good example of this approach – both for Ericsson and for Mannesmann – considering that GSM handsets were also mainstream business for Ericsson.

The Ericsson handset division in 1995 employed less than 2,000 people. Revenues from handsets reached SEK42 billion in 1996 and the company dominated the global handset

[26] Sony seeks cell-phone presence with Ericsson, Extracts from the Nikkei Weekly May 7 2001

[27] Nikkei also offered the following comment:
Still, teaming up with the Swedish firm also carries considerable risk. Matsushita Electric Industrial Co. had earlier considered acquired Ericsson's handset operations but abandoned the idea. Ericsson's handset division has reportedly lost many of its top people because the company was trying to sell it off, one senior Matsushita official said.

market together with Nokia and Motorola. However, technological mastery did not stay ahead of competitors forever. Ericsson handsets still had small displays and the limited ability of processor and memory to handle enough data for a big display[28]. This turned out to be a misfortune.

There are four reasons why Ericsson was extremely successful in its early development of mobile telephones. First, Ericsson was able to rapidly miniaturize its handsets. Second, Ericsson had chosen a strong architecture with a limited number of ICs that were also very small, and selected proprietary architecture was at the time very advanced. Third, Ericsson designers left no empty space inside the shell. Fourth, Ericsson was at an early stage able to develop new batteries based on polymer technology that eliminated the constraint of the form factor.

Ericsson had, since a start in 1987, been able to successfully master technological development of handsets and was ahead of competitors - generation after generation. The success was based on luck and competence – to have the smallest handset - and eventually Ericsson had the best mobile telephone, model 377. Handsets known as NH237, renamed as GH377 and nicknamed Jane, were introduced in 1995 and became a great success. However, Emma, or T28, with the automatic flip-cover became a disaster when introduced in 1998, although its actual introduction was delayed until 1999.

The role of handset business has always a critical issue within Ericsson, and a number of reports and investigations were carried out within the company. Ericsson CEO during most of the 1990s, maintains that the contract with the large infrastructure contract with Mannesmann in Germany in 1990 triggered a strong emphasis on Ericsson handsets as the German company demanded handset delivery which actually started in 1991[29]. He mentions that handset business became enormously profitable up to 1997 when model 337 was an outstanding success. He also suggests that handset business within Ericsson would not have taken off without the requirements that emanated from the delivery of systems.

However, problems arose from management inefficiency and were later on compounded by the fire in the Philips semiconductor plant in Mexico. Furthermore, its is common knowledge that Ericsson suffered greatly as many models were too late to reach the market. As one of his last activities as President of Ericsson he concluded that it was important to keep handset competence within the company which led to the creation in 2001 of the joint venture Sony-Ericsson Mobile Telecommunications. Ericsson could possibly have successfully divested its handset business when the company still had the leadership.

Ericsson CEO in 1997 had a different vision. He argued strongly that a triangular relation between Ericsson, Microsoft and Sony would make an extremely strong relationship in the marketplace – with communications from Ericsson, computing from Sony and contents enablers from Microsoft – a C^3 combination. However, the relationship between Sony and Microsoft were strained as Sony competed with its Playstation against xBOX from Microsoft. Thus he decided to start the partnership with Microsoft and possibly link up with Sony at a later stage – which actually happened but apparently in a very different combination. He

[28] In the early entry of Ericsson into terminals the company decided on one configuration for the processor and related software program already in 1986, which remained at the core for another ten years – until 1996. This forced Ericsson to keep small displays and the processor capacity did not offer the possibility to introduce game functions.

[29] Former CEO interview, September 1, 2003

sensed that a partnership with Microsoft could be very beneficial as the company applies the principle of Go-To-Market-Partner.

Expectations within Ericsson pointed in the direction of a boom to continue from its very strong position for handsets in in1996, but Ericsson stumbled. Motorola first suffered from a serious setback and somewhat later the same happened to Ericsson. A downturn in the handset boom would demand a different strategy with handsets becoming a commodity and selling at increasingly lower prices. This would require a different handset strategy and Ericsson embarked on a diversification strategy that would include a Bluetooth, servers and mobile Internet. However, handset vision within Ericsson lost its focus when the aim was no longer to make the handsets smaller and smaller, and rapid and broad attempts to diversify may have ruffled the management. An overriding question was what Ericsson should do once the period of early success was broken.

Origin of Losing Markets

Ericsson in the late 1990s based all its planning that the market for handsets would continue to expand rapidly. It was soon realized inside the company that market projections could not be realized. However, top management was initially unwilling to announce that its market projections were unrealistic as Ericsson would be punished by the stock market and possibly its sales of infrastructure would fall. Ericsson had set the goal of selling 60-70 million handsets in 1999 but achieved only sales of some 30 million.

Another serious complication was that Ericsson had entered into large contracts with suppliers and had a poorly developed logistics system where Nokia had become a world leader. It has been suggested that Nokia generally agreed to pay their suppliers more and would pay only when delivered – while Ericsson had entered into long-term fixed contracts. Furthermore, one interviewee offered the view that Nokia salesmen were much tougher and were able to sell the final 10 per cent of a model which yields substantial profits as all fixed costs are already taken care of. Ericsson on the other hand often had large numbers of unsold handsets for many models.

When the handsets became smaller and smaller there was a growing concern that Ericsson must use its technological expertise to enter new business and entered into areas such as data-phones, servers, for which a company with 300-400 people was acquired in the Netherlands. A section for pagers employed 200 staff and another section for satellite phones employed 100 staff. At this critical time the handset activities were consolidated into a division – Consumer Products Division (CPD).

Carrying out technological experiments in a technology department is a much safer approach than integrating everything into a single division, where many, many people are dependent on continued expansion. Technology developments which are carried out “independently” can relatively easily be closed down if customers are choosing a different way. Ericsson did not have a strategy for handling the challenges that were eventually creating the handset disaster.

Hubris prevented Ericsson to quickly and meaningfully handle a number of key problems – size of the display, design[30] and quality. The problem was compounded by management

[30] Another difference between Ericsson and Nokia was that the latter company excelled in design, which can not be done in committees, but requires a visionary commitment. Nokia decided to get rid of the outside antenna,

issues and appointed managers had only experienced the greatness of Ericsson and got used to an attitude that problems could be solved by employing more people. This attitude was prevalent within Ericsson infrastructure throughout the 1990s and came to dominate the handset consumer division from 1997 onwards. The key cornerstones for success in terminals - quality[31] and price – were neglected.

Many insiders argue that the primary reason for the handset problem, basically boiled down to Ericsson having delivered products of poor quality. After the success of Model 377 in 1997, the next two models suffered serious quality problems including the power amplifier and components. The replacement 788 suffered from quality problem which was also true for T28 with serious problem in its automatic flip-up cover with in-built microphone. There were no major problems for the next models - T29 and T39. However, the technology problem for handsets was compounded by serious shortcomings in the logistics systems and Ericsson management was not able to quickly address the catastrophe in the market place, and not realising that Ericsson was attempting to develop too many products – without a sufficiently focused strategy.

Exit Options

Insiders argued that Ericsson should have taken full control and found the proper leader to handle consumer product for which quality and price are absolutely paramount. With lacking focus and weak management for the handset sector Ericsson started to sell its factories. Ericsson had already at earlier stage sold its buildings, in 199?) in order to solve its cash flow problem and later on sold a major portion of testing equipment to be re-hired from its new owners. However, while the cash-flow problem was temporarily solved Ericsson still retained heavy overhead costs embedded in its bureaucracy while selling off its factories, also later on to realize heavy costs in changing these relations after entering into the partnership with Sony.

There always existed an intensive tension between infrastructure and terminal divisions inside Ericsson. The terminal competence that Ericsson gradually established had an extremely beneficial effect on the company's infrastructure business, and occasionally there existed a very good balance – at least in the later part of the terminal success story, before things went awry. A major reason for the failure of Ericsson was that it lacked the character of a consumer products company and was also deficient in the necessary customer-orientation - at basically all levels within the company. Furthermore, Ericsson was not able to handle logistics, production and material supply for terminals which required a very different approach than the development, production and delivery of infrastructure systems.

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which had the effect the head is more exposed to radiation. NR had expected that there would have been much more debate about the radiation effects from different antenna configurations, for which Ericsson maintained a more traditional approach.

[31] Ericsson terminals for a period to time suffered from a serious quality problem that was extremely difficult to trace. The problem originated in the 1950s when Ericsson experienced problems with their mechanical relays on which silicon oil was sprayed in which case the silicon was the problem. Subsequently, Ericsson decided that henceforth no silicon oil should be used on contacts in Ericsson equipment. Thus the contacts in the battery for Ericsson terminals developed oxide films from the burst of signals. No one imagined that it was the lack of silicon, as was just include as part of specifications when ordering contacts to be included in the battery box for which there may have been 15 suppliers. The supplier responsible for the contacts could possibly have told Ericsson. So, it took long time before the problem was finally identified. The natural reaction would have been to throw away the handsets so that confidence in the market would have been recovered.

Another underlying reason is obvious when comparing production profiles and management of Ericsson and Nokia. Infrastructure has always dominated sales over terminals at Ericsson while the opposite has been the case at Nokia. Thus, the terminal division was often required to support the interests of the infrastructure division. On one occasion the terminal division was required develop and deliver to a dual-mode AMPS/GSM telephone which only sold some 10,000 sets. The decision was taken by top management in order to support, in this case as in others, an infrastructure order to a significant customer. This development may have required some 75 man-years which would roughly corresponds to SEK100 million, although alternative costs were much higher. Such projects drained the handset division of Ericsson of its competitive power – capability which is not available in the market place. When looking at Ericsson Board membership in the past it is difficult to identify any member with real competence in consumer products this is equally true for the Chief Executive Team. Given the dominant share of revenues by infrastructure sales it is hardly surprising that Board and CET members paid incomplete attention to terminals.

Another serious issue was that managing production of handsets, which are consumer products, cannot be based on experience for products that were manufactured in numbers of ten thousand where many operations were manual, involving high technology and where price did not matter so much. Terminals provided a very different challenge as their production volumes are 1,000 times larger, with highly automated production and with eventually low margins.

This lack of competence was hidden during the rapid build-up of Ericsson terminal business when the company was not operating with salesmen but people who had the main function of receiving and accepting orders. In meetings they were happy to announce that projection for average price reduction during a certain period had not been met – as prices dropped much less than expected. Thus, very high margins could be maintained with a profit of around SEK1,000 per handset against later on only SEK100 kronor. Handset technology as such was excellent, mainly due to Ericsson being pioneer in the field.

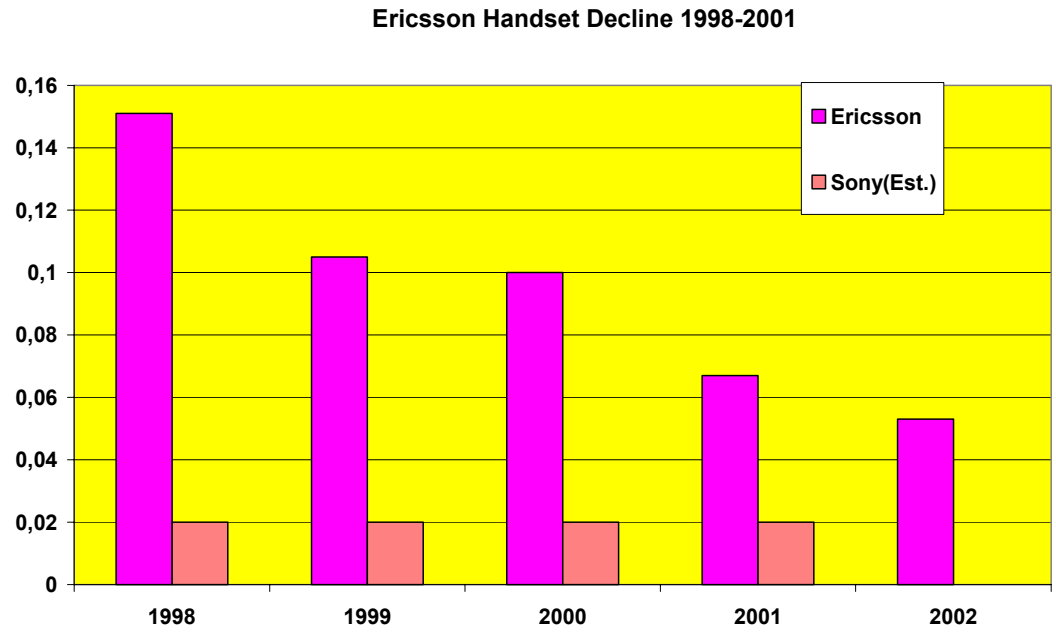
Ericsson terminal business started from a very low level and was not profitable until around 1993, and then still at very modest level. The high technological competence of developing increasingly small handsets coincided with a very favourable market situation where for a number of years demand exceeded supply. Ericsson management drew the wrong conclusion that that the company's technological prowess made it so successful in the market place, thereby reaching an annual profit of some SEK10 billion in 1997. Before that time Ericsson had already started a massive diversification of mobile devices like satellite phones, multimedia and un-related home consumer products which contributed highly to the downfall of the terminal division that subsequently lost SEK20 billion.

Many Ericsson production people responsible for terminals had limited sense of the importance of material flow. It is understood that it took months before managers at Ericsson became fully aware of the Philips fire which interrupted the delivery of chips. This provides another important comparative perspective as Nokia was organising/buying complete component sets while Ericsson was procuring component by component with individual buyers responsible for the various components. Thus managers at Ericsson would on many occasions, to their surprise, find that certain a component was missing and production of a model could not be completed. Furthermore, on several occasions the result was that large amounts of components had to be disposed in garbage bins as complete sets were not

available[32]. The reason is to be found in a different management structure at Nokia where Board members, CET members and middle managers were customer-oriented and knew correctly what would be needed for successful mass production.

The development of 3G terminals started around 1998/99 within the business unit GSM BU but became later a separate production unit UMTS PU, and expanded substantially. In 2000 the two units, which had originally been carried out as "skunk works" were merged into Strategic Planning and Technology (SP&T) that existed for approximately a year. The different cultures created a dreadful cultural shock and eventually the activities of UMTS PU became dominant – and now constitute the major part of Ericsson Mobile Platforms, while remaining activities were transferred to Sony-Ericsson or completely abandoned. The experience of the this cultural shock has some similarities with the earlier tension/conflict between fixed-line telecommunications versus mobile telephony, with the latter one eventually to dominate all Ericsson

Ericsson lost SEK20 billion on its handset business in 2000-2001 – within DCP (Division Consumer Products). This started a chain of events. The manager of handsets retired in spring 2000 and his successor attempted remedies after having found many "skeletons in various wardrobes". Ericsson continued to suffer substantial losses on its handsets and production was in the main transferred to Flextronics during the first half of 2000 with a continued transfer later on the year and early 2001. Market shares had continued to decline since 1998. See figure.



Source: Dataquest

However, a real turnaround of handset operations was extremely difficult to achieve, and top management became really concerned during the summer of 2000. Thus, Ericsson started to look for a partner and discussions were held with many potential candidates. Sony was one of them and that initially wanted to take over the whole chain of operations including technology, products, and all distribution with sales and marketing.

[32] Ny Teknik

Insiders argued that if Ericsson wanted to get rid of its handset business the company should at least keep the core technology – and Ericsson Mobile Platforms (EMP) was created. EMP is developing the chip set for mobile telephones and Sony wanted the deal also to include Ericsson handset technology that now resides at EMP, and Ericsson was hesitant to include technology in the deal unless very well paid. Thus Ericsson asked for an outside assessment of its handset technology and the value was estimated in billions of kronor. Basically Ericsson wanted to get rid pf products while keeping the technology and Ericsson asked for such a high price that Sony declined the offer. An important element of the negotiations was that Sony wanted to make a deal without any transfer of cash. In the end Sony contributed about 1,000 staff and Ericsson contributed their organisations for products and Sales&Marketing, which together became the new Sony-Ericsson Joint Venture, while Ericsson handset technology became Ericsson Mobile Platforms.

Sony-Ericsson - Partnership Components

	Ericsson	Sony
Staff original numbers in early 2001	3,000	1,500
Market knowledge - telecom operators	Of some importance	Limited
Market knowledge - consumer electronics	Limited	Very important
Handset technology	Very valuable	Sony did not want to pay

In the end Sony contributed 1,500 staff and Ericsson contributed their organisations for products and Sales&Marketing which together became the new Sony-Ericsson Joint Venture, while Ericsson handset technology became Ericsson Mobile Platforms. See figure.

The creation of Sony Ericsson Mobile Communications

Formal discussions were held between Ericsson and Sony in late 2000 with serious discussions in early 2001. Before the start of reorganising its operations the Ericsson handset division – DCP Division Consumer Products - employed close to 18,000 people, or almost 20 per cent of total Ericsson employment. Between 6,000 and 7,000 were transferred to Flextronics. An estimated roughly 8,000 were released and another 3,500 were transferred to Sony-Ericsson, EMP 900 Technology Licensing (EBT).

A number of companies had already approached Sony before Ericsson became the main solicitor. They included Motorola, Alcatel and Siemens. Nokia had already, at earlier stage in the 1990s approached Sony when the company wanted to sell its TV operations while at the same time creating a joint venture in telecommunications, an offer that Sony declined.

The Sony-Ericsson discussions initially focused on a soft alliance but Sony firmly required a joint venture. Sony emphasized three considerations as very important – cost, quality and TTM, while semiconductor technology was not going to be included in the deal. Sony identified its strength in user interface and would focus on upper-layer applications, where modules are important in areas such as still cameras, video, MPE4, Bluetooth and GPRS

The Head of Business of Sony initiated discussions with Ericsson in the 2000s to form a joint venture with Ericsson. Sony had a good market for mobile handsets in Japan but was not very successful abroad as the company "came too late" – with only about one per cent of the market. Sony top management suggested that it should be 10 per cent and could reach 20-30 per cent after 6-7 years. Sony started its cellular business in the early 1990s but realized that Samsung came later and has been much more successful – without any experience in radio. Samsung bought almost everything from Qualcomm to enter into the US and subsequently entered into GSM business. Sharp, without any earlier radio experience has also been successful, and was the first supplier in Japan to offer a handset with a built-in camera.

Before reaching a Memorandum of Understanding (MoU) with Ericsson in early 2001 Sony had been approached by various handset manufacturers and was also courted afterwards.

Ericsson and Sony entering into Negotiations

Ericsson at the time was a major partner in the relation – in terms of global sales and technology and saw relations between the companies as ten-to-one in favour of Ericsson in spite of its horrendous losses in selling handsets. However, Sony remained self-opinionated and refused to make any cash contribution, which became a major reason while Ericsson Mobile Platform (EMP) remains outside the joint venture. However, EMP is reducing its operations and does not want to be captive of Sony and is also selling technology to other customers such as LG.

A full agreement was reached in December 2000 but a mutual assessment had not yet been made, although it was agreed that the two companies would form a 50/50 joint venture. Ericsson still requested money as it considered Sony to be the minor partner. Eventually it was agreed that EMP should be excluded. Then followed very tough negotiations on a number of key issues such: governance, management, manufacturing, management of R&D, etc.

The negotiations were carried out by teams from each side consisting of some ten people.

Real negotiations started in January 2001 and a number of differences were sorted out and a MoU was signed in April 2001 – with real diligence to be completed by August 2001. There occurred a number of problems although it was agreed that the companies should form a 50/50 joint venture with Board of Directors from the two companies and a the president to be named by Sony.

A number of critical issues were sorted out during June-July 2001, of which intellectual property rights (IPR), the role of EMP and the reorganisation of production were the most critical ones. IPR was critical as it was not immediately clear how much IPR each party should transfer to the new company. Each company provided expertise on the various issues. However, it was not until August 2001 that Sony realised the seriousness of the manufacturing problem. Sony decided that it should control production although it took a year to solve the manufacturing problem which contributed considerably to losses as supply chain management was not to be brought under full control until considerably later.

Low key products are sourced on an ODM basis from suppliers in Taiwan and elsewhere. Sony-Ericsson has its own production plant with a 51% ownership together with Chinese partners – controlled directly from Japan. It took considerable time to change the supply management chain as Ericsson had entered into long-term contractual obligations with Flextronics, and EMS companies

Between the MoU signed in April and the final agreement on August 28 2001, Sony organised Functional Integration Team (FIT) that operated under tough time constraints to sort of issues in ten areas, which included governance, sales, R&D, sourcing and information system, and also select and agreed with Ericsson who would become managers of divisions. Once FIT was completed it took almost one year to sort things out. The corporate cultures were surprisingly different considering that both companies had been heavily involved in international operations. It has been suggested that Sony was very different in its cross-functional approach where it was quite common to oppose and argue with your bosses, while Ericsson was seen as much more bureaucratic with functions clearly divided. Sony could have played a more dominant role. However, Sony took a leading role in manning critical functions, and ex-Sony executives are in charge of business units and also in charge of supply chain management. Former Ericsson executives are in charge of human resources and a number of other functions.

Today both sides realize that this joint venture is big and rather complex one. Sony, in particular realized that implementation and consolidation would took much longer than expected and that both partners were too optimistic about early results as they expected profits already during the first year. It has also become evident that the partners had to learn more about each other. Sony also had to learn more about special requirements from the operators and also had to realize that a new platform requires at least one year to develop. In the meantime Ericsson would have to come to a deeper understanding that handsets are not only complimentary to infrastructure but are products by themselves

London became headquarters for Sony Ericsson Mobile Communications with leadership by Ihara-san and Mr Wäreby. All planning was completed by August 2001 and operation of the joint venture started formally on October 1 2001. The HQ in London was originally planned to have a staff of 20-30 people. R&D was to be carried out in Tokyo, Lund and Kista,

although originally scattered to several other places. Cultural perspectives were thought to have been sorted out and only financial issues were left for the remaining months.

Total staff of Sony Ericsson was close to 4,000 in mid-2003, with some 150 involved to control production. It was eventually realized that Sony-Ericsson had too many engineers. One development site, originally established by Sony and located in Munich, has been closed. This action will release all its 300 staff while simultaneously adding another 100 staff in Lund will reduce overall staff by 200. This is part of an overall plan to concentrate R&D activities and reduce travel time and costs. Staff involved in product development will eventually be reduced from presently 1,200. The present locations include Lund (700), USA for GSM (200), Japan (200), and China in cooperation with BMC in Beijing (30).

Consolidation

Before the establishing the joint venture Ericsson handset business was losing money and the market share kept going down – around 7% before establishing the joint venture. The market share of Sony was only a miniscule 2% and it would have been very difficult to expand cellular business on its own, although the company excelled in creative product design. The joint venture turned profitable after two years and reported a profit of €62 million the third quarter of 2003. This has thee result only after solving three major problems[33].

1. **Design**. It took a lot of time to develop and release attractive products in terms of design. Sony designers proposed Ericsson designers. to create a round-shape cellular phone rather than straight line ones. It was hard to explain this to Ericsson people logically. At Sony, design philosophy is not clearly written in a document, and Sony and Ericsson did not understand each other due to their internal terms (in-house words). Design words were re-defined to be understood by both. All procedures and operations about design can be preceded logically.
2. **Supply Chain Management**. Supply Chain Management did no work well. The joint venture initially used three different manufacturing facilities: Ericsson manufacturing contracts with EMS (Flextronics and others), Sony's own manufacturing company, and Ericsson's manufacturing plant in China. As a consequence the joint venture was not able to supply products as required and products did not meet customer's quality requirements. This was particularly true for EMS suppliers. Thus it was necessary to consolidate the manufacturing plants and to increase production in internal plants and use air cargo for overseas delivery
3. **Technology transfer**. It took considerable time to transfer technology and know-how from Japan. This has now been solved in the following way. Cellular technologies such as screen image and camera is first developed in Japan and then transferred to Europe and other locations. However, it took in reality much time to adjust technologies to each telecom operator in Europe.

Any joint venture, in particular if it embodies the complexity of Sony Ericsson Mobile Communications, faces a number of serious challenges. From the beginning it was evident that Sony would have a significant influence on design features, although Ericsson contributed most of the development resources that went into the new company. However, the two parties may not have completely realised the difficulties in aligning different approaches in supply-chain-management, and may also have faced difficulties in technology transfer – a hangover from the uncertain role of handset core technology (chipset) of what became Ericsson Mobile Platform (EMP), discussed elsewhere in this working paper.

The optimism from the early start that the Sony Ericsson Mobile Communications would show a profit already in Year One was not realised. It was not until the end of the second year (third quarter of 2003) that the company was able to show results in black figures, although losses decreased towards the end of 2002. However, in order cover the higher-than-expected consolidation costs Ericsson and Sony agreed in early 2003 to jointly invest another €300 million into the company.

[33] Extracts from Nikkei Business (Japanese), December 15 2003 – Sony Ericsson Mobile Communications (Interviews with Mr Ihara, Sony Ericsson President, in London, and Mr Kubota, Sony Ericsson Japan President, Tokyo

Another strategic change occurred in mid-2003 when the company decided to phase out production of CDMA-based cell phones for the United States and Canada, although it would continue to make phones for the Japanese market based on the CDMA standard[34]. Ericsson had already earlier indicated its concern with the consolidation costs of the joint venture. Subsequently, a decision was made in 2003to reduce development manpower with 500 employees and close R&D units in the US and in Munich, a unit which had originally been established by Sony during its earlier collaboration with Siemens.

Sony-Ericsson design approach in Japan

In the discussions leading up to the formal integration of resources one Sony member argued strongly that design plays an extremely important role and that the new joint venture would have to give special attention to the customers in Japan as they have a very weak relation to brand names as such while being strongly influenced by design and functionability. He mentions that top managers from Sony and Ericsson had a different perspective with their focus on merging competencies of the two companies. His message was that the Japanese market was different and that it was essential for the new company not to lose this opportunity.

This is obvious from the way i-mode was successfully introduced in Japan, while the equivalent WAP has basically failed in the rest of the world. Top management wanted to emphasize good communications although a successful strategy must be based on the notion that product comes first. The same person has been responsible as leader of the SEMC team that developed the highly successful SO505i handset of which DoCoMo sold a record of 41,000 units on the first introductory day – in June 2003[35]. A revised version was released by the end of the year – SO505is.

The former design manager argues that it is necessary to establish a distinct Sony-Ericsson way in Japan as the company will never be successful "to follow industry", as there are 11-12 firms competing in a handset market which is dominated by three operators. Sony-Ericsson is now in the forefront of a new design – Jet-style. The company has created new usages with its Mega-pixel camera. The 505 camera has 1.3 Megapixel which aroused the market. NTT DoCoMo encouraged Sony to continue its strategy. The 505 concept has created excitement in Europe, although it remains uncertain if operators and customers are ready to come along. Sony success with new technical features in 505 has its basis in the Sony capability to develop the CCD for the camera, the LCD screen and the small memory stick. EMP has not delivered the platform for 505 which is based on the PDC standard in Japan while EMP is focused on GSM. It is expected that 3G FOMA handsets will be introduced in the market during the first half of 2004.

[34] Charny, Ben Sony Ericsson: No CDMA in U.S. phones CNET News.com, June 24 2003

[35] He stresses that is important to inject the Sony DNA into the design process. This will include strong attention to the following elements

- Design impact with attention to handsets being small, thin and light
- User interface with attention to place of buttons and their size
- Connectivity benefits, with inclusion of features like Bluetooth
- High quality, with attention to picture screen and size
- Attractive contents, with Playstation possibilities and contents from the Sony Group

The product catalogue[36] of March 2003 allocates two pages to design and carries an interview with Erik Ahlgren who is the designer responsible for the Sony-Ericsson flagship product – T610. He says that "Usually we start creating a vision of the product, where we try to set a design direction and then, together with product planning sort out which key features and main characteristics the product should have to appeal to the end customer" Further on he states that "A new design is a synthesis of disciplines like engineering, acoustics, socio-cultural behaviour, logistics … working with the people who bring their expertise from all these different areas is very rewarding"

The Sony Ericsson handsets have diverted from the conventional design that were considered to be hallmark of Ericsson cellular phones. The P800 was well ahead of competitors in both style and features when it was released in late 2002. It included personal digital assistant functions, a large touch screen, and a built in camera and could play MP3 audio as well as MPEG4 video files. However, its successor P900 is clearly more advanced but competitors have considerably decreased the gap. In the meantime Sony Ericsson is far from its initial ambition to be among three major handsets manufacturers and is far behind Samsung and Siemens and had in late 2003 a market share similar to LG – around 6 per cent.

However, some commentators argue that the company has "an ace up its sleeve: A strong presence in Japan, the world's most advanced cell phone market, which gives it an advantage in production cutting-edge hand-phones."[37] Sony Ericsson people suggest that the company has an advantage over Nokia by being in Japan to observe trends and adopt technology more quickly[38].

Supply Chain Management

Logistics requires an attention to details which did not exist in the earlier Ericsson consumer division. It is a dull activity but extremely important as it is not only significant to be best but also in time and not being on time at loading platforms may seriously delay deliveries[39]. Ericsson may have lost very important production competence when outsourcing to Flextronics and other EMS companies.

The handset sector was not very professional in handling procurement and production and became tied up in costly procurement contract when market expectations failed to materialise. This happened at the time when the marketing people were aiming to increase market shared by almost doubling production of Ericsson phones. Crazy things were going on at production plants, where newly ordered (Sony) robots were lying idle as they were not needed. There was in fact a lack of knowledge and competence for upgrading production capability, and adjust downwards when necessary. Supply chain management which equals logistic was in fact very poorly managed.

[36] Mobile Life Product Portfolio 1/2003, Sony-Ericsson Mobile Communications AB, Lund , March 2003
[37] Mollman, Steve, Pump up the volume, Far Eastern Economic Review, November 20, 2003,
[38] ibid.
[39] There is much anecdotal evidence of insufficient attention to logistics such as the case when truck drivers in Europe were choosing different itineraries and one truck made an urgent delivery in six days instead of three – because the driver was not aware of the fact that a tunnel had been closed.

A case study on comparing Nokia and Ericsson approaches to outsourcing argues that Nokia management regards production as a strategically distinctive competence. It has been observed by international business correspondents that Nokia, in contrast to Ericsson maintained a major share of its handset manufacture within the company boundaries. Nokia also argues officially internal production and manufacturing competence is essential for its competence. While Ericsson transferred its handset production to Flextronics – possibly prompted by excessive costs and cash flow problems - Nokia developed deeper relations with its suppliers to advance its production prowess – with a substantial share of all Nokia handsets still being manufactured in Salo in Finland.

By maintaining high-volume production in a high-cost country such as Finland Nokia has also been able to exert strong pressure on its staff in development and engineering departments to find optimal solutions. However, Nokia is walking on two legs and established production units outside Finland with a major one Beijing to be surrounded by suppliers with which Nokia already has good and long-lasting relations. Direct outsourcing is being done to Hon Hai in Taiwan. Although Nokia has earlier declared that outsourcing will remain a small part of the company's total production of handsets. A major reason is that considers that full control of value chain and suppliers to be a critical element of its overall strategy. Nokia still has the notion that not yet become a commodity but remains a highly complex production, while other competitors are judging the situation differently.

A number of strategic competencies are directly related to the production process. The competitiveness of innovative companies is directly or indirectly associated with manufacturing prowess that requires low costs, high quality, and high flexibility and assured delivery. Knowledge in manufacturing is important in judging suppliers for price and ability, and exchange of information. Close relations with manufacturing assure efficiency and speed in product development. Production-based knowledge is required for moving quickly from trial production to large-volume manufacture and to maintain a high degree of flexibility for changes in product types and versions

Two successful handset makers have completely different strategies. Nokia maintains internal production of almost anything, and only using subcontractors for high volumes, towards end of product cycle and covers a very wide segment. Samsung on the other hand has very different characteristics as it buys platforms and concentrates on the high-end segment.

Technology Transfer - Handset Technology and the role of EMP

When handling the handset crisis at Ericsson a divorce was arranged for Sony-Ericsson and EMP to become separate entities. However Sony-Ericsson is a priority customer and its CTO, formerly based in the US, in mid-2003 moved to become CEO of EMP. EMP has a number of special customer for whom the company is developing professional interface.

The employment at EMP was 1,200 in early 2003 of which 700 were employed in Lund. The focus is on EMP as a centre of innovation. EMP is a very precarious venture. The relations between Sony-Ericsson and EMP are very critical and are in fact closely interlinked. Technology for EMP products is very complex and the EMP staff is well able to handle all technological challenges but did originally not have all the necessary management skills. Control of the chipset would in fact be crucial for future success. Combining EMP software

with chipsets would create a viable business model, but it would require storing chipset and develop necessary logistics, which indicates the need for developing a new business model.

EMP works in the material services domain, which is separated from the physical product domain, and is involved in two close related activities - development and integration of software into system solutions and developing system solutions and related design for implementation. EMP does not only develop software and solutions but has also set up a number of projects to work closely with key customers, who are usually the brand-owner. EMP should possibly also have close relations with the foundry manufacturers for ASIC silicon and other components. EMP is hardly able to control the pricing of platforms which is dependent on silicon being process inside the foundries, and partly controlled by developers of the silicon process.

However, it was evident that Sony-Ericsson could not carry the Ericsson Mobile Platform, which becomes obvious from a simple calculation. Let us assume that an average handset has an average price of €150, with production costs around 95. Costs of EMP chipset would be around €20 with another €5, at most, for the software which is the real income of EMP. The actual income for each handset may not be more than SEK30 which yields a total income of SEK 600 million if installed in 20 million handsets which was the expected volume for Sony-Ericsson in 2003. However, EMP with more than 1,000 staff carried total costs in 2003 which were twice as high. Thus, EMP has been facing very tough challenges as the company has to create twin databases both for GSM and 3G. So far EMP has four customers, which also includes LG, Samsung and Siemens.

EMP is active at three technological levels

1. GSM, which is a mass market with today simple technology and low markets. Agere is active here.
2. EDGE is at middle level requiring more complex technology and larger margins. Infineon and BMC are active in this segment.
3. 3G requires highest complexity of technology and offers very good margins. Aside from EMP only Qualcomm and Motorola are active in this segment.

Profit margins between first and third segment is approximately 1/5, and there are many competitors in the market for GSM handset platforms. EMP has signed contracts with four of the ten biggest handset companies. The business model is based on upfront payment when signing the contract plus royalty to be paid later on when production starts. Thus, EMB also has to handle a serious cash-flow challenge.

EMP is one of only three companies that can deliver the platform for 3G handsets and expects to capture at least 30 per cent of the market. The other two competitors are Motorola and Qualcomm. For GSM there may as may as 20 companies that are competing in the market for handset platforms. Expected time schedule envisaged an early introduction of 3G during 2003, as exemplified by Hi3G and pre-commercial launch by Vodafone, followed by expansion during spring 2004. Then would follow a 2nd Generation Platform required in 2005 – for a mass market making the handsets less costly with fewer components[40].

[40] The product of EMP consist of a CD-ROM with specifications, a number of physical files and list of contacts where the chip(s) can be produced, possibly combined with A Software Development KIT – SDK – for productification. The product is basically an enabler inside a handset – to make applications possible. Strategic product development started in August 2001 and was basically completed into the EMP Strategy by October-

The EMP technology platforms include complete component specifications, printed circuit board layout and software[41]. EMP product parts include CD, files, list of contacts for manufacturing, and also Software Development Kit (SDK) for productification. The income for EMP is generated from an upfront fee and from royalty for each unit sold, when reaching the market, depending on the price that the platform buyer can negotiate with the foundry company.

Qualcomm has a business idea that is similar that of EMP, although the company has its own ASIC factories. Furthermore, Qualcomm basically owns CDMA through its patent portfolio which makes it extremely difficult for Ericsson to compete for this system. EMP business model requires customer initiative after the first delivery. EMP expects to deliver products that enable customers to have short time-to-market, and a high rate of repeat customers.

EMP is already competent in technology solutions but is still weak in understanding customers. The platforms have to be very flexible in order to meet customer needs as they to quickly adjust to rapidly changing market conditions, such as requirements for sound, size and character of display, and introduction of multimedia, e.g. MP3. There are two solutions for the handset makers – either hard-coded as hardware is becoming or cheaper or software based, such as GPRS, and other developments which are not yet mature. So EMP is facing a strategy choice whether it should aim for the high-end or low-end, or both. Ericsson has in the past made serious mistakes in first developing high-end phones and later on diversifying into lower segments by using the original design where diversification was not foreseen[42].

Sony Partnership with NTT DoCoMo

The management of Sony Ericsson has a strong conviction that cellular phone functions will be more diversified and that the trend is towards using the handsets for many other purposes than only voice communication. The i-mode services of NTT DoCoMo are seen as inspiring example when users were enthusiastically embracing mobile Internet for e-mail and for viewing web pages.

One example of brave new development is the Sony launching of a new venture with DoCoMo in late 2003 to develop business of smart cards for cell phones[43]. They plan to introduce cell phones embedded with FeliCa smart cards – originally developed by Sony – during in the second half of 2004, to be followed by full-scale service. Cell phones, embedded with Sony Corp.'s (6758) FeliCa smart cards, are already available and can by now be used as train tickets and credit cards. Five thousand handsets equipped with the FeliCa cards will be used in tests. They will enable users to deposit electronic money into their cell phones through DoCoMo's i-mode mobile Internet service and make payments. The trials will involve mostly employees of the participating firms, but the general public will participate as well. Participating in these tests will be 27 companies, including East Japan Railway, All Nippon

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November in the same year. The Strategy Plan was finalised in spring 2002 and still assumed an early 3G introduction.

[41] Johnsson, Cecilia & Selander, Lisa, The Multi-Perspective Intelligence Framework – A methodological approach for Technology business strategies at Ericsson Mobile Platforms, Research Policy Institute, Lund University 2002

[42] This was costly for Ericsson when first developing T28 at high end and later on T20 for the low-end market. However, T68i moved on to remain at the high end by introducing P800.

[43] Nikkei Interactive, DoCoMo to test smart-card-embedded cell phone service, December 16, 2003

Airways, and credit card company JCB. The trial service will be completed by the summer of 2004.

The handset market is maturing market and telecommunications carriers and consumer-electronics makers are looking for features with advanced functions that will stimulate replacement demand. It emerges from recent initiatives that Sony, rather than Ericsson, is taking a much more active role within Sony Ericsson in developing new functions for mobile handsets. Sony and NTT DoCoMo on October 27 2003 announced that they will jointly establish a company to manufacture and sell smart cards for cell phones[44]. DoCoMo will begin distributing handsets equipped with Sony-standard smart cards from the middle of 2004. A new company, FeliCa Networks Inc. will be jointly funded by the two companies, with Sony providing the major share - 60% of an initial investment of about 20 billion yen. The joint venture will initially have a staff of 90, and Mr. Soichi Kawauchi from Sony has been appointed president – after having previously supervised the development of DoCoMo's very popular mova SO505i cell phone[45].

[44] Nikkei Interactive, Sony, DoCoMo to set up firm to make cell-phone smart cards, October 28, 2003

[45] NTT DOCoMo at the time of announcing the new venture with Sony expressed the view that after the new service is launched on a full-scale, new DoCoMo phones that will be put on the market will probably be offered with a contactless IC as standard equipment – and new services are not to be implemented by DoCoMo alone, but with possibilities for cooperation with the other two major operators in Japan, KDDI and Vodafone

The business model of the new company is built on the concept that Sony's smart card standard – FeliCa - will be made into a microchip fitting into cell phones. The contact-less card technology will allow data to be transferred by placing the chip against a reader device. Kawauchi says: "We will aim to have them equipped in 50-60 million cell phones", although not yet indicating the time frame[46]. FeliCa smart cards from Sony are already being used in East Japan Railway Suica system, allowing passengers to pay fares in most of JR East's network by simply passing the card over a reader at the wicket gate[47].

Sony expected at the time that the FeliCa card would be approved as the international standard and have an important impact on both smart card and electronic-money standards. About 38 million cards using Sony's FeliCa contact-less smart card standard have been issued worldwide[48]. In addition, the chips will likely use the Edy e-money standard, which is being promoted by Sony and DoCoMo[49].

The new Sony business model with DoCoMo for mobile handsets should be in understood in wider context. In late 2002, Sony and Philips reached agreement on the development of Near Field Communication (NFC) technology. In order to promote NFC worldwide, the two companies submitted the draft specifications to ECMA International, the organization responsible for standardizing information and communication systems – and have now received approval[50].

The two companies argue that their standard offers a highly intuitive method where simply bringing devices into proximity allows them to directly recognize each other and communicate. This is in contrast to previous methods where devices have identified by screen icons on computer screens or selected within wireless networks like Bluetooth and Wireless LAN.

Sony anticipates, after the ISO approval, an accelerated adoption of NFC chips into a range of consumer electronics devices. Mr Youji Tanii of Sony, President, FeliCa Business Center, Network Application and Content Service Sector, perceives the future in the following words:"We aim to develop the business globally enabling FeliCa4 contact- less IC card technology to be adopted into wider applications such as the financial industry as well as the public transport domain[51]."

[46] ibid.
[47] The fare is automatically deducted. The smart cards are also accepted for payments at 2,700 shops nationwide, including am/pm convenience stores. Outside Japan, Singapore and Hong Kong employ them as tickets in their transit systems, while 38 million cards have been issued worldwide.
[48] Nikkei Interactive, Sony To Gain An Edge In Standards Battle With DoCoMo Tie-up, October 22, 2003
[49] Edy already has a big lead over competitors like Mondex and WebMoney. The number of smart cards that use Edy has surpassed 2.7 million, and more than 2,700 stores accept it for payment although competing with Type B standard being promoted by NTT Communications Corp. and overseas chipmakers. (Source: Nikkei Interactive, Sony To Gain An Edge In Standards Battle With DoCoMo Tie-up, October 22, 2003)
[50] Near Field Communication Technology Jointly Developed by Sony and Philips Approved as ISO/IEC International Standard, JCN Newswire, December 8 2003
[51] ibid.

Conclusions

This study provides the background for two companies in telecommunications and how they joined forces in the development of future mobile communications. The story also includes their earlier perspectives on handset business and provides partial information on the creation process of the joint venture and the following stages of implementation and consolidation.

In 2001 almost all observers agreed that the combination of Sony and Ericsson was an example of an ideal international joint-venture and that it would integrate complimentary resources from two global-reach companies. The two partners expected, at least officially, an immediate success although it took more than two years to run the venture in a winning way.

Available information indicates that the joint venture required considerable time to handle cultural gaps including differences in corporate values and differences in business orientation. Such clefts appeared on issues such as: 1. design philosophy; 2. supply-chain-management, possibly accentuated by Ericsson late-in-the-day transfer of large manufacturing facilities to Flextronics; and 3. technology transfer. These issues are now in the process of being fully sorted out.

The success of a joint venture can be assessed by criteria such as losses and profits in the balance sheet, market share, future potential, and ability to handle risks. A successful joint venture must address a number of key issues which include strategy, governance, and contributions from parent companies. In this case capturing the potential in future mobile telecommunications is of great significance.

In looking at the present situation of Sony Ericsson Mobile Communications major conclusions include the following ones. First, different types of cultural gaps should have been addressed at an early stage. Second, considerable time would have been needed to identify mutual shortcomings and hidden agenda. Third, stated goals should have been more clearly matched with available resources. Fourth, stated goals should have been more supported by appropriate strategies.

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