contact

ERICSSON PUBLICATION FOR EMPLOYEES WORLDWIDE

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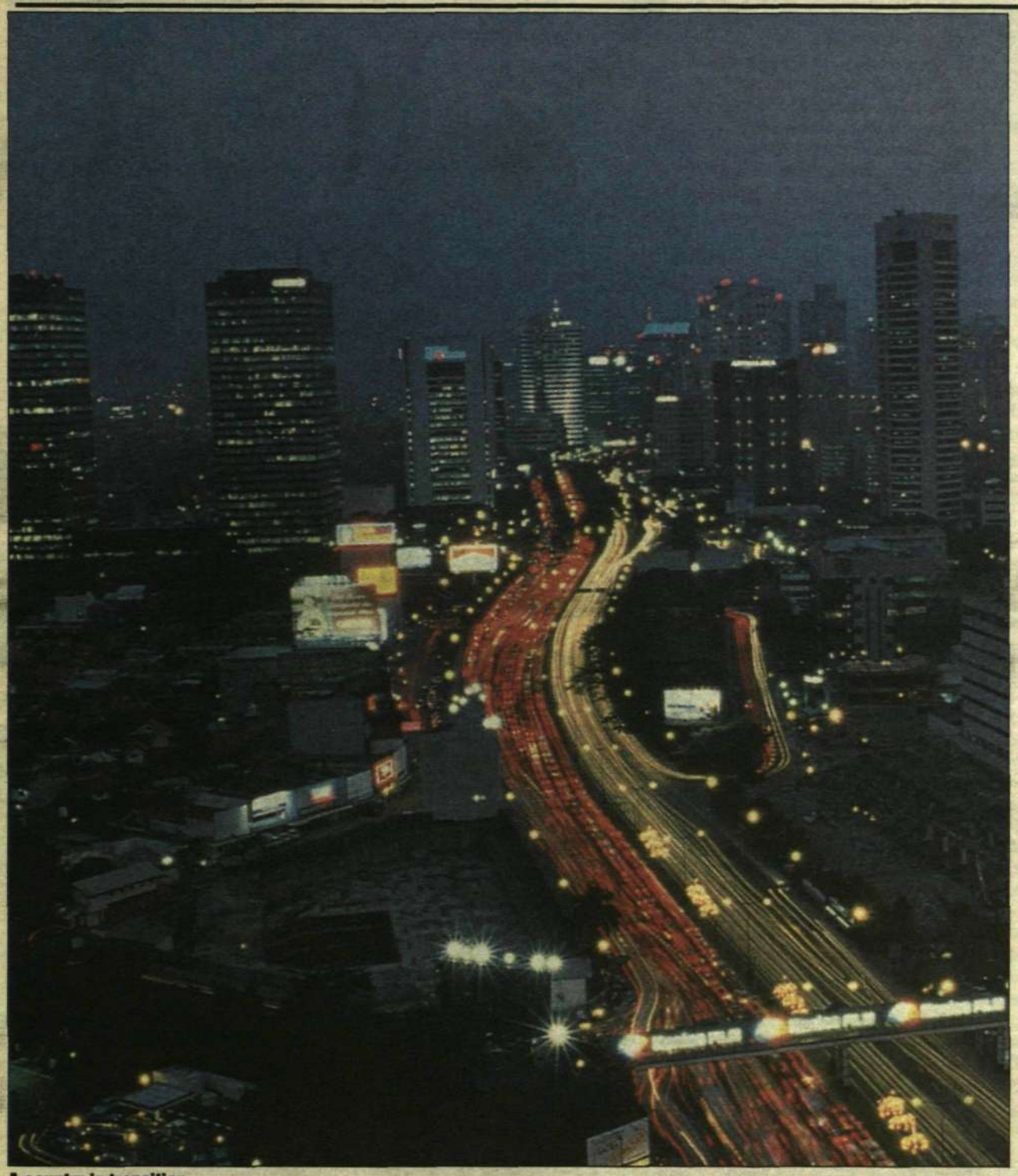


A country in transition. Indonesia is one of many countries in Southeast Asia characterized by explosive economic growth. The same is true of Ericsson's business operations in the country. Order bookings have increased by a factor of seven since 1995.
Photo: PRESSENS BILD

Ericsson makes major breakthrough in Indonesia

Ericsson made a major breakthrough in Indonesia during 1996, penetrating new market sectors and increasing sales by a factor of seven. Ericsson has kept pace with Indonesia's fantastic economic development during recent years.

Pages 14–15

Record-profit again!

Ericsson reported its best year ever in 1996. Profit rose to a record SEK 10 billion. Continued growth was also noted in sales and order bookings. Ericsson's success is now beginning to yield favorable effects on cash flow, which rose to a surplus of SEK 4 billion in 1996.

Pages 2–3

Three pages of local news

Don't' miss the "Ericsson Worldwide" – a new section featuring local news from different areas and operations.

Pages 18–20

Asia focus is on Singapore

Singapore is often called the Constantinople of Asia. Industry and commerce are flourishing. Strong focus on telecommunications makes Singapore a highly attractive market for Ericsson. Interest in the Southeast Asian nation has been heightened by the Singapore government's recent decision to deregulate the country's telecom market earlier than originally planned, with the year 2000.

Pages 12–13

Erieye, more than radar

The PS-890 is well-known primarily as a surveillance radar which is mounted on aircraft such as the SAAB 340 as an integral part of the Swedish acquisition radar system.

Pages 10–11

Theme Supplement: "2005 – Ericsson Entering the 21st Century"

1996 – another record year for Ericsson

- **Order bookings, net sales and income increase**
- **Strongly improved and positive cash flow**
- **Continued success in mobile telephony**

Ericsson's orders booked increased 31 percent to SEK 138,048 m. (104,981 m. in 1995). As a consequence of the consolidation of the formerly associated company Ericsson Telecomunicacoes S.A. in Brazil, the orders booked increased by SEK 7,800 m. or 7 percent.

For comparable units orders booked increased 25 percent. It is primarily the business areas Radio Communications and Public Telecommunications that account for the increase.

Net sales amounted to SEK 124,266 m., an increase by 26 percent compared with 1995 (98,780). The consolidation of Ericsson Telecomunicacoes S.A. means that net sales increased by SEK 3,400 m. or 3 percent. For comparable units net sales increased by 23 percent. Business area Radio Communications continues to show the greatest increase, + 40 percent.

Consolidated income before taxes was SEK 10,152 m. (7,615), an increase by 33 percent or SEK 2,537 m. compared with 1995. The income included a net capital gain of SEK 341 m. (–70) which is mainly related to the sale of Ericsson's shareholding in Selga AB, and the divestment of On-site paging operations. The consolidation of Ericsson Telecomunicacoes S.A. has no effect on Ericsson's income before taxes. Income per share, after current and deferred taxes and after full conversion, was SEK 7.27 (5.83), an increase by 25 percent.

The United States is Ericsson's largest market, followed by China/Hong Kong, UK, Sweden, Italy, and Spain. Total exports from Sweden, including sales to foreign subsidiaries continue to show a strong increase, and amounts to SEK 73,000 m., an increase by 30 percent.

The number of employees rose by 9,436 to 93,949, of which the consolidation of Ericsson Telecomunicacoes S.A. contributed 2,300. In Sweden, the net increase was 1,874, mainly within the expanding business area Radio Communications. Of the total number of employees, 65,575 – including 43,896 in Sweden – are in units within the EU.

Ericsson's gross margin weakened due to increased competition, currency exchange effects and that continuous consideration has been given in the accounts for increased risks related to changes in technology and markets, and greater financial exposure. The total effect of these continuous provisions is reported as part of other current liabilities.

Total expenses for selling, research and development and administration were SEK 40,803 m. (33,580). As percentage of sales, total expenses were 33 percent, compared with 34 percent in 1995.

Also during 1996, Ericsson continued the substantial investments in technical development, and in plants and technical equipment.

Ericsson's total costs for research and development (including such costs related to customer orders SEK 1,763 m. (1,571), reported as part of the cost of sales) were SEK 17,467 m. (15,093), or 14 (15) percent of sales. The total technical costs, including cost of modifying systems and products for specific markets, amounted to SEK 21,94 m. (19,171), or 18 (19) percent of sales.

Operating income was SEK 10,758 m. (8,164), mainly attributable to business area Radio Communications. All business areas reported increased operating income compared with 1995. The stronger Swedish krona had a negative impact on income before tax of approximately SEK 900 m. compared with the previous year. The operating margin improved from 8.3 percent to 8.7 percent.

Ericsson's financial net was SEK 412 m. (58) (of which SEK 127 m. from the consolidation of Ericsson Telecomunicacoes S.A.), due to a satisfactory result in the financial management and also due to interest income as a result of the stock issue in October 1995. As the rates of interest successively decreased during the year, the financial net has gradually decreased in the second half of the year (excluding the consolidation of Ericsson Telecomunicacoes S.A.).

Financing

Cash flow before financing activities during 1996 was positive SEK 4,044 m. (–2,512), an improvement with SEK 6,556 m. Mainly the strong earning capacity, the faster inventory turnover and large customer payments at year end contributed to this cash flow. The turnover rate of capital employed rose from 2.1 times to 2.2 times as a consequence of the improved inventory turnover. The inventories were 16 percent (20) of sales.

The equity ratio was 39.1 percent (39.6).

Business Areas

Radio Communications continues to show strong growth in mobile telephony, its dominant area of operations. Orders booked by the business area rose 31 percent and net sales were 40 percent higher.

The trend of business for mobile telecommunications systems has continued to be very favorable. The growth in number of subscribers, for digital systems in particular, is very rapid throughout the world. The number of subscribers is estimated to have grown by 50 million to 137 million during 1996. Ericsson estimates the number of subscribers in five years to reach around 590 million.

The mobile telephone business is developing favorably, with strong demand for GSM products. Ericsson is strengthening its position as the leading supplier of digital mobile telephones.

Orders booked in *Public Telecommunications* rose 56 percent and net sales 7 percent. For comparable units and excluding the consolidation of Ericsson Telecomunicacoes S.A. orders increased by 26 percent while net sales were on the whole unchanged. The success of the AXE system continues with high order bookings in e.g. Brazil. The business area continues its focused efforts concerning solutions for multimedia communication and the Internet.

The business area as a whole shows weak but improved profitability.

The process of change, designed to shorten lead times and reduce costs, is continuing.

Business Networks' net sales rose 13 percent and order bookings were unchanged. Profitability is still weak. The market has shown very strong interest in the business area's DECT-based radio access system.

Components reported both higher sales and order bookings for comparable units. Product areas in which there is strong demand include energy systems, telecommunications cable, and microelectronics for mobile telecommunications systems.

Profitability was very satisfactory.

Order bookings and net sales for *Microwave Systems* showed a strong increase. Important orders were booked within defense electronics both in Sweden and internationally. The volume of business in the telecommunications field is increasing in all markets. Profitability was very satisfactory.

Radio Communications continues to show strong growth in mobile telephony, its dominant area of operations. Orders booked by the business area rose 31 percent and net sales were 40 percent higher.

Investments

Ericsson's investments in property, plant and equipment during the period amounted to SEK 7,188 m. (6,457), of which SEK 3,415 m. (3,656) in Sweden.

The board's proposed dividend

The Board of Directors will propose that the Annual General Meeting approve an increase in dividend of 43 percent to SEK 2.50 per share (1.75).

ERICSSON 1996 IN BRIEF

Order bookings	SEK 138,048 m.	+ 31%
Net sales	SEK 124,266 m.	+ 26%
Pre-tax income	SEK 10,152 m.	+ 33%
Income per share	SEK 7.27	+ 25%
Proposed dividend per share	SEK 2.50	+ 43%

"Thank you for a great year"

- **New record year for orders, sales and profit**
- **Strongly improved and positive cash flow in spite of the sharp growth**
- **Mobile systems and mobile phones grow by almost 50 percent in orders and sales**
- **AXE orders increase by 18 percent**
- **New organization as of January 1, 1997**
- **Record number of patent applications during 1996**

Nineteen ninety-six was a record year in terms of order bookings, sales and earnings. As a result of the action programs and rationalization measures that we have implemented, Ericsson can now show a strongly improved and positive cash flow despite the sharp growth in operations.

The past five years have been a period of uninterrupted expansion for Ericsson. It is therefore with the greatest satisfaction that we can now identify the company as the world-leading supplier of equipment for telecommunications systems and related terminals. As in earlier years, our operations in mobile telephony, in particular, continued to expand sharply. Sales of both systems and mobile telephones increased nearly 50 percent in 1996. This has strengthened Ericsson's position as the world leader in mobile telephony. Orders for AXE systems used in fixed-wire networks rose 18 percent. This represents a major success, considering the heavy pressure on prices in this market.

The financial market has not been slow in evaluating our successes and the market value increased by 62 percent to SEK 202 billion in 1996.

Success factors

As I see it, Ericsson's success can be attributed primarily to two factors.

First, we have a very strong marketing organization. As a result of our long presence in more than 130 countries, we have been able to develop good relationships with customers in all parts of the world and have acquired knowledge that enables us to respond to and meet the differing needs of customers at the local level. Ericsson also has a reputation as a reliable corporate citizen in the countries in which we operate.

Second, we draw our strength from a concentrated focus on research and development. Our efforts in the area of technical development guarantee world-class quality and the attractiveness of our products in terms of both price and performance. More than 18,000 employees in 23 countries are engaged in technical development programs.

We will naturally continue to build on these strengths in the future. Our employees are the ones who provide the foundation for these success factors. I am very proud of their contributions and wish to express great gratitude to all Ericsson employees for their performance in 1996.

New organization

Effective January 1, 1997, Ericsson has introduced a new organizational structure. You may ask: Why change a winning team? The answer is simple: Ericsson has to become even more profitable if it is to retain its leadership position in the years ahead. This will require continuing expansion and further strengthening of our market position. Ericsson is growing substantially every year – and this costs money. Larger volumes of business require more working capital, major investments and, accordingly, higher earnings. We must increase our rate of capital turnover – by continuing our strategy of purchasing certain components and products from other companies, by forming partnerships or, in some cases, by divesting operations.

The rapid changes in markets and technologies make it necessary for us to become more efficient in all areas of our business: Research and development, design, production, marketing, sales, distribution, customer service and administration. As a result, our employees have become accustomed to a very high rate of change. New jobs are being created continuously; others are being discontinued.

During the past two years more than 1,000 new jobs have been created within Ericsson every month. This has occurred in part through external recruiting and in part through a comprehensive internal realignment. Our employees have accepted the necessary change in a truly fine manner, while at the same time they all know that the rate of change will only increase in the future and that we will see more internal realignments than new hirings. We also know that radical improvements in productivity in manufacturing, distribution and administration mean that we will be able to supply larger volumes with fewer employees. We must, very simply, become better at meeting the market's and customers' needs rapidly, flexibly and competitively in all the areas where we are active as a supplier.

Ericsson's new organization and its three business areas – Mobile phones and Terminals, Mobile Systems and Infocom Systems —makes Ericsson much stronger than before in the battle for customers in a rapidly changing market.

With the new Infocom Systems Business Area we are for the first time creating and combining the resources required in order to be a leading supplier in the information and data communications field. The "Infocom Systems" name underscores our ambition to be able to provide all the network solutions and products that may be required for multimedia communications. The telecommunications and data communications fields are moving increasingly closer to each other. The same is true of business networks and public telecommunications networks. There is thus a strong demand for total solutions – including radio access systems – as well as for assistance in the construction of networks for fixed-wire systems. The market has clearly signaled that it is time for Ericsson to establish a business area of this type.

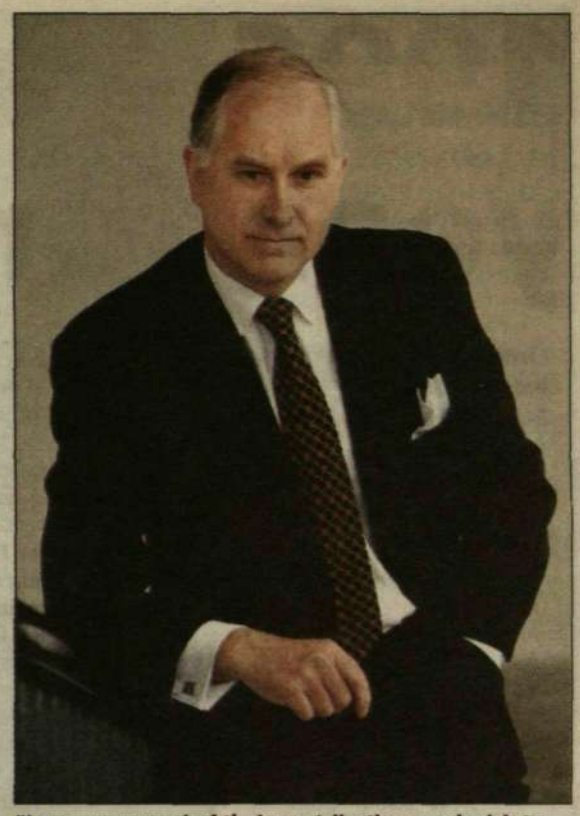
In all three business areas, we will expand our operations related to customer services and Internet Protocol (IP) access (Internet and Intranet access).

Ericsson now has the world's largest customer base. We have supplied systems serving 40 percent of the world's mobile telephone subscribers and our AXE exchange – with systems installed in 117 countries – has been sold more widely throughout the world than any other system. It is naturally important that we maintain and expand our customer base effectively in order to be able to grow with the market and with our customers.

Strong growth for mobile telephony

At year-end 1996, based on preliminary figures that are now available, there were around 137 million mobile telephone subscribers throughout the world, an increase of more than 55 percent during the year. The Asia Pacific region showed the strongest increase, nearly 90 percent, followed by Latin America with almost 65 percent, Europe with 55 percent, and North America, more than 30 percent. Ericsson estimates the number of mobile telephone subscribers to reach 590 million in five years.

We can also note that digital systems account for the strongest growth, 180 percent. The GSM, PDC and D-AMPS networks now have a combined total of more than 50 million subscribers. The GSM system has become the de facto world standard. The growth in number of subscribers to digital systems amounted to 3.5 million new connections per month during the last months of the year. By far the greatest growth has occurred in systems based on TDMA technology, where Ericsson is the leading supplier.



"I am very proud of their contributions and wish to express great gratitude to all Ericsson employees for their performance in 1996," says Lars Ramqvist.

Investment in the future

Our present and prospective customers know that Ericsson will continue to invest heavily and purposefully in research and development. While development costs, calculated as a percentage of sales, will decrease, the company's investments in development work will increase in absolute figures. We know from experience that our portfolio of marketable products changes within the course of two to three years. We therefore measure our progress in technical development by the volume of order bookings. This is the most important measurement of our competitiveness and our ability to develop new products and new functions in time.

Another important measurement is how well we succeed in protecting our inventions through patents. It is therefore gratifying to be able to report that Ericsson submitted nearly 900 new applications for patents in 1996.

Ericsson has always placed substantial emphasis on work in the environmental field. In England the company was one of the first to receive an environmental certificate based on the ISO14000 standard. A number of other companies are in line to be certified. Our environmental program will be intensified.

Our Total Quality Management program also continues to be implemented at an undiminished pace. During 1996, Ericsson won national quality prizes in Finland and Australia. The company also received a number of fine quality awards from major customers. These awards confirm that Ericsson's quality is of the highest class internationally. Nearly all Ericsson companies have received ISO 9001 certification.

In conclusion, let me thank our shareholders for their support of Ericsson. It was your help – and I am thinking in particular of the new issue of shares amounting to nearly SEK 8 billion in 1995 – that enabled Ericsson to become the world leading telecommunications supplier in 1996. We intend to maintain that position.

LARS RAMQVIST

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news briefs

GSM Network in Lebanon

■ Ericsson and its Lebanese subsidiary have been contracted to expand France Telecom's GSM network in Lebanon. The contract is part of a framework agreement valued at approximately SEK 600 million. Deliveries will be completed during 1997 and 1998. France Telecom and its local partner are the largest GSM operator in Lebanon.

The order calls for new exchanges and radio base stations. The present system has a capacity to serve 160,000 subscribers.

Ericsson acquires Orbitel

■ As reported in the previous edition of Contact, Ericsson has acquired all shares in the British mobile telephone company, Orbitel. The acquisition was finalized in April. Effective January 1, 1997, Orbitel's new status as an Ericsson subsidiary will also be reflected in a new company name, Ericsson OMC Ltd. OMC stands for Orbitel Mobile Communications. The company has 1,200 employees and is based in Basingstoke, England.

Ericsson will save millions on IT tariffs

■ Ericsson will save approximately SEK 100 million annually as the result of an agreement in principle to eliminate customs duties on components and information technology products. The agreement represents the first concrete results of the World Trade Organization's (WTO) recent meeting of trade ministers in Singapore. For Ericsson, the agreement will save significant amounts of money on imports of components to Europe and exports of finished products from Europe.

The agreement is designed to include 90 percent of all trading in information technology products by the year 2000. In addition to EU countries and the U.S., Japan and Canada have already ratified the agreement, thereby covering 80 percent of IT trading. The tariffs will be reduced in a four-step program to be started in July 1997.

"The IT agreement will strengthen Sweden's competitiveness," said Björn von Sydow, Sweden's Minister of Industry and Commerce, and the country's representative at the WTO conference in Singapore.

"We import telecommunications components valued at nearly SEK 3 billion annually," declared Lars A. Stålberg, Senior Vice President, Corporate Relations.

Total solution. **The world's most sophisticated GSM network was installed recently in San Diego, in southern California. Ericsson delivered both the system and telephones to the operator, Pacific Bell Mobile Services.** Photo: Niklas Kjeldsen/Pica Pressfoto

Large GSM investment in USA

Ericsson has delivered the world's most sophisticated GSM system to San Diego, in southern California. The huge and highly complex project was finished on schedule, in compliance with stringent time demands.

The new PCS 1900 network will soon cover all of Nevada and California.

A first generation of the GSM-based PCS 1900 system was installed in the Washington/Baltimore area in autumn 1995. The system has since been upgraded, and the advanced version was placed in commercial traffic at the end of October in San Diego by Pacific Bell Mobile Services (PBMS).

"This is a critical step for the GSM standard in the American market," says Roland Jensen, project manager for PCS 1900 installations, based in Dallas.

New speech encoder

The new PCS 1900 system features improved voice quality provided by a new speech encoder, called enhanced full rate vocoder, developed by Ericsson. The calls are transmitted at the same bit-speed as other GSM telephones (13.2 kbps), but the speech encoder contained in the telephones and the system has a more modern and improved coding algorithm.

"More data can be processed faster, which makes speech more realistic," says Paul Marsäter, project manager for development of mobile telephones in Lund, Sweden.

In parallel with the new system, Ericsson also supplied PBMS with telephones. The unique CF388 mobile phones are produced in Kumla, Sweden. The CF388 is the only mobile phone in the world today that offers Ericsson's high-level voice quality.

"In the next version of GSM, probably in the second half of 1997, the new voice quality based on the same technique will also be made available for 900/1800 MHz bands," explains Dag Johansson, project manager for system development of PCS 1900

One million man-hours

The entire PCS 1900 project has attracted considerable attention in the GSM industry. Development work conducted over the past two years involved more than one million man-hours.

All of Ericsson's design centers working with GSM development, about 20 in various parts of the world, have contributed to the design of PCS 1900. The new speech encoder was developed by Ericsson design center in Nürnberg, Germany during the spring of 1996.

"They did a great job working with a schedule that was next to impossible. Everything was delivered on time," continues Dag Johansson.

Support system

The PBMS order, valued at SEK 2 billion, included 29 AXE exchanges and 1,500 base stations. Deliveries also included a Network Management System.

"It's a completely new support system that enables the operator to effectively monitor system operations, work with network analysis questions, alarm systems, planning, subscriber services and invoicing," explains Mr. Johansson.

Among other features, Ericsson Erisoft developed TEMS, a test method used to measure the coverage ranges of base stations.

During the first quarter of 1997, the PBMS network's coverage will be extended to such metropolitan areas as San Francisco, Los Angeles, San José, Oakland and Las Vegas.

NILS SUNDSTRÖM

Cordless DECT telephone for home use available in spring

■ In spring, Ericsson plans to launch a DECT-based cordless telephone for home use. The telephone itself is very similar to the existing Freeset model. The base station will be able to handle up to eight separate cordless phones on the same telephone number. The system can also handle an internal call between these phones simultaneously with an external call.

Talktime – 12 hours

The impressive performance data include a talk time of 12 hours and a standby time of 110 hours. The new telephone is expected to go on sale early in 1997, but the retail price has yet to be announced.

The DECT telephone for home use increases Ericsson's penetration of the consumer market, supported by Ericsson's strength as a brand name due to the success of the company's mobile telephones. The main strengths of Ericsson's DECT telephone, apart from the long talk and standby times, are quality and security. DECT, short for Digital Enhanced Cordless Telecommunications, is a standard for cordless telephony. The "E" formerly stood for European, but since DECT is now also in use outside Europe, the designation has been changed while retaining the acronym. Today, the DECT standard is accepted in 24 countries, with 12 more countries in the process of ratifying it.

After adoption of the standard in 1992-1993, Ericsson was the first company to launch a commercial DECT-based product for company exchanges. Ericsson estimates its current share of the DECT market at 50 percent.

30 million DECT telephones in use

Industry forecasts predict that by the turn of the century one third of all telephone connections installed in company exchanges will conform to the DECT standard. Ericsson estimates that by then there will be close to 30 million DECT telephones in use, 12 million of them in the home environment. Field trials of "dual mode" telephones, integrating GSM and DECT in the same telephone, are also under way.

PATRIK LINDÉN

Ericsson focuses on CeBIT fair

CeBIT, the German computer and telecom exhibition held annually in Hannover, is one the industry's largest trade fairs. Photo: THORD ANDERSSON

CeBIT, the German computer and telecom exhibition held annually in the city of Hannover, is one of the industry's largest, usually attracting about 6,500 companies from more than 60 countries.

During the six days of CeBIT, an estimated 700,000 persons are expected to visit Hannover and the Fair. Many of the industry's new products are introduced every year at CeBIT.

Like last year, Ericsson plans to have two stands totaling 2,600 square meters. One display stand will be devoted exclusively to mobile telephones and accessory equipment, while the other will include displays of Ericsson's other business activities.

Ericsson's display stands will be in Halls 17 and 26. About 300 Ericsson employees will be in Hannover to assist visitors. The CeBIT Fair will be held March 13-19 in Hannover.

PATRIK LINDÉN

Deliveries to Uruguay completed in record time

■ How quickly can Ericsson develop, deliver and install a complete network for a telecom operator? Well, if the company uses the latest technologies, such as the DECT-based DRA 1900 radio access system, it can all be accomplished in about one month!

A good example of Ericsson's new capabilities is illustrated by its most recent and rather significant DRA 1900 contract with Uruguay, which was announced a few weeks ago.

The customer is Antel, Uruguay's government-owned telecom operator, the same company that purchased AXE equipment and mobile telephony from Ericsson in the past. The current contract is valued at about SEK 200 million and calls for delivery and installation of a large number of radio access lines for the inhabitants of Montevideo, the capital of Uruguay.

"Business negotiations with Antel were initiated as recently as November 1996," explains Adriana Boersma, Ericsson's Marketing Manager for DRA 1900 in Latin America and Spain.

After a few weeks of intensive negotiations, Peter Axell, president of Ericsson Uruguay S.A., signed the contract with Antel on December 18.

Approximately one week (!) later, during the peak of the Christmas holidays, a plane was loaded in Karlskrona, Sweden, with complete material requirements for 2,000 subscribers. All DRA 1900 deliveries to destinations in all parts of the world emanate from Karlskrona. When the plane landed in Montevideo, Uruguayan customs officials provided express control and approval for import of the equipment. The following day, Ericsson technicians in Uruguay and two persons from Sundbyberg, Sweden, were working on the installation at Antel headquarters.

The first call handled by the new system was made before New Year's Eve.

The DECT Acess unit, which controls DRA 1900, was incorporated on January 1, 1997 in the Public Telecommunications business unit of Ericsson's new Infocom Systems Business Area.

THORD ANDERSSON

Record deliveries from Karlskrona

■ December 1996 was a record month for deliveries from Ericsson's Verkö and Vedeby production units in Karlskrona. Production at the plants include Consono MD110 products and solutions for business networks, which are shipped to all parts of the world. During the week of December 9–13 alone, 144 LIM units for MD110, with 25,479 lines, were shipped from Karlskrona, an all-time high.

Production of the sophisticated D3 series of system telephones has averaged about 3,000 units per day, peaking at 3,219 on December 10. All delays have been eliminated and delivery precision is approaching 100 percent.

Records were also set in December for DECT-based DRA 1900 radio access systems for public networks, with deliveries rising to 22,754 lines, an increase of 10 percent compared with November. Deliveries of the new DRA 1900 to customers were started in January 1996. A total of 108,063 lines were produced and shipped during 1996.

Ericsson's Verkö and Vedeby production units are model plants in Ericsson Business Networks AB. According to present plans, the factories will be taken over this spring by Ericsson's new partner, Flextronics International, one of the world's leading contract manufacturers. The transfer is part of a program designed to improve production efficiency. About 900 Ericsson employees will join Flextronics. Ericsson Business Networks will retain its logistics unit with about 80 employees.

THORD ANDERSSON

news briefs

AXE and SDH for Colombia

■ Ericsson recently signed contracts with two telecom operators in Colombia.

Empresa de Telecomunicaciones de Santa Fe de Bogota contracted Ericsson for delivery of AXE and SDH (Synchronous Digital Hierarchy) transmission networks valued at SEK 340 million. In parallel, Empresas Publicas de Medillin placed an order for AXE, intelligent networks and supervisory equipment valued at approximately SEK 190 million.

Including the new contracts, 1.8 million AXE lines have been ordered or installed in Colombia, a market in which Ericsson has conducted business operations for 100 years.

Ghana's GSM network is up and running

■ Ghana's GSM network, Ericsson's second GSM system in Africa, was placed in operation recently. In its initial phase, the network will cover the capital of Accra and the seaport city of Tema, with a capacity to serve 8,000 subscribers.

The network is operated by Scancom, whose majority shareholder is Investcom Holding, a Lebanese company. Ghana's GSM system was launched under the name of Spacefon.

Colossal growth of global Internet

■ The Internet is experiencing colossal growth. As recently as 1990, only one million people were connected to the Net. According to estimates by John S. Quarterman of Matrix Information and Directory Services in Austin, Texas, 57 million users are now surfing the Internet. And this is just the beginning! Quarterman expects the total number of people connected to the Internet to virtually explode, soaring to approximately 700 million users worldwide by the year 2000. Fred Briggs, Technical Director of MCI, a major American telecom operator, says: "It took 100 years to build the telecom network we have today. The Internet will reach the same level of expansion in a period of only five years."

(Source: Time)

hello there!

Nils Scherlund, Security Coordinator at Ericsson Telecom.

Nils to the rescue after Ericsson fire

Nils Scherlund, Security Coordinator at Ericsson Telecom, is the man in charge of clean-up and restoration after the fire that destroyed a large section of the Hägersten plant near Stockholm.

• How are things going?

"I'm pleased that we were able to start as quickly as we did with alternative production, and our restoration work and the the damage was relatively limited. It was quite a scare and things could've been much worse. We were lucky the entire factory didn't burn down.

• Security's job involves fire prevention. Does this fire represent a failure?

"Investigations conducted by police authorities and my department have shown that neither negligence nor sabotage/arson caused the fire. It was probably started by an electrical malfunction. Nobody can guarantee 100 percent security, but Ericsson maintains a relatively high level of fire safety standards at all factories and installations."

• What was your initial reaction when you heard about the fire on the morning of January 9th?

"I heard the news on radio in the morning and naturally went to the factory as quickly as I could. When I arrived, I wasn't allowed into the area at first, but eventually a security guard helped me gain access. The fire had been burning for an hour and six minutes when I got there. At 10:30 AM, we were able to start the clean-up process.

• What lessons have you learned from the clean-up and restoration work?

"On the whole, I am very satisfied with our accomplishment. But hindsight always provides a better perspective, and I realize that we could've worked even more efficiently during the first few hours after the fire. Those of us who work with security can improve our abilities to delegate responsibility and communicate with each other. Contingency plans for this and various other types of disasters will have to improved."

"I also want to emphasize that everybody involved made extremely valuable contributions in dealing with a very difficult situation."

LENA WIDEGREN

outlook

1997 – the year of Wireless?

There is one thing that we can be sure of 1997 will not be the "Year" of wireless. Just as there was no single year of the desktop PC, notebook PC, local-area network, cellular phone, or pager, there will be no single year of wireless. Overall, 1997 should be a great year, but in some respects, it will be a bad year as well.

The stakes are high on the US wireless market. Many billions of dollars are being spent so far – not the least on license fees for the PCS Spectrum. Photo: LARS ÅSTRÖM

In 1996, wireless voice use grew by double digits; new wireless voice providers – PacTel, APC, Sprint, BellSouth, and others turned on portions of their systems and AT&T turned on its TDMA digital cellular service in many areas, calling it nationwide digital Personal Communications Service (PCS).

On the hardware side of things, Motorola, Sony, and Ericsson added new, smaller handheld cellular phones to their product lines.

What we did not see happening in wireless data in 1996 was any real movement toward learning how to place products into retail channels so that they would become available to individuals and small companies. Most of the sales were driven either by network providers or by value-added-resellers (VARs) into the vertical markets. There were certainly advances in the number of users populating the wireless data networks, although again, last year the industry had little or no success in gaining horizontal users.

Ending on a High Note

The year did end on several high notes. Microsoft and seven hardware vendors announced handheld PC devices that run Windows CE and are designed to be companion devices for those already using a desktop PC; RadioMail inked a deal with Netcom to provide wireless e-mail and messaging services to the Internet provider's customer base.

The PCS systems that were turned on worked well; CDMA finally got into the market with real networks; and the PCS1900 folks got some of their systems up and running (and decided to revert to the name "GSM" for their technology which is known as the digital standard for voice and short messaging in Europe and parts of Asia).

Sliding into 1997

But what can we expect to see happen during 1997? How much will the voice, voice-and-data, and data-only markets grow? How many new customers will there be on the networks? What types of new devices and software will we see? Will anyone break the code and set the world on fire with a hot new approach to wireless? And finally, what will Congress and the FCC do to either help those already on a charted course toward wireless implementation, or hinder those who have invested heavily by "finding" more spectrum and allowing yet more networks to be added to those we already have?

Sticking Out Our Neck

Below are some of the things – good and bad – that I believe will occur during 1997 that will have an impact on how the industry will change over time. Change, after all, is certain and is a safe prediction. As for the balance of my predictions and observations, many are, frankly, more in the realm of "hopes" than solid predictions. Here goes.

The PCS players that have already started building out their systems will continue to do so, and others will launch their first systems. Build-outs will remain aggressive and users will begin trying these services. Pricing models that will be tried during 1997 include those already in use no monthly commitment, buy the phone and pay by the month, flat-rate pricing, all-you-can-eat voice, and prepaid services.

There is some danger that end users will discover that PCS is not like cellular in one important aspect. In most cities, you will not be able to simply switch carriers by reprogramming your phone. You will have to buy a new phone that incorporates a different digital technology and start over again.

The PCS-GSM folks will provide short messaging services along with voice and, by the end of the year, a few roaming agreements should be in place. Some CDMA systems may be up and running with some form of data use in addition to voice, but I believe that it is not likely that many of the CDMA systems providers will view data as anything more than a technology to be embraced in coming years. They will concentrate on establishing the necessary cash flow primarily by selling voice services.

Some PCS carriers will begin working toward a wireline bypass strategy, going head-to-head with local phone service providers by offering dial tone in residential areas, and some will continue to go head-to-head with cellular systems.

Several companies will introduce PCS phones that will offer a combination of two different digital technologies for PCS, and some that will function on both cellular and PCS systems. PCS phones will be offered with paging and short-messaging services – either bundled into the phone or as part of a package deal. We will also see combinations of cordless and PCS phones enter the marketplace.

Unfortunately, we will not see any vendor offering what I consider full PCS in the form of a single phone that works at home, on the road, and in the office with a single "smart" number. This is really what PCS is supposed to be about – a single number with a smart network. Users are supposed to be able to have business and personal calls routed according to their wishes using a single number and a single phone.

Cellular

More digital systems or overlays will be established during 1997, and the cellular industry will make a real effort to keep its existing customers and add new ones.

They will offer longer-term, less-expensive airtime contracts, pre-paid airtime, and perhaps even begin experimenting with multiple phones with the same number for a single monthly access charge.

Some cellular carriers will be using 1997 to try to "out-PCS" PCS by adding microcells in key business areas, public buildings, and even neighborhoods. AT&T will finally get around to using both its cellular and PCS systems to offer local-loop bypass to compete with the various regional bell operating companies (RBOCs) for local service and to provide direct access to its long-distance services.

Regardless of the build-out of PCS, the number of cellular users will continue to grow during 1997 – still in double digits, but perhaps not as much as in previous years.

Now let's take a look at what should happen but won't.

Priority Calling Capabilities

Today, everyone on the cellular system has an equal right of access. Normally, this works great. However, during times of disaster – when critical traffic should have priority – there is no way to establish it. During the Oklahoma bombing incident, local authorities had to ask the commercial radio stations to beg users in the downtown area not to use their phones so important calls could get through. During the earthquake in LA, emergency cellular telephone traffic had to compete with normal traffic.

Wireline carriers have the ability to restrict traffic by type of phone (emergency, business, pay phone, residential), but cellular carriers have never implemented any type of priority system. Thus far, I have heard nothing to indicate that PCS carriers will provide for priority calling either.

In-Building Coverage

I do not believe that either the cellular carriers or the PCS providers will do much, if anything, to improve their coverage inside buildings. It has improved on the cellular side in recent years, but coverage is still not acceptable in most public buildings, or even in concentrated areas of business.

Some will say that people should be using wired phones while inside. My response is that if the wireless phone is supposed to be my main form of voice communications and I am to rely on it for incoming calls, it needs to work reliably wherever I am. It costs a lot of money to improve in-building coverage, but if we are to embrace wireless voice communications, good in-building coverage is a requirement.

Final Thoughts

If all of the companies currently providing voice paging or data services and all of those that obtained new spectrum through the auction process build out their planned systems, there will be an over-abundance of services in the short term, many company failures, and millions of dollars lost.

The year 1997 should be a year in which the realities of economics become clear to most of the network providers. Build/buy decisions will be revisited when the costs of the spectrum they are holding are reviewed. Business plans, no matter how carefully crafted, will be reviewed and revised.

I believe that successful network providers will use 1997 as a time to solidify their positions, make deals, acquire other players, combine resources (including

spectrum and distribution), and put together non-traditional partnering agreements. In other words, as important as building out the networks is and will remain, making better use of the networks and loading them with subscribers at the lowest possible cost of customer acquisition will require new marketing and sales models as we move forward.

There is no more "build it and they will come" play in the wireless market. The vendors need to move to a model that convinces customers that what they have to offer will save them time, money, and aggravation. What's more, users will be looking toward consolidation of services this year.

I hope that 1997 turns out to be the year we look back to and say, "Some really important stuff happened in 1997, and 1998 was the year of," dare we say it, "wireless!"

ANDREW M SEYBOLD

Andrew M Seybold is a renowned US editor and analysts, specializing in computer technology and telecommunications.

Key to the Internet

What is the actual key that opens access roads to the Internet? For most users, it's the modem. Ericsson's skills and expertise in the modem field have been nurtured for years in the shadow of other more dominant telecom products and solutions. Suddenly, however, the little pearl known as the modem has caught the spotlight. More modems are being sold every day. And the Ericsson name, as usual, stands for quality and reliability.

For most people, modems provide access roads to the Internet. "We expect to double our sales in 1997," says Hans Holmqvist, manager of Ericsson modem sales.
Photo: PETER GUNNARS

"Market growth in Sweden during 1996 reached 135 percent, compared with world market growth of 65–70 percent," says Hans Holmqvist, manager of sales and marketing for Ericsson modems. Product development and manufacturing of the modems are concentrated in Ericsson A/S in Arendal, Norway.

"We sell about 40,000 modems every month in the Swedish market," continues Hans Holmqvist. "Ericsson has a market share of about 10 percent. We are also a leader in the Norwegian market, and have noted considerable success in Ireland and Croatia. By year-end 1996, we expect to have sold about 60,000 modems. Sales in 1997 are expected to double. Special focus is now being placed on capturing greater market shares in major European countries such as Germany, France and England, in parallel with efforts farther afield, for example, in Thailand and China.

Modem – a sideline

Ericsson has sold modems for 30 years. The operations have always been conducted as a sort of "sideline activity" to Ericsson's solutions for business communications. Modems have often been included in total solutions.

The product range also offers a few special modems, with particular focus on commercial customers, using the modem in combination with NMT telephones, for example, and, recently, in combination with GSM telephones, as well as high-functionality modems that offer reliable and cost-efficient coding applications.

The latter application, which is used by all off-track betting and lottery outlets (ATG) in Sweden, also guarantees reliable transmissions of bets and other wagers to the nearest access node in the Eripax network, a system supplied by Ericsson Business Networks to process all ATG traffic in Sweden.

Easy to use

In its infancy, the transfer speed of most modems was in the range of 300 bits per second. The latest generation processes 33,600 bit/s based on the new V34+ standard. According to Hans Holmqvist, speeds of 56,000 bit/s are just around the corner, and modem transmissions will soon be measured on a par with ISDN.

The modem has become a consumer product and, as such, it must be easy to use. Hans Holmqvist does not deny it can be a little tricky to install and use modems, but he also maintains that all difficulties can be overcome through carefully formulated packaging solutions.

All modems from Ericsson come with an instruction manual with graphic illustrations and pictures corresponding to what users see on their screens during installation. The manual is simple and easy to understand, explaining the process one step at a time.

Important asset

"Our know-how as a telecom supplier is clearly an important asset. A modem, regardless of how you twist and turn it, is a telecom product that has to be approved for use in the telecom networks of all markets. Eventually, uniform standards will be established, but we aren't there yet," he continues.

Tough price pressure

The rules and regulations of the PC industry generally apply to modems. The market is characterized by rapid change. The right price at the right time can increase business opportunities. Competition and price pressure are extremely tough, however. Modems are now sold in accordance with the same principles that apply to GSM telephones, whereby the operator/supplier subsidizes hardware purchases, i.e., the modem, to attract new subscribers, for modems, to the Internet.

Volume product

"This is a volume product. It is intended for the mass market, and our strategy is to concentrate on agreements with selected distributors which, in turn, sell the products to large numbers of retailers. One of our greatest challenges is to get our modems into every shop and store in the world that sells mobile telephones," Hans Holmqvist explains.

The wave of reorganizational change now sweeping through Ericsson might push the modem into a new structural domain. Hans Holmqvist recognizes the possibility that he and "his modems" might eventually find themselves in the new Mobile Telephones & Terminals Business Area created to concentrate on consumer markets. Ericsson's modems might well be subject to the same regulations that govern GSM telephones. The possibility of being placed in tandem with GSM telephones might provide a greater boost to retail outlet sales.

KARI MALMSTRÖM

First environmental certificate awarded in England

Ericsson's production plant in Scunthorpe, England, recently became the first Ericsson unit to win environmental certification. The certificate was awarded in accordance with British standard BS 7750 by BSI auditors in the latter part of November.

The rather unusual award ceremony was held on Friday, November 22. The first environmental certificate was to be awarded to Ericsson's factory in Scunthorpe, a city in Humberside, north of London. The factory has about 650 employees (half of whom are contracted for outsourced operations) working on AXE exchanges and assembly of radio base stations.

The problem was that Steve Hutchinson, environmental manager at the Scunthorpe plant, was in Stockholm attending Ericsson's first international environment seminar. A video conference was arranged, therefore, between Scunthorpe and Telefonplan, outside Stockholm. When management personnel in England accepted the original certificate, a copy was presented to Steve Hutchinson in the Stockholm video studio.

Hard work

"It took one year and a lot of hard work," explains Steve Hutchinson. "The fact that we were awarded the certificate does not mean we have taken the lead in the field of environmental protection, but we have caught up to our competitors, and that is important to large customers such as BT."

Environmental efforts and awareness are gaining greater importance in all branches of industry. A new international standard, ISO 14000, was recently developed in a short time, and major efforts to achieve environmental certification is under way both in Ericsson and other companies.

The main reason Scunthorpe was granted certification in accordance with BS 7750 was that the ISO standard was not available at the time, but the intention is to secure ISO 14000 certification during 1997.

From all parts of the world

Representatives from several local companies throughout the world, including Australia, Spain, Mexico, India, England, Croatia, Norway and Brazil, attended Ericsson's first international environment seminar in Stockholm.

Håkan Jansson, Senior Vice President, Corporate Technology, emphasized executive management's support of all active environmental conservation efforts and the importance of a new philosophy at all levels of the company to meet new demands from various outside interests.

To underline the importance of outside interests, Mats-Olov Hedblom, Ericsson's Environmental Manager, had invited several guests to the seminar. Christina Schnell, Telia, and Christer Larsson of Volvo described the comprehensive programs conducted internally by their companies and the strong support of such programs by executive management.

More certificates

Several more Ericsson units are in line for environmental certification. It has been determined that previous certification in accordance with ISO 9000 is a very strong starting platform.

Ericsson's first environmental certificate was awarded to its production plant in Scunthorpe, England. Steve Hutchinson, environmental manager at the plant, accepts a copy of the certificate from Mats-Olov Hedblom (r), Ericsson's Environmental Manager.
Photo: CECILIA ABELIN

Certification also requires a thorough advance analysis of current conditions, having the "right" person make the "right" measurements and appointments of designated persons to cooperate internally and externally, in addition to the formulation and implementation of special training courses.

LARS CEDERQUIST

"Ericsson not a good citizen"

Johan Riddergard and Katherine Hansson, two industrial doctorate candidates at Chalmers Institute of Technology, have examined Ericsson and suggest various ways for the company to become a better corporate citizen.

Illustration: EBBA STRID UDIKAS

Is Ericsson a "Good Corporate Citizen?" Of course, has been Ericsson's reply for the past few years. "Not at all, but Ericsson could be, the company has everything to gain," say two industrial economics doctorate candidates at Chalmers Institute of Technology, who studied Ericsson since July 1996 and examined its present position and future courses of action to improve its status as a citizen of society.

It's not enough just paying taxes, having thousands of employees, selling good products or conducting other business operations included under normal customer relations. Neither does charity qualify a company as a good Corporate Citizen, claim Katherine Hansson and Johan Riddergard, two industrial economics doctorate candidates at the Chalmers Institute of Technology.

For a company to qualify as a good Corporate Citizen, it must take more affirmative action to improve society, not just react to the questions of others. A company must go above and beyond statutory requirements. Allocations of money are not enough either, the company must try to actively engage its employees and equipment in various projects.

Missing in business culture

"Of course, there several examples of good Corporate Citizenship within Ericsson, but a sense of central vision or general strategy is lacking. Neither do these elements have a place in Ericsson's business culture," says Katherine Hansson.

Ericsson has everything to gain by becoming a better corporate citizen. It would certainly enhance the company's image. Private consumers, for example, might choose Ericsson more readily over its competitors when all other factors are equal. It would also help the company recruit qualified labor. Employees also appreciate working for a company with an active interest in society and its status as a good citizen.

What is the significance of being a good Corporate Citizen?

A prime example of a local project that Johan and Katherine believe would signify a commitment to good corporate citizenship for a company like Ericsson would be to supply a number of elementary school classes with the knowledge and equipment needed to connect them with the Internet. This could be a global effort to connect various classes with each other via the Internet, without necessarily flooding the students with information about Ericsson. The result, hopefully, would be reflected in greater knowledge and, perhaps, increased interest in communications. In the long-term perspective, it might also provide Ericsson with a broader recruitment base and more knowledgeable consumers. The gesture should not just be a matter of donating equipment, but also the time and commitment of its employees. Otherwise, it's a simple matter of charity.

"These types of long-term measures are clear indications of a company's commitment to good corporate citizenship. Another good example is the effort made by Skandia, a large Swedish insurance company. Skandia's main product is security. Through involvement in groups such as "Parents on patrol," they are able to help prevent violence and insecurity in swedish cities. This is a prime example of the significance of good corporate citizenship for a company," says Johan Riddergard.

"It's important to differentiate between Corporate Citizenship, sponsorship and charity, concepts that are often grouped under one heading," says Katherine Hansson.

Charity comes into play when Ericsson donates money or equipment to an organization for charitable purposes, without expecting anything in return. Sponsorship may be defined as a mutual business agreement in which Ericsson contributes money or equipment for the prominent display of its name or for cooperation purposes. Sponsorship is beneficial to both parties and involves more than purchases of advertising space.

Corporate Citizenship is more of a long-term concept, compared with charity and sponsorships. It encompasses Ericsson's actions in relation to all parties, including employees, owners, investors, customers, environmental organizations, schools, communities and nations.

The company's best interests

Being a good Corporate Citizen is an abstract concept that does not provide any concrete short-term advantages, but serves the long-terms interests of a company and provides certain benefits to society.

Good Corporate Citizenship is a relatively new concept in Sweden.

"Corporate Citizenship cannot be translated into Swedish. It is defined as a pro-active commitment to public service programs in a genuine attempt to contribute to various forms of improvement throughout the community in particular and society in general," explains Katherine Hansson.

Ericsson has an excellent vantage point. Communications solutions do not create environmental contaminants or waste. On the contrary, communications leads to improved contacts between people and reduced transport needs. Many Ericsson companies also conduct various programs in cooperation with schools, and several projects now in progress may be classified as good Corporate Citizenship. But its efforts are not communicated, and the company lacks an overall common strategy, according to the Chalmers graduate candidates.

"Ericsson has everything to gain by developing efforts focused on Corporate Citizenship," conclude Katherine Hansson and Johan Riddergard.

PATRIK LINDÉN

■ *Olle Wikström works with public affairs within the parent company. He is joint supervisor, together with Ericsson's Senior Vice President, Corporate Relations, Lars A. Stålberg, for Johan's and Katherine's dissertation project.*

Study provides useful information

"We are very pleased with the Corporate Citizenship study, which has provided us with valuable information," says Olle Wikström. "We plan to proceed with this work until we have created a common platform for Good Corporate Citizenship within Ericsson. But it is still too early to say exactly what form it will take."

"The study has given us a considerable amount of useful information," agrees Lars A. Stålberg. "Based on the definition of Good Corporate Citizenship that we are applying, we have a long way to go before we take the lead. However, we already have every justification for feeling proud of our role in society in view of the social and economic benefits resulting from advances in telecommunications. We are also pursuing a number of other projects that come under the same heading, and we have received many tips on how to work more professionally in this area.

"It is interesting to note how companies in North America and Asia apply the Good Corporate Citizenship concept in the more active sense described by Johan and Katherine," adds Lars A. Stålberg.

■ *Good Corporate Citizenship is not a precise term, and there are many interpretations of exactly what it involves. In their degree project, Katherine Hansson and Johan Riddergard applied the following definition of a company that is a Good Corporate Citizen. Such a company:*

- *Takes proactive measures to improve society and the conditions governing the lives of individuals within society.*
- *Does more than merely comply with the law.*
- *Strives to achieve socially beneficial results as well as financial gain.*
- *Works to achieve mutual benefits for the company and those with an interest in it.*
- *Commits not only money but also its own employees, equipment and facilities to the project.*

Under the West African sun

One of the first GSM systems in West Africa is about to go into operation. Ericsson has established a presence in Ghana, and Göran Kretz is one of the installers dispatched there to toil in the African heat.

Twenty-eight-year-old Göran Kretz is a mechanical and electrical installer working for Ericsson Business Networks in Järfälla, near Stockholm. But instead of spending all their time in the cool of the assembly unit in Sweden, Göran and his colleagues often travel to various parts of the world to set up Swesite installations. Their most recent trip was to Ghana, where four installers headed at the end of September to carry out a month-long installation project.

"It was warm down there – already up to 32 degrees when we woke up in the morning," relates Göran. "You have to keep your cap pulled well down over your forehead and drink six to seven liters of water a day to survive the heat."

While the heat may be a problem for human beings, the radio equipment is installed in air-conditioned shelters that can withstand temperatures as high as 55 degrees.

Local office established

The job in Ghana was part of an important order secured by Ericsson Radio Systems. The Ghanaian operator Scancom, owned by a Lebanese company, purchased six radio base stations and two exchanges to set up one of the first GSM networks in West Africa. The first stage of the project will connect 4,000–5,000 subscribers in the capital Accra and the port city of Tema.

"We are opening a local office in Ghana to serve as our operational center for West Africa," reports Robert Rudin, sales manager for North and West Africa.

Ericsson previously operated on a direct-marketing basis, but now that the GSM system is established, the local office in Ghana will serve as the base for all Ericsson's operations in the region, where Ivory Coast, Togo and Guinea are also potentially important markets for Ericsson.

Göran Kretz and his colleagues had plenty to do in Ghana. With the entire company working flat out to fill orders, there is a heavy work load and a shortage of personnel. Despite only getting one day off in five weeks, they successfully readied the system for its inauguration – to the customer's great satisfaction.

"After returning home, we received a letter of thanks from the president of Investcoms, the Lebanese company behind the Ghanaian operator," relates Göran.

Bird's-eye view

Ghana turned out to be a good place to work in after all. Although the truck-mounted cranes often did not appear until lunch-time, the people were friendly and cooperative. Scancom, the operator setting up the GSM network in Ghana, came through 100 percent.

In addition to the six base stations in their Swesite shelters, Ericsson Radio Systems installed two radio links. For Göran, this meant scrambling around 95 meters above the ground on the television tower in Accra to install the larger of the radio links, 1.2 meters in diameter. The other link, a minilink with a diameter of 0.6 meters, was installed at a height of 46 meters.

"Everything went smoothly," relates Göran, "but since there was no elevator, quite a bit of climbing was involved. Naturally we used safety lines."

It is likely that there will be more jobs in Ghana in the future. In the country's gold-mining areas, there are large numbers of people but very few telephones.

"We have a good chance of securing more orders, since the Ghanaians are planning to extend the coverage of the GSM network," notes Robert Rudin in conclusion.

JESPER LINDAU

Erieye, more than radar

The PS-890 is well-known primarily as a surveillance radar which is mounted on aircraft such as the SAAB 340 as an integral part of the Swedish acquisition radar system.

However, a typical export system differs from the Swedish version in many ways. Export customers normally desire to have personnel, the operators, in the aircraft to control the radar and other equipment. They also direct attack aircraft through voice and data links, coordinate with the command and control central and ground units as well as other command and control (C&C) activities.

The operators work at the C&C center where all information from radar and other systems is displayed on screens. Information about targets comes mainly from radar, but IFF (Identification Friend or Foe) equipment is also used, as well as signal surveillance equipment, ESM (Electronic Support Measures) to identify and, to some extent, detect targets.

The control system includes functions needed to create and update air status reports. It also contains other information operators need, for example, about own aircraft, those in the air and at other air bases, as well as information about own and enemy anti-aircraft defenses. For control of its own fighters, the control system calculates the intercept commands and forwards them by data or voice commands by radio. The operators also exchange information with the ground control centers by data link and voice radio.

A typical Erieye Mission System contains the following: a C&C system with three to five operator stations, radar, IFF equipment, ESM equipment and eight to twelve VHF/UHF radio and data links. The radar is manufactured by Ericsson Microwave Systems and the control system by Erisoft in Luleå. Other equipment is purchased from various suppliers outside Ericsson and integrated into the system.

Integration of such a large and complex system is a new and exciting challenge which requires know-how in many areas in which Ericsson has no previous experience. In order to cope with current and future undertakings personnel involved in system construction must be increased substantially in the near future.

Broader market for Erieye

Erieye is a highly versatile radar system designed for both military and commercial aviation applications that, hopefully, will make the system a best seller.

Ericsson recently embarked on a program of cooperation with Lockheed Martin of the U.S., whereby Erieye will be mounted on Hercules C-130 airplanes as a suitable combination for radar surveillance. Ericsson is also proceeding with sales of several radar systems in Brazil.

The Division for AEW systems (Airborne Early Warning) noted strong growth in 1996, expanding from 100 employees to 114.

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For export markets, the Saab 2000 is a more likely aircraft alternative than Saab's smaller 340 model.

(The photograph above is a composite)
Photo: SAAB

Erieye finds new markets

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"We followed our plan for 1996, but now we need more employees, especially more system engineers," says Division Manager Lennart Joelsson.

"Erieye is an unique airborne radar system, characterized most strongly by its compact design. Naturally, however, there are similar systems such as AWACS, Hawkeye and the Israeli Phalcon system that is also based on an electronically controlled antenna. Northrop Grumman is also working on development of a similar system designed primarily for larger aircraft. Our system is less expensive since it requires smaller airplanes. As far as we know, Erieye is the only system on the market that can be carried by a small turboprop airplane, such as the Saab 340. For export purposes, however, the most common alternative is the Saab 2000, because it accommodates more than one operator in the aircraft.

"The bigger we get, however, the greater the risk for plagiarism," Lennart Joelsson continues. "We're already competing with the biggest companies on the market. Nevertheless, I want to emphasize that our Swedish customer is our most important customer. During 1996, we delivered two systems to the Defense Materiel Administration of Sweden (FMV). The Swedish customer is an important reference for exports," continues Mr. Joelsson.

The agreement with Lockheed Martin, which calls for Erieye mounted on C-130 aircraft, is expected to open doors into new markets.

Marketing with patience

Erieye can also be used in all kinds of surveillance, and is expected to gain considerable importance in non-military applications. The present market outlook for Erieye is highly promising. Ericsson is counting on 10 "hot" customers, with "hot" defined as a strong and very realistic chance of booking an order before the year 2000. The prospects are situated in Brazil and a number of countries in Asia.

"Naturally, the dual application feature is an added attraction; products with dual applications always find larger markets," Lennart Joelsson says.

About 10 of the division's 110 employees work with marketing. Including all persons whose jobs are concentrated on customer contacts, the number is closer to 20.

"Marketing people have to be patient, willing to hang tough. It may take three-four years from the first contact with a prospective customer until the first bid is submitted, and then a few more years before the first contract is signed. It's important to maintain contacts with potential customers, avoid periods of dead air with no contact, and keep plugging although it may seem futile at times; for example when waiting for decisions on military spending," explains Lars Törnquist, marketing manager.

"Military defense projects have two things in common: they are always multi-million dollar projects and they take time to implement, since we are dealing with government agencies. A number of various impediments can be encountered along the way toward a large contract," he continues.

Commercial applications and new functions enhance exports

Export milestones

Although the armed forces usually account for procurements, several budget centers may be involved because of the dual application feature, since the Erieye system is used mainly for peacetime applications, for example to control fishing waters and smuggling and to protect rain forests, continues Lars Törnquist.

Project Erieye has a few years under its belt. We asked Lennart Joelsson and Lars Törnquist to review the most important milestones, with particular emphasis on markets and exports.

- **First exhibition in Farnborough, England in 1992.**
- **FMV's radar order in 1993.**
- **Bid from Sivam of Brazil in 1993.**
- **Opening of demonstration center in Mölndal in 1995.**
- **The demonstration of an image linked from an airplane to the operator's position was shown at the MILINF exhibition in 1996. It was the world premiere for direct transmission of authentic pictures for a large international audience comprising representatives of the trade press.**

To accelerate development work, the division has now started to use standard computers/processors, which are also expected to reduce future lead-times.

"We invest about SEK 20 million annually in product development. By the year 1999, we expect to introduce new modes and functions. Primary goals include higher system levels for recognition systems and signal surveillance equipment," says Lennart Joelsson.

"All our efforts are concentrated on a basic product that can be equipped with unique solutions to meet the specific needs of all customers."

BRITT-MARIE WIHDÉN

New methods and techniques tested in the Erieye project

■ Included in the framework of the Erieye Project, Ericsson has also conducted related research and development programs. By testing new methods and techniques, the company has produced a new signal processing system for modes that could not be realized with existing signal processing. The project was designed to improve Ericsson's capability to meet future customer demands, under the assumption they will want products delivered quickly and not accept decade-long project times.

It is difficult to maintain constant access to the best and most modern signal processing equipment and techniques. As a result, Ericsson decided to use commercial techniques, so-called commercial off-the-shelf (COTS) techniques, for its most advanced, high-calculation signal processes.

Sophisticated research

Simplicity is also required to make conversions to new techniques used in the next generation of signal processors. Hardware has to be programmed with graphic tools now available and used by several software companies serving the communications and medical electronics industries. The graphic tools were developed through highly sophisticated research programs conducted by various universities throughout the world, and they are now assuming the stability required for software production.

Computer-aided calculations for signal processing algorithms, consequently, are used for specification and verification purposes. Results of the realizations were placed directly (seamless) in a network of floating-point signal processors to make real-time calculations. The target machine, with a capacity to process two gigaflops (two billion floating-point operations per second), consists of a commercial circuit boards with 40 digital signal processors that can be housed in a one-cubic foot box, about the same size as a conventional PC.

The project spanned one year from original concept to airborne prototype and yielded anticipated results, despite minimal resources.

BO LYCKEGÅRD

industry news

Integrated network in Helsinki

An integrated network for telephony, Internet and other services will be opened by the Helsinki telephone company in February. The network was delivered by Nokia. New network technology will make it possible to conduct telephone conversations over the Internet (using Internet Protocol) from conventional telephones. The network is based on broadband technology, including ADSL (Asymmetrical Digital Subscriber Line) and HDSL (Hi-bit-rate Digital Subscriber Line).

Expansion order for GSM booked by Nokia

Nokia has signed a contract with the Henan Provincial Post and Telecommunications Authority in China for expansion Henan's GSM network. The order is valued at about USD 75 million. The original network was placed in operation last April. The recent order is the second expansion order booked by Nokia and, after the latest expansion project, network capacity will be increased to 500,000 subscribers.

Order bookings up for Alcatel

Alcatel Alsthom, the leading French telecom supplier, shows invoiced sales of FFR 162 billion in its preliminary report for 1996, an increase of FFR 1.6 billion. Sales of telecom equipment rose 6 percent and order bookings were up 21 percent.

300,000 new lines to the Philippines

A three-year framework agreement valued at FFR 1.8 billion has been signed by Alcatel of France and ETPI, a Philippine telecom operator, for delivery and installation of 300,000 new telephone lines. The order includes digital exchanges, fiber optics, microwave links, fiber-optic access systems and installation. Cable and Wireless, the worldwide telecom giant, owns 40 percent of ETPI.

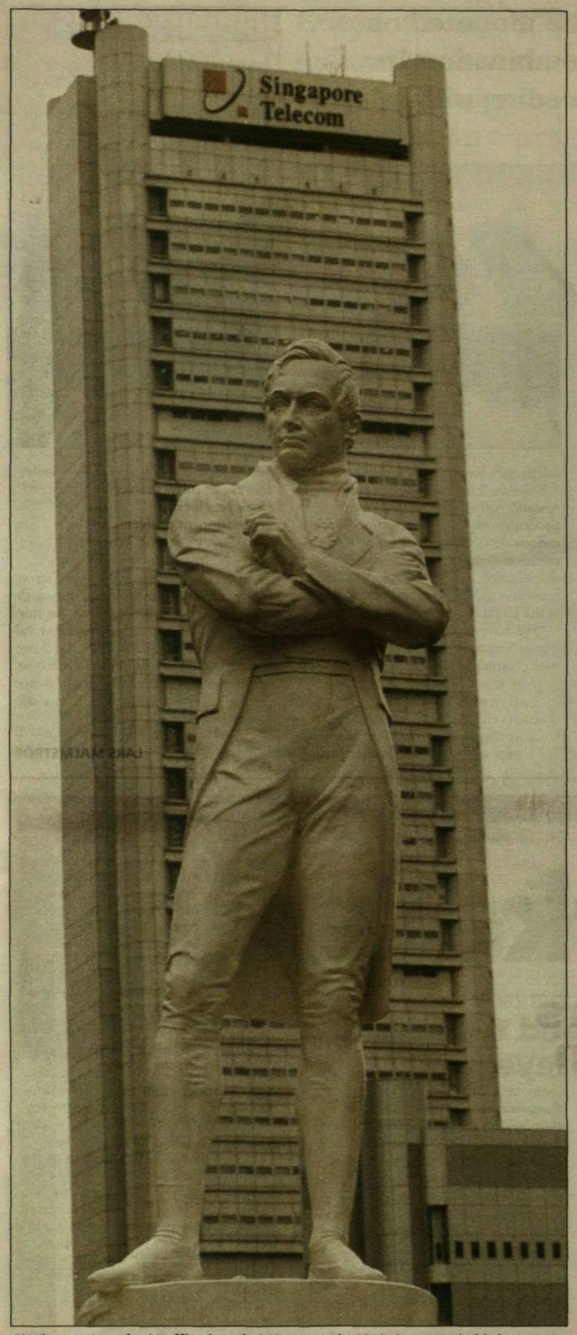
21,000 kilometers of underwater network

A consortium comprising Alcatel, AT&T Submarine Systems, KDD Submarine Cable Systems and Pirelli has been contracted to deliver most of the world's most sophisticated underwater optical-fiber network. The total length of the network will span 21,000 kilometers, linking Singapore with Germany and other countries. The order was placed by 24 of the largest telecom operators in the world today. The project will employ SDH technology, and the massive network is expected to be completed in December 1998.

Nortel reports order bookings up 28 percent

Nortel (Northern Telecom), a major Canadian telecom supplier, reported a 28-percent increase in order bookings during 1996, compared with the preceding year, with earnings up about 30 percent. R&D investments quoted in absolute values also increased but, expressed as a percentage of total revenues, showed a marginal decline to 14.1 percent. The overall increase in research and development costs was attributable primarily to new efforts in cordless telephony as well as business and broadband networks.

Focus turns to in Asia Singapore



Sir Thomas Stamford Raffles founded Singapore in 1819. A statute in his honor has been erected outside Singapore Telecom. Singapura, the Lion, Singapore's original name, had a rich Asian history long before Sir Raffles arrived in this island nation. According to local historians, the city was established in 1160 and flourished for centuries as the "Constantinople of Asia."

Singapore – Brief Facts

Area: 646 sq. km.
Average temperature: 26.7 °C
Precipitation: 2,352 mm/yr
Population: 3 million
Chinese: 77.4%
Malay: 14.2%
Indian: 7.2%
Other: 1.2%
Literacy: 91.8%
Literate in more than one language: 45%
Languages: English, Mandarin, Malay, Tamil
Economic growth 1995: 8.9%/yr.
Inflation 1995: 1.7%
Foreign debt: 0

Singapore – three million people on an island that measures 646 square kilometers. Somebody once compared the city with a very elegant and clean public water closet. The downtown area and shopping district around Orchard Street features modern skyscrapers made of steel, tinted glass and marble. Everything looks like it was built last week, then washed and polished at least 10 times.

"Visitors should be made aware of Singapore's good sides," says Göran Berntson, President of Ericsson Pte. Ltd. "Everything works here: telephones, telecommunications – you're in a taxi 10 minutes after you land at Changi Airport – there is virtually no corruption, the crime rate is low and you can walk the streets safely.

We ate lunch at the Singapore Polo Club, one of the few remnants of Singapore's colonial past under British rule – a beautiful, low-lying pavilion overlooking the polo field.

Despite its size, however, Singapore is a highly attractive and interesting market for Ericsson. In terms of economic growth potential, the World Economic Forum in Switzerland recently ranked this Southeast Asian island nation No. 1 in the world, replacing the U.S. as No 1. And, as China's assumption of power in Hong Kong approaches, Singapore is the current choice of many multinational companies as the site of regional offices in Southeast Asia. Ericsson has also established its regional office for mobile telephone operations in Singapore.

Göran Berntson is President of Ericsson Pte. Ltd. in Singapore.

Singapore, like most other countries in all parts of the world, is now in the process of deregulating both its wired and mobile telephony markets.

The government recently decided to grant licenses to two more operators on the wired network, effective in the year 2000, rather than 2007, as resolved earlier.

No decision has been made on Singapore's selection of its new telecom operators. License applications must be submitted by the summer of 1997, and a decision is expected to be reached during the third quarter of 1998.

"License applications must include specifications of services to be offered, and the competition will probably be decided by peripheral services proposed by the different applicants. We are helping several prospective licensees to find technical solutions for their bids, and I am quite convinced they will lead to business opportunities for Ericsson".

The intelligent island

The attraction of Singapore has been enhanced by the government's vision to build the "intelligent island." Step one in the project calls for construction of a broadband network, Singapore One, for rapid and efficient telephony and data communications between private homes, offices, schools, companies and institutions. The network is being designed primarily to make various forms of public service accessible to private citizens and commercial companies. Construction is now in progress, with completion scheduled for the year 2001. The next phase will be started in 1999. Upon completion in 2007, it will feature direct broadband connections to all private homes. The government has allocated the equivalent of SEK 160 million for phase one and SEK 250 million for phase two. The entire project is designed to establish Singapore as the financial center of Southeast Asia.

The "intelligent island" concept naturally presents some highly interesting business prospects for Ericsson.

"In the field of broadband, we have already tendered bids to both local telephone companies, Singapore Telecom and Singapore Cable Vision, but no decisions have been reached yet," says Göran Berntson.

Modernization and expansion

As increased competition for telecom service approaches, Singapore Telecom has also become a more attractive company, and a decision has been made to modernize and expand its network by adding 1.2 million new lines.

"In mid-November, we signed a contract with Singapore Telecom for an STP network that will control telephone traffic in the local switches. It's an important order for Ericsson, because it will establish the AXE technique in Singapore's fixed telephone network. Ericsson Pte. Ltd. now plans to proceed with a bid on expansion of the 1.2 million lines to be installed during the next two–three years," explains Göran Berntson.

"The government will select more than one operator, but with the recent order for an STP network and our well-documented expertise in network construction, we should have a good chance to be selected," he continues.

During recent years, Singapore Telecom has become more open and receptive to telecom suppliers other than Alcatel, traditionally its main supplier.

The mobile telephony market was deregulated in 1995, when a license was granted to Mobile One, a new operator.

"Mobile One is building two digital networks, one based on the CDMA/IS-95 standard and the other a GSM system, which will be opened to commercial traffic in April 1997.

Price, quality and content

Singapore Telecom has four mobile telephone networks – two analog networks: ETACS and AMPS – and two digital: GSM and DCS 1800. Ericsson supplied the ETACS and GSM networks.

About 11–12 percent of Singapore's inhabitants have mobile telephones, but aggressive growth is anticipated during the next few years. The emergence of another operator on the market will almost certainly enhance network quality. Price, quality and content are still the only competitive weapons available. And Singapore Telecom is constantly expanding its network, fully aware of new competition in April.

According to government estimates, Singapore will have one million mobile telephone subscribers by the year 2000, corresponding to market penetration of about 30 percent.

Ericsson is the leader in sales of mobile telephones in Singapore, with a market share of more than 50 percent.

Mobile domination

Sales of mobile telephones and GSM systems account for about 90 percent of Ericsson's business operations in Singapore today.

"We might see some major changes, however, if our bids on the wired network are successful," says Mr. Berntson.

Singapore also has a Mobitex network supplied by Ericsson. It's used by taxis, fire and police departments and trucking companies.

"We have noted considerable success in this area. Along with Telia's system in Sweden, the Mobitex network in Singapore is one of the world's most successful in terms of attracting subscribers. By the beginning of 1997, we expect to have 10,000 subscribers in Singapore."

At the same time, Ericsson will also focus more strongly on another one of its products in Singapore – DECT, or Digital Enhanced Cordless Telecommunications, a cordless telephony system and telephones for offices and private homes.

Ericsson has also localized some radio research operations in Singapore, with particular emphasis on multimedia applications via GSM networks. The R&D activities are conducted in cooperation with the Centre for Wireless Communications and the Institute of System Science at the University of Singapore.

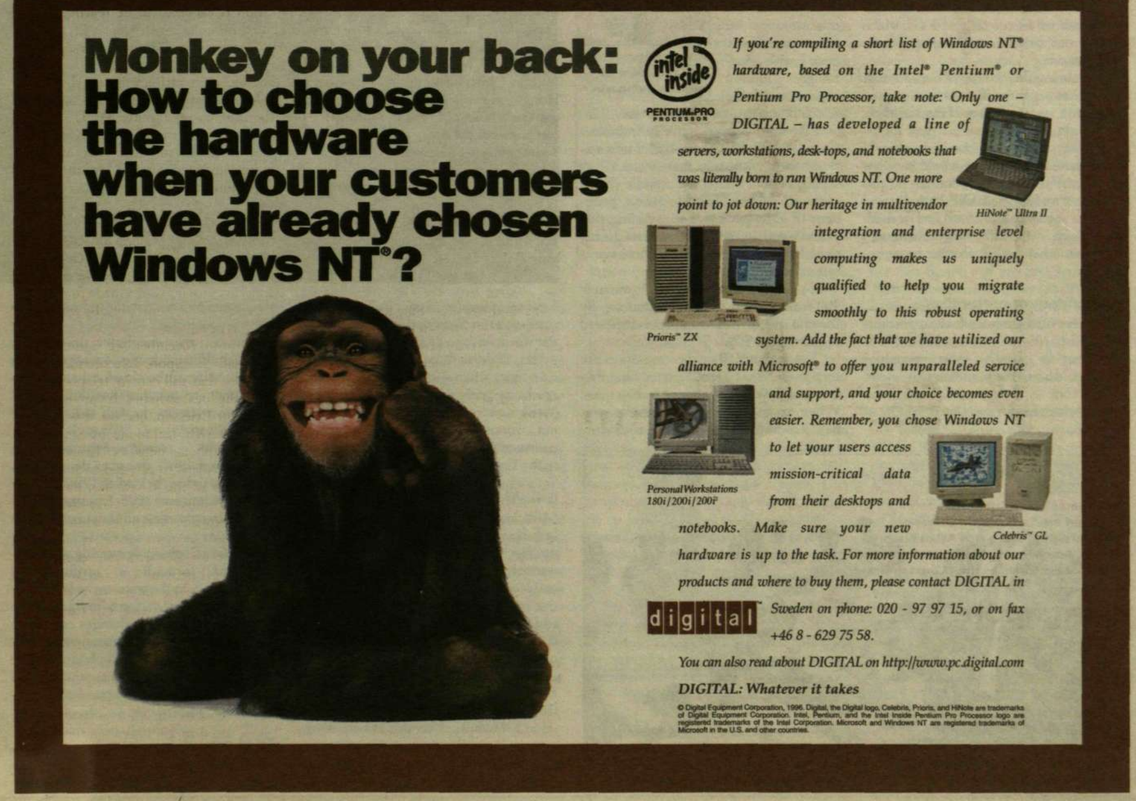
"We have established research activities in Singapore for two important reasons. Naturally because we have an important job to do, but we also want to evaluate research skills and expertise in this market," Mr. Berntson adds..

Like other high-technology companies in Singapore – and several other parts of Southeast Asia – Ericsson has experienced difficulty in recruiting qualified employees locally.

Recruitment problems are linked with the country's strong economic growth. There is virtually no unemployment.

"In fact, however, Singapore's strong economic growth has faltered during the past year. GNP growth during the third quarter of 1996 was only 3.5 percent, calculated on a yearly basis, and even slower growth was projected in the fourth quarter, compared with double-digit growth figures just a few years ago," concludes Göran Berntson.

LARS MALMSTRÖM



Ericsson Indonesia experienced strong growth in 1996. The number of employees tripled, and order bookings increased almost seven times, compared with 1995. The telecom market is on the upswing, with impressive growth figures and no flattening in sight.

Ericsson building up in Indonesia

The first steps toward deregulation of the telecom market have been taken, and there are already many international operators investing heavily in Indonesia, the world's largest and most heavily populated archipelago.

Ericsson's successes in Indonesia have been achieved without a single sale of AXE, which is still not approved switching equipment in Indonesia.

"Not being able to sell AXE means that we have to put extra effort into other products and systems," says Hans Karlsson, who is the manager for fibre and multimedia network at Ericsson Indonesia. "I am not even sure that we would have been successful with other products on this market if we have had AXE here. Instead we were forced to work hard and be more innovative. Eventually, however, we will have to market the full product range here."

Mats H. Olsson Ericssons president of Ericsson Indonesia.

Tremendous opportunities

Indonesia offers tremendous opportunities. With 200 million inhabitants, it is the world's fourth most populous country. Most of the population — about 60 percent — live on Java, the main island, which has an area one third that of Sweden.

Telephone density is extremely low, less than two phones per 100 inhabitants. On the other hand, given the large population, a one-percent increase represents two million lines. The opportunities are thus significant, even with seemingly modest expansion of the telecommunications infrastructure.

"Ericsson has been active in Indonesia since 1907. Until recently operations were limited, although there was a vey strong period during the middle of the century," relates Mats H Olsson, president of Ericsson Indonesia, adding that in Indonesia, as in many countries during the 1940s and 50s, the name Ericsson was synonymous with a telephone.

At year-end there were approximately 300 employees at Ericsson Indonesia. By the end of 1997, this number is expected to increase to 500.

"Today about 60 of the employees are foreigners," says Mats, "but we intend to increase the relative ratio of Indonesians. When expansion occurs as rapidly as it has, it is difficult to manage with only local employees. Staff from Ericsson companies in Sweden and other parts of the world have to be brought in.

Alfred Ling is the Ericsson Indonesia manager responsible for new operators. An important part of his job is to provide training to Ericsson's new customers.

"It is important to maintain the company culture when so many new employees are being hired over such a short time. Many new recruits are young and have not worked anywhere else, which of course makes it easier to quickly assimilate the Ericsson culture," notes Mats.

Growth pains better

"Although we are recruiting many Indonesians and are very busy, this does not mean that we do not have time for the normal introductory programs for new employees. However, we have to be creative in maintaining the Ericsson culture and routines with so many new employees. Contracted employees can play a key role in this regard, " says Darmoni Badri, vice president of Ericsson Indonesia, who also emphasizes that there are negative side effects of very rapid growth but that this is better than no growth at all.

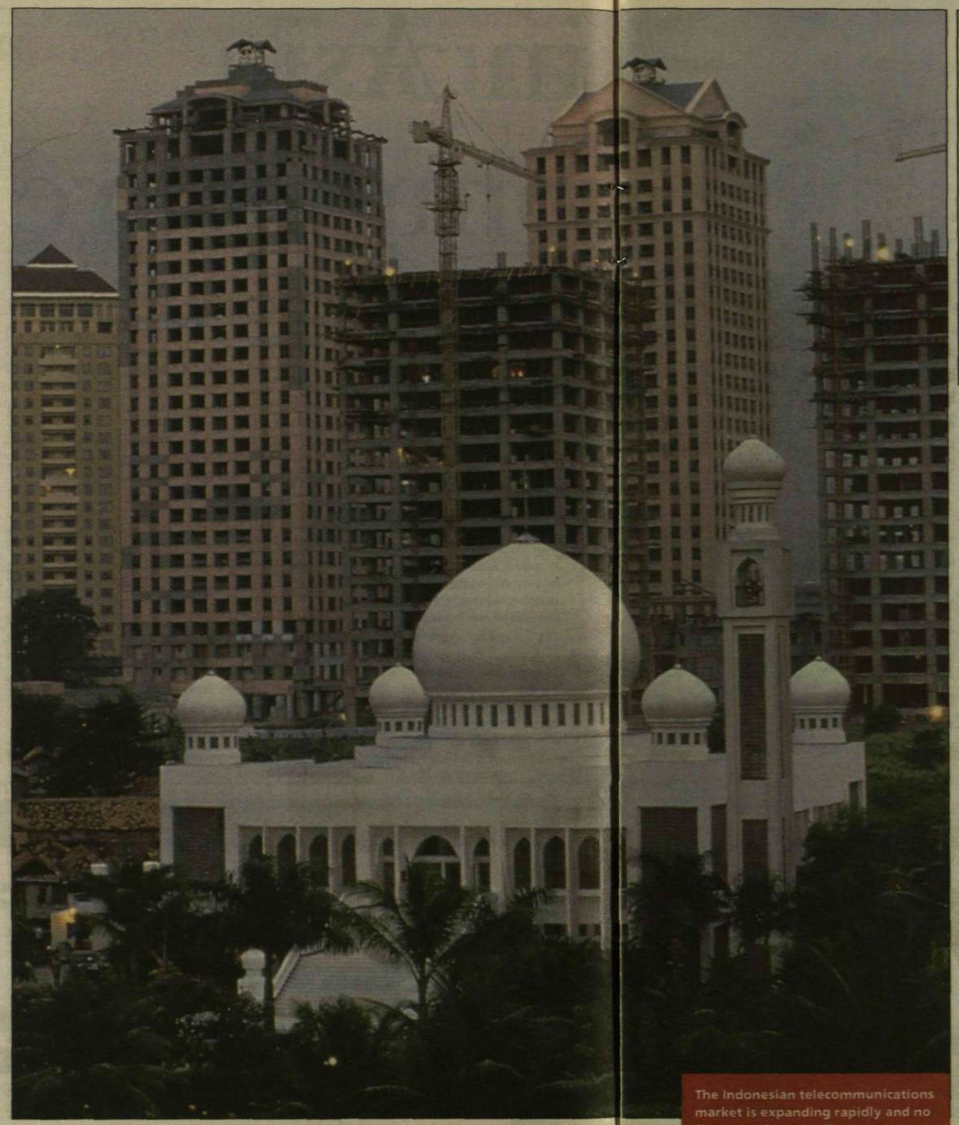
Localisations is important for several reasons. Most obviously, customer confidence depends on having Indonesians in the company. Non-Indonesian contract employees also encounter unnecessary cultural difficulties. No less important is the necessity of showing local employees that there are career opportunities in the company, despite the fact that it is foreign-owned.

Ericsson's recent expansion in Indonesia follows the growth of GSM, which started at the end of 1995 and gained momentum in 1996. Ericsson supplied the country's first pilot network in late 1994.

"Public telephony is starting to be deregulated through a profit-sharing system between the state-owned operator PT Telkom and various foreign operators. However, major changes cannot be expected until after the presidential election in 1998. Mobile telephony, on the other hand, is a newer phenomenon and has never been as tightly regulated," says Darmoni.

GSM growth

Since 1986, Ericsson has been the only supplier of NMT systems in Indonesia.



The Indonesian telecommunications market is expanding rapidly and no flattening in sight. The country's economy is in strong growth.

Further increases in this product area are not expected, however. Instead GSM will increase. The first system was taken into operation in 1994, and Ericsson's share of the GSM market, currently at 35 percent, is increasing steadily.

Ericsson recently delivered a GSM network to Exelcom, a new operator who is expanding at rapid pace and has not yet had time to load its network with subscribers. As Excelcom's network comes up to capacity, Ericsson's market share will increase.

For the state-owned GSM operator Telkomsel, Ericsson is one of three suppliers.

In addition to NMT and GSM systems, there is also three AMPS networks, but GSM is growing most rapidly.

"PCN networks are coming, but as yet no one knows which operators will win licenses and when they are awarded. There are more than 150 applicants, and the big challenge in 1997 will be to find the strong candidates and back the right operators," says Johan Lallerstedt, manager for mobile systems at Ericsson Indonesia.

Mobile phones still status items

Mobile telephones are still status items in Indonesia. Currently there are about 500,000 GSM subscribers, corresponding to less than one mobile phone per 400 inhabitants. The market is therefore not yet price-conscious. Among mobile telephone users, Ericsson is a popular choice, and many 388s can be seen among business users in Jakarta and other major cities. Visitors arriving at Jakarta's airport are greeted by billboards promoting Ericsson telephones, which can also be rented during the traveler's stay in Indonesia.

"The fact that mobile phones are still most common among businessmen is due not only to price, but also to traffic conditions. On Java, and in Jakarta in particular, traffic can be very frustrating. For this reason, many people have bought mobile telephones so that they can make best use of the time they sit in traffic jams," says Johan Lallerstedt.

"It is particulary encouriging that we during 1996 managed to double our market share on a market that doubled in it self. Now our market share is 40 persent on phones in a contiously growing market", says Mats H. Olsson.

A suitable portfolio

While mobile systems and phones accounts for the major share of Ericsson's successes in Indonesia, sales of access products are also very strong.

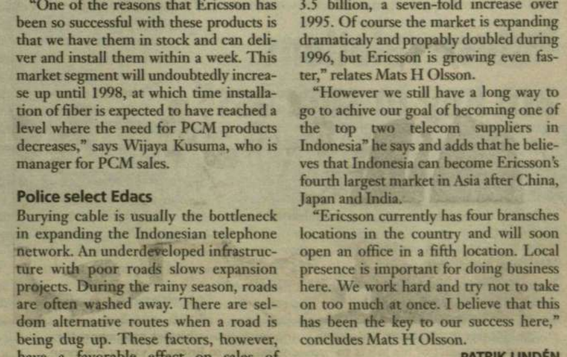
"Our successes in recent years is due in large part to having a suitable product portfolio for the Indonesian market, particularly with regard to access products for both fixed and radio networks," says Mats H Olsson.

Ericsson currently has a 70-percent share of the Indonesian market for access products. This will probably fall to 40 to 50 percent as competitors develop products and enter the market.

"Business must be conducted in a different manner than in Sweden," relates Hans Karlsson. "You can't sit and wait for requests for tender. To a much greater extent, the company has to go out and show customers what it has to offer. For example, we donated a test system for a fiber-optic network, as well as some other equipment, so the customer could see what we had to offer. We also submitted a proposal to the state-owned operator PT Telkom showing how copper wire can be replaced by fiber to increase capacity. Such initiatives have resulted in a number of contracts for access products."

Indonesia first with DRA 1900

The DRA digital radio access system is one of the many access products that Ericsson has sold.



Indonesia is in great need of improved telecommunications. Bad roads and inaccessible terrain make a speedy development difficult.

"Indonesia had the world's first pilot system for DRA 1900 in January 1996 and later also the first commercial system," relates Alfred Ling, who is the Ericsson Indonesia manager responsible for new operators and radio-based access products.

"Orders for fiber access products and DRA 1900 amounted to about USD 200 million in 1996, compared with virtually zero in 1995," says Alfred.

With the steps toward deregulation already taken, the telecom market is changing, and access products are becoming very important. "In addition to fiber access products and DRA 1900, Ericsson has also been successful with products such as pair-gain equipment that increase capacity in the existing copper network," says Mats H Olsson.

Ericsson offers products that allow up to 12 subscribers to share a single copper line. These are PCM (Pulse Code Modulation) products that enable copper networks to be used more efficiently until they can be replaced by fiber.

"One of the reasons that Ericsson has been so successful with these products is that we have them in stock and can deliver and install them within a week. This market segment will undoubtedly increase up until 1998, at which time installation of fiber is expected to have reached a level where the need for PCM products decreases," says Wijaya Kusuma, who is manager for PCM sales.

Police select Edacs

Burying cable is usually the bottleneck in expanding the Indonesian telephone network. An underdeveloped infrastructure with poor roads slows expansion projects. During the rainy season, roads are often washed away. There are seldom alternative routes when a road is being dug up. These factors, however, have a favorable effect on sales of Ericsson's Mini Link microwave products.

Ericsson recently sold a first trunking radio network for Jakarta to the Indonesian Police, who will soon begin using Edacs terminals. Last autumn, Ericsson CEO Lars Ramqvist visited Indonesia. It was his first visit to the country and the first-ever visit by an Ericsson CEO.

"During Dr Ramqvist's visit, a memorandum of understanding for the Edacs contract was signed with the Indonesian Police, in reality establishing Edacs as the standard for trunking radio within the police" relates Edacs product manager Tom Zdanowski. "The first stage of the contract calls for 1,200 radio terminals, but this figure will increase signifacally. Today there are more than 250,000 police in the country, so there are certainly opportunities for expansion."

There are already two Edacs networks in operation in Indonesia, one at the airport and one used by the state-owned oil company Pertamina.

"During 1996, our orders totaled SEK 3.5 billion, a seven-fold increase over 1995. Of course the market is expanding dramaticaly and propably doubled during 1996, but Ericsson is growing even faster," relates Mats H Olsson.

"However we still have a long way to go to achive our goal of becoming one of the top two telecom suppliers in Indonesia" he says and adds that he believes that Indonesia can become Ericsson's fourth largest market in Asia after China, Japan and India.

"Ericsson currently has four bransches locations in the country and will soon open an office in a fifth location. Local presence is important for doing business here. We work hard and try not to take on too much at once. I believe that this has been the key to our success here," concludes Mats H Olsson.

PATRIK LINDÉN

17,000 equatorial islands

■ Indonesia consists of more than 17,000 islands stretching like a ribbon along the equator. Some 6,000 islands are inhabited. ava is one of the world's most densely populated islands and the location of capital city Jakarta. Java also is the area that attracts the greatest amount of foreign investment. Indonesia's total population is 200 million.

The most important islands are Java, Borneo (Kalimantan), Sumatra, Sulawesi and New Guinea (Irian Jaya), of which half belongs to Indonesia. Indonesia covers an extremely large area. Spread out on a map of Europe, the country would stretch from London to Teheran.

From the beginning of the century up until World War II, Indonesia was a Dutch colony. In 1942, Japan invaded Indonesia, which became independent in 1945. Today Indonesia is a republic with a strong central government headed by President Suharto, who has been in power since 1966, when Suharto as a military general successfully fought off a coup attempt.

The dominant religion is Islam, which in Indonesia is interpreted less strictly than in many other Muslim countries. There is also freedom of religion for other beliefs.

The government has adopted Bahasa Indonesia (Malay) as the national language of Indonesia, which consists of more than 300 ethnic and linguistic groups.

Because the islands are situated near the equator, the climate is hot and humid. It is said that there are two types of weather in Indonesia: either hot and dry or hot and humid. Nearly all rain falls during the rainy season from November to March.

Much effort had been expended to broaden Indonesia's industrial base. Oil, gas and agriculture followed by touruism, however, remains the three largest sources of income, although industry is growing, particularly as a result of increased interest from foreign investors.

Ericsson delivered its first telephone exchange to Thailand in 1908. It served 2,400 subscribers in Bangkok. Today, Ericsson is Thailand's leading player in mobile telephony, with a key role in expansion of the country's wired network.

"We've been here so long that many people consider Ericsson a local company, which is a strength and advantage, of course, " says Lennart Svensson, Executive Vice President of Ericsson (Thailand) Ltd. Only 20 of the company's 900 employees are not Thai nationals.

Ericsson's logo in Thailand features a Buddhist monk, which legend says will bring happiness and success.

The decorations are similar to old Swedish provincial artwork.

Ericsson is a pioneer in Thailand

"You have to work in Thailand for a long time before you even begin to understand the country's business culture," says Lennart Svensson. "I've been here more than three years, and I'm still a beginner. After six months, I thought I understood everything, but I have assumed an increasingly humble approach ever since."

Ericsson (Thailand) Ltd. has very strong local roots strengthened by focus on local Thai management personnel. Only 20 of the company's 900 employees are not Thai nationals, and a large percentage of management is comprised of local employees. Approximately 450 people are employed at the new head office in Bangkok, with a 100 more working at the production plant in Ayutthaya, north of the capital, where AXE components are manufactured. Other employees work at various local offices in the northern provinces, in such cities as Chiang Mai, Phitanulok, Nong Kai, Ubon Ratchatani and Udon Thani.

Until 1991, there were essentially two suppliers of wired networks operating in Thailand: NEC, with a market share of 70 percent, and Ericsson, which controlled the remaining 30 percent. Three years ago, however, Telephone Organisation of Thailand (TOT), the Thai telecommunications authority, issued two licenses for continued expansion and changed the country's established telecom order overnight.

"Close relations are key to success"

Waiting for decision

One of the new licenses was awarded to Telecom Asia and comprised 2.6 million lines. The other was issued to Thai Telephone & Telecommunication Public Co., Ltd. (TT&T), comprising 1.5 million lines. Since the licenses were issued, Ericsson has delivered 650,000 lines to TOT and 720,000 lines to TT&T.

At the end of November, Ericsson signed another contract with TOT for deliveries of AXE exchanges valued at SEK 1 billion, most of which will be delivered and installed during 1997.

What is the outlook for continued business development in Thailand?

"It will depend completely on how the country's planned privatization of TOT proceeds and the contents of its so-called Eighth Development Plan," says Lennart Svensson. "Today, there is talk about expansion in the range of six million new wired lines distributed among a number of regional operators. We're waiting anxiously for the final word from Thai authorities."

Regional disparity

In all analyses of Thailand's rapid economic development, a differentiation must be made between Bangkok and the rest of Thailand. While 500 new cars are sold every day in Bangkok and a new skyscraper is built every other week, development in other parts of the country has virtually stood still during recent decades.

The same is true of development in Thai telecommunications. Telephone density is higher in Bangkok than many European cities, with about 40 telephones per 100 inhabitants. The corresponding figure in the poverty stricken northeastern province of Issarn is about one telephone per 100 inhabitants. Comprehensive efforts are being made to narrow the gap between different regions of the country, but Bangkok will remain in a class by itself as the heart of Thailand's financial world for a long time.

Much stronger sales

Until 1990, Ericsson's annual sales in Thailand were relatively steady at about one billion Baht (SEK 275 m). When TOT issued the licenses for wired and mobile networks, however, sales started to accelerate.

During 1995, sales rose to 5.4 billion Baht (ca. SEK 1.4 billion), an all-time record in the Thai market. Sales in 1996 were expected to increase to 6.5 billion Baht, as Ericsson's approaches its sales target level of 10 billion Baht by the year 2000.

The public sector, including networks, accounted for about 40 percent of Ericsson sales in Thailand during 1995. Mobile telephony, including mobile telephones, accounted for 50 percent, with the remaining 10 percent comprising sales of business exchanges, computer networks and network materials. In addition to public operators and commercial customers, Thailand's military defense structure, police forces and Ministry of Home Affairs are also important customers.

"Sales are still lower than invoicing by Ericsson in Malaysia, for example, mainly because economic development and growth started a little later here in Thailand," says Lennart Svensson. "But there is tremendous potential in the Thai market, and it will be a long time before we even begin to approach a saturation level."

Competition for labor

Despite its very strong increase in sales, Ericsson (Thailand) has managed to maintain the same size labor force. Partly because of efficient utilization of resources, the number of employees has remained relatively steady at about 900 persons.

We have a very youthful labor force, with nearly 80 percent younger than age 40. The average age of technical engineers in the labor market is very low, mainly because of the relatively recent expansion and sophistication of Thailand's educational system. Access to qualified engineers remains far below demand, however.

As a result, the labor market is characterized by tough competition for qualified personnel.

"In the past, there was a steady flow of well-educated people between different companies in the telecom market," continues Lennart Svensson. "Fortunately, the market has stabilized, and we don't expect to lose any qualified employees to the competition this year. On the contrary, we have managed to recruit some new employees. I believe our personnel policy is one reason for our success in the labor market.

"A company consists of individuals. We recognize this fact and emphasize the personal development of our employees. Among other efforts, we try to identify future managers at an early stage and provide them with support and training through special education and training programs - here in Thailand and other parts of the world.

Different business culture

The business culture of Thailand is naturally much different from the Swedish. In addition to other differences, relations between customers and suppliers are more intimate, and hierarchies of companies are much more structured.

"You have to work in Thailand for a long time before you even begin to understand Thai business culture," explains Lennart Svensson. "I've been here more than three years, and I'm still just a beginner. After six months, I thought I understood everything, but I've assumed an increasingly humble approach ever since.

"Personal relations and contacts can be completely critical to commercial success in Thailand," he continues. "People do business with people they know, and look more to long-term business relations. As a result, it may take a frustrating and very long time to establish customer relations, but it's well worth the effort once business relations are established.

We have a very youthful labor force, with nearly 80 percent 40 years old or younger.

In the middle of my interview with Lennart Svensson, he was interrupted by a telephone call. A customer with a license for new lines had still not received final financing approval from the banks. Ericsson has guaranteed the transaction, however, and already completed most deliveries – even though financing has not received final approval!

"As I said earlier, here in Thailand, business agreements are based on good faith and confidence," says Lennart Svensson with a smile. "Contingencies like these have to be factored into bid calculations. You cannot stare blindly at an individual business transaction, but focus instead on customer relations and profitability in the long-term perspective. Of course we take some risks, but we consider the risk level warranted and manageable."

The activities of Ericsson Thailand have been coordinated during recent years to increase operating efficiency.

"During 1995, the operations of all our companies were brought together in a single organizational unit to provide improved utilization of resources and reduced risks of friction in our customer relations. In the past, employees of different Ericsson companies might work in parallel with customers without even knowing about each other's existence. The situation simply had to be changed," explains Mr. Svensson.

"To improve internal coordination, we also created two unofficial groups with representatives from the public and private sectors. We meet regularly to discuss ongoing projects, bids and cooperation opportunities. Our objective is to make customers feel they are dealing with one company – Ericsson."

JAN KIND

Thailand in a nutshell

Population: 60 million
Size: 517,000 km2 (about the same size as France)
Government: Constitutional monarchy (King Bhumiphol Adulyadej), parliamentary system with two chambers, a senate and house of representatives elected by the populace.
Language: Thai
Population: Thai (75%), Chinese (14%), other origins (11%)
Religion: Theravada Buddhism
Literacy: About 90%
GDP/capita: About USD 2,700 (distribution of GNP is very uneven, however)
GDP growth: About 8.5% in 1996.

■ Economic growth accelerated in the late-1980s and has since averaged slightly less than 10 percent annually. Thailand's economy is one of the strongest in the world, ranking in a class with China.

The strength of Thai tourism is a measure of the country's buying power. Believe it or not, two million Thai tourists spend more money on trips abroad than six million foreign tourists spend in Thailand.

Mobile telephony in Thailand

■ Ericsson's first mobile telephone system in Thailand was placed in operation during 1985–86.

"It was an NMT-450 system that's still in operation," Says Anders Borneving, regional manager of the GSM, NMT and TACS business unit of Ericsson Radio Systems. "The system still covers parts of Thailand and provided Ericsson with a good start in the country's mobile telephone operations."

During 1991 and 1992, Ericsson and Nokia delivered a nationwide NMT 900-system, the second largest NMT system in the world, with about 900,000 subscribers. The operator is AIS, Advanced Information Systems, a company in the well-known Thai industrial group called Shinawatra. Three years ago, Ericsson received its first order for GSM network equipment in Thailand; the system has been expanded gradually, including the most recent order in 1996. The GSM system serves about 60,000 subscribers today and covers Thailand's capital, Bangkok, and other parts of the country. The operator is AIS.

Thailand also has an analog AMPS system with equipment supplied by Motorola and a DCS system supplied by Nokia.

GUNILLA TAMM

Network construction in Thailand

■ Thailand began to make serious progress in the construction of its wired network for public telephony during the late-1980s. Ericsson was one of eight suppliers chosen by the Telephone Organisation of Thailand (TOT) to implement the project. In a matter of just a few years, the wired network was expanded by nearly one million new telephone lines throughout the country. Ericsson Thai Networks Ltd., under the management of Bo Hildingsson, built and installed many of those lines.

Several large total projects were conducted in parallel, with heavy emphasis on Bangkok, the capital, and about 150 other communities, including Udon Thani and Khon Kaen, in northeastern Thailand.

Ericsson noted significant success in its implementation of the projects and was soon ranked No. 1 by TOT.

During recent years, Thailand has become a "domestic market" for network construction, and Ericsson commands a very strong market position in competition with Siemens, NEC of Japan and other telecom companies. Ericsson Thai Networks was integrated in Ericsson (Thailand) Ltd. recently to increase the focus of all operations on customer needs.

THORD ANDERSSON

What questions do customers ask?

■ The web site of Ericsson's new Mobile Telephones & Terminals Business Area contains a list of the most common questions asked by customers. It also shows the standard answer to many of the most common questions: Talk to the retailer who sold you the telephone.

Other questions include the following: When will Ericsson release a new model? Ericsson cannot make any announcements about future products. Others ask why their GSM telephones cannot be used in the U.S.? And the answer is, as many people know, there are different standard systems in the U.S. and GSM countries, primarily countries in Europe.

If you want to know more about mobile telephone models, there is an impressive amount of information available at Ericsson's web site on the Internet (http://www.ericsson.se) under "Mobile Phones."

Continued growth in Montreal

montreal ■ Ericsson Communications Inc. continues to expand its research unit, Ericsson Research Canada. Construction was completed recently on a new research center in Montreal, comprising more than 20,000 square meters of laboratory facilities. But the next phase of expansion is already in progress. The addition of 9,000 square meters will provide working facilities for 300 research center employees by year-end 1997.

Lionel Hurtubise, Chairman of Ericsson Communications Inc., declared that further expansion of the research center is a testimony to Ericsson's long-term commitment in the Montreal area.

"In 1987, we had 48 employees. Today, nearly 900 persons are employed in research and development activities. We are one of the most important technology and research-intensive companies in the Province of Quebec," Mr. Hurtubise stated.

Ericsson Research Canada has global responsibility for development of the American AMPS/D-AMPS standard for mobile telephony.

Ericsson Communications Inc. has more than 1,250 employees working in all parts of Canada.

Ericsson in the movies

copenhagen ■ Ericsson's office building in Copenhagen has a highly distinctive appearance and is a well-known structure in the Danish capital. Photographers and movie producers have used the building often in various commercial productions. In January, a new Danish family movie made its premiere. In the movie, Ericsson's office building "plays" the part of head office for a large toy empire. Many of the persons in the film talk over cellular telephones and, naturally, they use Ericsson telephones (GH 388). The telephones have a highly visible profile in the movie.

President Jan-Åke Kark installs links.

Jan-Åke knows his links

mölndal ■ At Ericsson Microwave Systems in Mölndal, Sweden, management participates actively in product testing. When a new MiniLink installation was to be made at the company at the beginning of the year, president Jan-Åke Kark and vice president Sivert Bergman did most of the work. Installation of the two links started at 9 a.m. and was completed by 3:30 p.m.

The original intention was to set up yet another jump link for testing. In addition, the product manuals were reviewed. (The company executives are reported to have had many valuable comments.)

"Seeing how MiniLink works in practice was very useful. Everyone should have this opportunity with all products," said Jan-Åke Kark.

MiniLink notes 40 percent annual growth

In 1996, Ericsson Microwave Systems produced more than 20,000 MiniLink systems. In 1995, the total number of MiniLink shipped from the Borås plant was 14,000.

Since 1990, when 2,000 links were produced, average annual growth has been 40 percent.

"The availability of microwave technology has increased steadily during the 1990s, and this growth clearly shows how well MiniLink fits into telecom operators' transmission networks," comments Sivert Bergman, vice president of Ericsson Microwave Systems.

Hudiksvall Environmental training at Ericsson Cable

■ All employees at Ericsson Cable's telecom cable division in Hudiksvall are now receiving environmental training. This means that 570 employees will undergo a four-hour basic training in environmental issues. In addition, all "enthusiasts and agents of change" are being offered additional training to become environmental coordinators in the company. Manufacturers' responsibilities now include total environmental responsibility for all materials used, not just from grain to bread, but over the total life of the product until the end user disposes of it. This is an environmental policy that is based on a holistic approach and life-cycle analyses of both processes and products. One of the goals is that all employees should be aware of Ericsson's environmental policy and environmental program and that they should have a basic a familiarity with Agenda 21, which is a part of the U.N.'s environmental work. Environmental training will be held during weeks 5 to 15.

hudiksvall

Ulf Rosén and Bo Dalenius sum up a three-day course with Brian Malladain and Dennis Boddington from South Africa.

Visitors from South Africa

■ Brian Malladan and Dennis Boddington from Automatic Systems Manufacturing in Johannesburg, South Africa visited Ericsson Component's facility in Söderhamn, Sweden at the end of last year. During their visit, which was arranged for the purpose of training, they spent two days at Ericsson's offices at Kungens Kurva outside Stockholm before traveling to Söderhamn with Ulf Rosén, who works with joint-venture companies all over the world.

Automatic Systems Manufacturing became a wholly owned Ericsson subsidiary in 1995, when Ericsson South Africa Ltd. Bought the company. In cooperation with Ericsson Components, the company manufacturers energy products, including a low-cost alternative to the Spirit rectifier.

Computer simulation trains operators

■ Computer simulations will be used to train mobile telephone operators in the operation and monitoring of GSM systems. In December, former Minister of Education Beatrice Ask inaugurated the Network Maintenance Center at the Kista Training Center.

kista

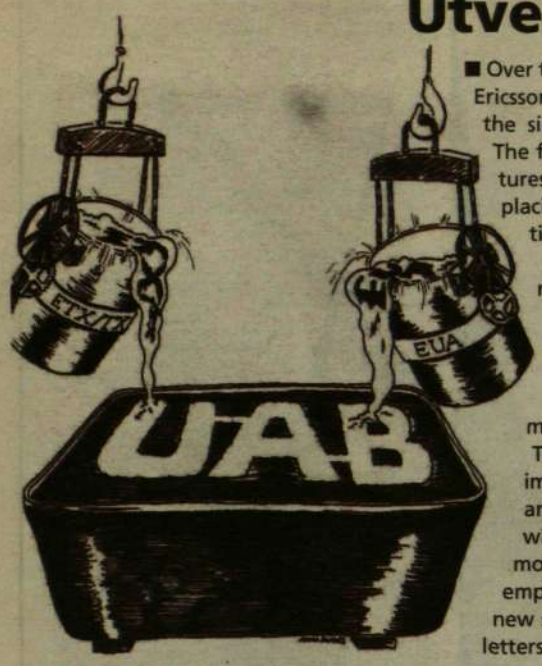
Customer training is often included in the contract when mobile telephone systems are sold. Now the Mobile Systems business area's European Standards business unit has inaugurated an experimental classroom in Kista where operators will receive practical computer-assisted training in the efficient operation of a GSM system.

"This is an innovative approach in that we are providing more process-oriented training in an environment that is similar to the operator's actual environment," says Andrée Wernlund, who heads the Kista Training Center.

"With computer methods, we can simulate unexpected situations in which it is essential to rapidly identify and correct faults."

The new training includes the TMOS and OSS network monitoring tools. It is also possible to practice network planning.

New signature for Ericsson Utvecklings AB



■ Over the weekend of February 15-16, Ericsson Utvecklings AB will change the signatures of all its employees. The first three letters of their signatures will be changed to UAB, replacing the company's old designations letters ETX and EUA.

At 12:00 noon on Friday, February 14, all computer communications with Ericsson Utvecklings AB and its employees will be discontinued temporarily. No transmission of memo or e-mail will be received or sent.

The change in signatures will be implemented over the weekend, and computer communications will be resumed on Monday morning, February 17, when all employees will be back on-line with new signatures, all starting with the letters UAB.

Tommy and Ming attend training in Kista

kista ■ **Suzanne Brennermark (left in the photo), Quality Control Manager of the resistance network production unit of the Microelectronics business unit in Kista, is training Tommy Jin and Ming Wong in the art of quality assurance. Tommy is a service engineer and Ming is a technical engineer, They work for Ericsson Simtek Electronics Company Ltd., a new joint- venture company in Shanghai. Tommy and Ming are attending a five-week course to gain greater knowledge into production of resistance networks, under the tutelage of Kista service engineers and other experts. Their training will be completed in Shanghai. Beginning in March, production of resistance network components will be transferred successively from Kista to the new production unit in Shanghai.**

A golden link

Ericsson recently delivered its 50,000th radio unit for the MiniLink system.

To mark the occasion with a modest celebration, Ericsson in Germany held a small ceremony in cooperation with Mannesmann Mobilfunk, one of Ericsson's most important customers and cooperation partners in radio communications.

To show its appreciation for Mannesmann Mobilfunk as a pioneering customer in radio communications, Sivert Bergman, Executive Vice President of Ericsson Microwave Systems, presented a ceremonial version of the MiniLink to William L. Keever, Director General of Mannesmann. Mr. Keever promised that Mannesmann will continue to work with Ericsson's MiniLink and contribute to the product's further development. When MiniLink was first introduced in 1980, it comprised an enormous satellite dish with a separate antenna. Today, MiniLink is a much smaller and totally integrated product.

Swedish snow Vikings in Sapporo

sapporo ■ Helena Stjernberg from Nippon Ericsson K.K. in Japan was a member of the Swedish team that participated in The International Snow Sculpture Competition at Sapporo's recent Snow Festival. Three representatives of the Swedish Embassy in Tokyo teamed up with Helena in the annual snow sculpting contest.

The Swedish team's contribution was a Viking sculpted in snow. Ericsson's web site on the Internet reported the team's daily progress to interested observers around the world. Ericsson and Volvo were major sponsors of this year's Snow Festival in Sapporo. Last year, the Swedish team's entry was a huge hand holding a mobile telephone.

The history of a factory

telefonplan **An historical account focused on Ericsson's main factory at Telefonplan is now being compiled. Gunnar West has reviewed volumes of material on the factory's history. The project's name is – The history of a factory.**

"When we started to outsource a growing percentage of production, it was generally thought that we should have access to greater documentation," says Gunnar West. "It was the beginning of the end of an era."

The history of a factory will be published in the spring. Contact reviewed some of the proofs and is able to present a few excerpts:

In 1930, Ericsson bought land at Midsommarkransen to build a new factory. The premises at Tulegatan had become overcrowded in the mid-1920s. Ericsson's construction plans were shelved during the 1930s, however, due to the Great Depression.

In 1932, the wages of all employees were reduced 6 percent because of the ongoing financial crisis.

In 1938, ground was broken and the first blasting operations echoed around the site of Ericsson's new factory, which was occupied at year-end 1940. Social-Demokraten, a leading Stockholm daily newspaper at the time, called it an unparalleled model factory.

In 1947, the 72-meter high tower was built to accommodate development of microwave technologies.

In 1951, Sweden enacted new industrial vacation legislation, whereby all workers were entitled to three weeks of vacation annually.

In 1963, Ericsson introduced the nine-hour day and free Saturdays for its factory workers.

In 1971, the average wage of factory workers was SEK 11.80.

In 1972, the 40-hour work week became standard.

Ericsson architecture featured on TV

telefonplan ■ Architectural elements of Ericsson's main factory at Telefonplan, just outside Stockholm, were featured in a special report telecast recently by ABC-Nytt, a regional TV news program for the greater Stockholm region. The plant was built in 1940 and, in terms of architectural features, clearly reflects the optimism that characterized society in those days, shortly before welfare state philosophies started to dominate Swedish political thinking, theorized Dan Sporrong, an ABC-Nytt reporter.

Mr. Sporrong has presented a similar report on the Sveaplan High School in Stockholm, which has several structural similarities with the Hägersten factory. Many of the buildings that comprise the main factory have been designated cultural landmarks, and all rebuilding is planned in consultation with architects specializing in buildings from the early 1940s, when functionalism flourished in architecture.

wanted.wanted.wanted.wanted

Knowledgeable readers?

mölndal ■ A reader from Mölndal has sent in this photo of an old Ericsson telephone. The apparatus was purchased by an American relative in Michigan. Now the relative wants help in dating it. We turn to our knowledgeable circle of readers, and hope that someone knows how old the telephone may be. Please get in touch with the editorial board by memo (Ime.Impali).

Ericsson donates telephone lab

bandung ■ November saw the ceremonious opening of a telephone laboratory donated by Ericsson to the Indonesian operator, PT Telkom's own college for telecom engineers in Bandung on Java. Other major telecom suppliers have also donated equipment. The head of Ericsson's Indonesian operations, Mats H. Olsson, is shown formally donating the lab to a representative of PT Telekom.

Photo: ANDERS ANJOU

Modular power in Kista extended

kista ■ Ericsson Components has opened its enlarged premises for the production of DC/DC transformers within Energy Systems in Kista, and thereby extended capacity. In volume terms, counted as number of modules manufactured per year, Ericsson's production of DC/DC modules has grown to the largest in the world. Two years ago 150,000 modules were manufactured in Kista, while estimated manufacturing for 1997 amounts to 2.2-2.5 million in Kista and 1 million in Kalmar. Around 65 percent of deliveries go to various Ericsson companies, the remainder to the external market. The manager of power-module operations, Bo Andersson, is shown cutting the tape at the opening ceremony.

Luxurious summer job

Photo: DIMITRIS KOUMARAS

athens **There are many different kinds of occupations within Ericsson. Last summer, some of our personnel in Greece were allocated one of the more enviable tasks. They sailed round the Mediterranean, landing on various Greek islands to meet journalists, retailers and the public.**

At every harbor visited they held displays, raffled off mobile telephones, took children out on sailing trips for the day and other promotional activities.

"It was a way of promoting awareness of Ericsson. Since it proved successful, we are thinking of something similar for next summer," says Elena Pagoulatu, in charge of Ericsson marketing in Greece.

It was also a way for Ericsson employees to meet retailers and customers under relaxed circumstances.

In Greece, for thousands of years, communication has meant travelling across the water. What we have been doing is just a natural sequel to this. It is about communication between people, in this case of Greek vintage with a sailing boat bearing an Ericsson ensign.

Keeping with customs reaps dividends

■ There is big money to be earned in keeping on top of customs rules and ensuring that Ericsson utilizes the opportunities available. The EPC-team Trade Policy has awarded the following four persons the "Trade Policy & Customs Award" for 1996:

Börje Karlsson at Ericsson Radio Systems and **Björn Frännhagen** at Ericsson Mobile Communications for actively having contributed to applications for new customs exemptions and utilizing existing ones.

Kenny Hartzman at Ericsson Telecom for having worked in an exemplary manner with tariff classifications, and actively having contributed to the utilizing of existing exemptions within what was then the Public Telecommunications Business Area. He has assumed responsibility for these matters despite them not being part of the regular duties of his department.

Bernt Botmar at Ericsson Components who, by means of his expertise and assiduous efforts on customs issues, sees opportunities for Ericsson to benefit from tariff reductions in the classification and reclassification of its products on import. He is querying the current classes, and coming up with proposals for an alternative (more favorable) classification.

SANDBERG & CO

Want a better e-mail system?

Electronic mail is a "must" for working effectively in the global business community. E-mail effortlessly sweeps through time and space to help you accomplish far more in less time.

The only hitch is whether the functions in your e-mail system are compatible with other e-mail systems – both old and new.

Different e-mail systems usually don't get along with each other right away. Expertise is needed to persuade them to work together.

Ericsson Data is your ticket here. For more than a decade we've been adapting, integrating, installing and operating advanced e-mail systems. Including systems linking Ericsson's 300 locations worldwide – handling more than 200 000 messages daily.

By tapping our experience and expertise, you can build a better e-mail system.

Contacting us isn't more difficult than dropping a line to mail.services@edt.ericsson.se

ERICSSON DATA – IN NETWORKING SINCE 1985

ERICSSON

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vacancies AT ERICSSON

■ This is a selection of vacancies within the Ericsson corporation. They are published in the electronic News system, which is being updated once a week.

For further information about advertising here, send a memo to LME.LMEJOB.

Contact no. 1 1997 **Updated February 3**

Ericsson Ltd UK - Guildford

SECTION MANAGER – Mobile Network design

● The Network provisioning department are now expanding and we are looking for a Section Manager to the Section-Mobile Network Design. The organisation supports GSM/DCS markets with mobile network design activities during tender processes as well as full turnkey involvements. Many of the worlds GSM/DCS networks are today growing rapidly and the demand for network design and modelling is expanding at a similar rate.

We are looking for candidates with a few years experience in mobile network design and who wants to take on a challenging management position. Good skills in leadership, communication and negotiation are required.

Contact : Thomas Vesterlund ETL.ETLTSVD Phone +441483305990 or Rikard Slunga ETL.ETLRDSA Phone +441483305874. Application : Thomas Vesterlund or Rachel Gray, ETL.ETLRAGY, Phone +441483305776.

Global Response Center

SUPPORT ENGINEERS

The Global Response Center (GRC) with locations in Holland, USA and Australia seeks engineers to compliment it's high performing team of dedicated professionals.

The GRC provides the Ericsson Worldwide Emergency Service and as well as supporting global customers such as TMI and FT-Nordphone, supports local Ericsson companies with technical assistance and trouble shooting.

● We need experience in AXE-10 s/w trouble shooting, preferably with support background, but most importantly with the skills to solve complex software problems quickly. We work in a fast moving, challenging area in which highly motivated, flexible people thrive.

The specific skills of interest are IOG11, Intelligent Networks (IN), APZ, OPS and of course general APT knowledge. The roles are varied, and you have the chance to shape the environment you are in to improve the GRC operation. Training, rotation and teamworking generate a stimulating atmosphere to work in.

In addition to the above we also need personnel for development into Customer Support engineers in the TMOS (including it's applications) and Airline product areas.

Contact: Dave Eales, ETMDES, +31 161 229362, Andreas Luiga, EPAADL, +61 3 9301 1814 or Peter Dicksson, EUSDCKN, +1 972 583 1356.

Ericsson Telecommunicatie B.V., Rijen, Netherlands

TECHNICAL SUPPORT ENGINEERS TMOS

● Function character: As a Technical Support Engineer TMOS the main responsibility is to give customer support to the network management systems of Ericsson, so that the continuity and the stability of these systems are remained.

Function tasks: The activities that take place in this function are among others: configuration, verification, installation of the latest software releases, solving on- and off-site software problems at customer-sites from PTT Telecom, Unisource, Libertel and Telfort, giving emergency support in case of calamities and giving technical support to the different Markting & Sales divisions.

Job requirements: Candidates should have 2-3 years relevant experience in troubleshooting on one of the different TMOS-systems (OSS, XM or SMAS), customer oriented and be able to work independently.

Contract periode: 12 months starting as soon as possible.

Contact: Maarten Cornelissen, Competence manager Technical Support TMS at ETM. Phone: +31 161 249080, memo: ETM.ETMMACO.

Ericsson Inc, Richardson, USA

PRODUCTION INTRODUCTION ENGINEERS

● BT organization located at Research Triangle Park in USA is looking for experienced testers with air interface knowledge. We support the consumer products on a global basis and verify the products by participating in end user/customer testings.

The requirements are: BSEE or MSEE. +2 years verification and testing background. Willing to travel. Excellent communication skills.

Contact: Forouz Firoozi(Manager) phone: 919-472-6640, Fax: 919-472-7452. Application: Ken Dean (Human Resources), Phone: 919-472-7898, Fax: 919-472-6510.

Ericsson (China) Company Ltd

SENIOR SYSTEM SUPPORT ENGINEER (PSTN)

● We urgently require staff to fill the above position in the Field Support Office for Region Central and East in Shanghai, P.R. China.

Job description: The ideal candidate will be an open-minded individual and will be required to work independently in the following areas: *Trouble report handling with knowledge of* MHS, ACH, MSS. Trouble shooting with PLEX and ASA ability/ knowledge. Software upgrade handling (CN-A, AC-A, EC-A implementation). Operation and Maintenance. Technical emergency handling. Customer help-desk and consultation activities. ISDN/ IN/ BGS (this is desirable but not essential). Transfer of knowledge/ experience to local staff.

Requirements: Telecom background and university degree in electronic engineering or equivalent. A minimum of 4 years working with PSTN. Long and solid technical experience of working in the AXE environment, preferably in a support organisation. The successful candidate must have good written and oral English skills and must be prepared to travel within China. The candidate must be able to work unsupervised and independently, and be able to adapt to a culturally diverse environment.

SENIOR SYSTEM SUPPORT ENGINEER (TACS)

● Job description: The ideal candidate will be an open-minded individual and will be required to work independently in the following areas: Trouble report handling with knowledge of MHS, ACH, MSS. Trouble shooting with PLEX and ASA ability/ knowledge. Software upgrade handling (CN-A, AC-A, EC-A implementation). MSC/ HLR/ RBS (RBS desirable but not essential). Operation and Maintenance. Technical emergency handling. Customer help-desk and consultation activities. Transfer of knowledge/ experience to local staff.

Requirements: Telecom background and university degree in electronic engineering or equivalent. A minimum of 3 years working with TACS. Long and solid technical experience of working in the AXE environment, preferably in a support organisation. The successful candidate must have good written and oral English skills and must be prepared to travel within China. The candidate must be able to work unsupervised and independently, and be able to adapt to a culturally diverse environment.

SENIOR SYSTEM SUPPORT ENGINEER (GSM)

● Job description: The ideal candidate will be an open-minded individual and will be required to work independently in the following areas: Trouble report handling with knowledge of MHS, ACH, MSS. Trouble shooting with PLEX and

"Would you like to specify and develop product and mobile value added applications on GSM and PCS?"

Ericsson Radio Systems AB are looking for Technical Product Managers.

The Product unit Digital Switching Systems and Applications, (DSA), provides competitive switching, service control and applications products to GSM/DCS/PCS operators through Ericsson / RMOG marketing and sales channels.

DSA is fastly expanding to meet the global market.

We are strengthening our systems and project management competence for specification and development of mobile value added applications based on our digital mobile telephone systems GSM and PCS within business unit RMOG.

We are currently looking for specific competence in the following areas:

Technical Product Managers
- Voice mail, e-mail and SMS applications
- Positioning systems and applications
- Networked based Personal Communication Applications
- Personal Communication Services using Mobile IN technology

You will help us to specify and develop products and applications in close co-operation with our markets.

Knowledge in systems development based on UNIX, Windows NT, Internet using C++, Erlang, www or proxy technology in combination with knowledge in GSM/PCS is appreciated.

For further information please contact:
Bo Fahlén, tel INT +46 8 404 28 69,
e-mail: bo.fahlen@era.ericsson.se
Erik Thorén, Human Resources,
tel INT +46 8 404 49 59.

Please send your application to:

Ericsson Radio Systems AB
LK/HS Mia Hjertén
164 80 Stockholm
e-mail: erac.eramihj@memo.ericsson.se

Ericsson's 90,000 employees are active in more than 130 countries. Their combined expertise in switching, radio and networking makes Ericsson the world leading supplier in telecommunications. You can get more information about us on our homepage **www.ericsson.se/SE/**

ERICSSON

ASA ability/ knowledge. Software upgrade handling (CN-A, AC-A, EC-A implementation). Operation and Maintenance. MSC/ HLR/ BSC/ BTS (BTS desirable but not essential). Technical emergency handling. Customer help-desk and consultation activities. Transfer of knowledge/ experience to local staff.

Requirements: Telecom background and university degree in electronic engineering or equivalent. A minimum of 3 years working with GSM. Long and solid technical experience of working in the AXE environment, preferably in a support organisation. The successful candidate must have good written and oral English skills and must be prepared to travel within China. The candidate must be able to work unsupervised and independently, and be able to adapt to a culturally diverse environment.

FIELD SUPPORT OFFICE MANAGER

● The manager position at the Shanghai Field Support Office in Region Central and East, P.R. China will become vacant in June 1997 .

There are currently 170 exchanges in service in the region (PSTN, TACS, GSM and DAMPS) located in five different provinces. There are four provincial FSO:s located in the region which report to the Shanghai FSO. To ensure a smooth and efficient hand-over it is preferred if the successful candidate can work with the current FSO manager for a 1-2 month period before his departure.

Responsibilities: Perform required management and functions of the unit. Ensure the efficient running of the system support activities in the region. Maintain staff levels according to the resource budget and the actual/ forecasted workload. Develop and maintain the required staff competence levels. Achieve the unit's objectives. Achieve and maintain customer satisfaction with external and internal customers. Establish and maintain good customer relations.

Requirements: University degree or equivalent. Minimum 8 years working in the field of telecommunications. Leadership ability and a number of years experience in management, preferably in a similar position. Ability to work and manage people in a culturally diverse environment. Wide contact network within Ericsson group. Very good written and oral English skills.

Contact: Huang Yan Yan, memoid ETC.ETCSHYY or Damian O'Sullivan, memoid ETC.ETCDOSU phone +86 21 63753399, fax +86 21 63509140. Application: Huang Yan Yan, memoid ETC.ETCSHYY.

Ericsson Ltd, United Kingdom

CN168 ACCEPTANCE SUPERVISOR, GUILDFORD

● The ESO in Guildford has a vacancy for an Acceptance Supervisor. The supervisor is responsible for PCDs, development of personnel and their daily activities. As an Acceptance Supervisor you are responsible for a team of approx 5 people working with GSM.

Main Duites: To develop, maintain, improve processes and personnel in the following areas for all ETL ESO customers: Accpetance planning. Acceptance. First site implementation. FOA planning. Planning of consolidation period.

We are a young and motivated team and work very closely with our main suppliers "the nodes" in Aachen (Germany) and Sweden. You should have previous test experience and be open and flexible. You need to be able to handle more than one thing at a time. Prev ious management experience is a bonus.

Contact: Martin Sadle, elt.etlmnse or Michael Chance, etl.etlmlce

CN170 COMMON TEST SUPERVISOR

● The ESO in Guildford has a vacancy for a Common Test Supervisor. The Supervisor is responsible for PCDs, development of personnel and their daily activities. As a Common Verification Supervisor you are responsible for a team of 6 - 8 people working with GSM.

MAIN DUTIES: Develop, maintain, improve processes and personnel in the following areas for Common Verification within the ETL ESO: Test analysis for all communality between ETL ESO customers. Common New feature test. Develop common test. Common Regression/old feature test. Close testing/interworking with "nodes" (development projects)

We are a young and motivated team and work very closely with our main suppliers "the nodes" in Aachen (Germany) and Sweden. You should have previous test experience and be open and flexible You need to be able to handle more than one thing at a time. Previous management experience is a bonus.

Contact: Martin Sadle, etl.etlmnse or Michael Chance, etl.etlmlce

CN169 CUSTOMER VERIFICATION MANAGER

● The ESO in Guildford has a vacancy for a Customer Verification Manager. The Manager is responsible for PCDs, development of personnel and their daily activities. As a Customer Verification Supervisor you are responsible for a team of 8-10 people working with GSM.

Main Duties: Develop, maintain, improve processes and personnel in the following areas for all ETL ESO customers. AS-design, parameter setting. Develop, new testing strategies towards our customers. ASR. Correction transfer. Test Analysis/Customer design. Test execution of new features, old functionality etc.

We are a young and motivated team and work very closely with our main suppliers "the nodes" in Aachen(Germany) and Sweden. You should have previous test experience and be open and flexible. You need to be able to handle more than one thing at a time. Previous management experience is a bonus.

Contact: Martin Sadle etl.etlmnse or Michael Chance etl.etlmlce

Ericsson Radio Systems AB, Sundbyberg, Stockholm

REGIONAL MARKET OPERATIONS MANAGER

● Northern and Western Africa (Sektionschef)

The unit consists of 12 colleagues and has the full responsibility for satisfied customers, for NMT, GSM and TACS products in N/W Africa.

Management and leadership experience is required. Knowledge of Africa and the ability to speak french are also regarded as merits for this position.

A good general knowledge of AXE and/or CME 20 is required as you will be manager for a unit with many different skills. The regional manager has the consolidated responsibility for the region.

We are located in Sundbyberg, the pace is high and you are required to travel, from time to time.

Contact: Hentik Moberg LP/AC memoid: ERAC. ERAMOBB, phone +46 8 757 2919. Application: SG/ERA/LP/H Anita Malmström Wallner memoid: ERAC:ERAANTA

LM Ericsson A/S, Copenhagen

"CATALYST" IN SOFTWARE DESIGN AND FUNCTION TEST

The kernel areas in AXE 10 is developing very rapidly, and a lot of parallel activities is going on in the areas of Traffic Control Subsystem (TCS) and Service Switching Function (SSF), to be able to meet the demands of the future AXE 10 system. In the Kernel Areas LMD has the PRIME LDC responsibility for TCS, and has been defined as competence centre for SSF development.

● If you have software design and/or function test experience in the areas of TSS, CHS or PSTN and a wish to expand your AXE 10 competence and network knowledge, then we have an offer for you to take a job, working as a "Catalyst" in a young design-/ test team, and thereby contribute to the future AXE 10 structure.

It is important for us that you are used to put requirements to the kernel areas, and that you bring exactly that point of view into the team work here at LMD. The team will work in all phases of the development projects here at LMD, i.e. from Feasibility (TG1-TG2) until Release (PRA).

Contact : LMD/T/KAC Niels Jørgen Bay Jensen, +45 3388 3393, memoid : LMD.LMDNBJ or LMD/T/KC Bente Holm Skov, +45 3388 4034, memoid : LMD.LMDBHS.

Ericsson Eurolab Deutschland, Germany

Our young Research & Development Centre in Herzogenrath, near Aachen, Germany, offers the following vacancies:

EARLY DESIGN PHASE PROJECT LEADER, CME20/CMS40 Development

● The System and Product Management Department at EED (ie EED/X/D) has the responsibility to organise and run PAX (RMOG DSA Product Area Switching) projects before TG1. This includes the development phases Pre-prestudy and Prestudy. We are currently looking for a project leader to start as soon as possible, latest 970301, for our MSC8.0 project (part of the DSA8.0 project). A similar role for future projects is a possible eventuality.

The suitable candidate will be someone who has good experience as a project leader and, if possible, experience in early design phase development (especially requirement definition phase). The nature of Pre-prestudy and to a lesser degree Prestudy is that the project content is changing significantly and continuously. In addition some aspects of the methodology during these early phases are not yet as well developed and clear as in later phases. As well the nature of this work is that it requires a project leader who has a good grasp (on high level at least) of the technical content of the project to help him/her make sound project management decisions. All these factors make for a very challenging position??

Contact: EED/X/DC Ari Peltonen Memoid: EED.EEDATP +49(0)2407-575-222 or EED/H/R Doerte Kaulard Memoid: EED.EEDDKA +49(0)2407-575-163.

System and Product Management Department (EED/X/D)

TOOLS, METHODT AND PROCESS DEVELOPER

● X/D department requires a tools, methods and process (TMP) developer to work with PAX early phase design (including pre-prestudy and prestudy). In addition the person shall work with "system level" design TMP aspects, according to AXE106 design model, for PAX development. This includes the System Modelling process (during feasibility study phase) and the System Coordination process (during execution phase). The X/D TMP developer shall work closely with complimentary developers in AMC and later phase TMP developers in PAX to ensure that PAX has a set of tools, methods and processes for early phase design which is well coordinated with our key development partners.

Suitable candidates should have a significant level of experience in development (especially early phase design) and ideally some experience in tools and methods and/or process development. Nevertheless anyone who is interested in this sort of work and who believes that he/she can make a valuable contribution in this area will be considered.

This position will be located in the PAX system management group (EED/X/DE).

Contact: EED/X/DC Ari Peltonen Memo-Id: EED.EEDATP, +49-(0)2407-575-222 or EED/H/R Doerte Kaulard Memo-ID:EED.EEDDKA,+49-(0)2407-575-163.

Operation & Maintenance Systems Department EED/L/B

SENIOR DESIGNER

● Our most important development area is base station management for the OSS world. Within the TMOS development process, EED/L/B is responsible for Requirement Analysis, Design, Implementation, Basic and Function Test. The B/E and B/F design groups deliver the products to our inhouse Function Test group.

The position reports directly to the Group Manager. As a suitable candidate, you gained competence in OO design and C++. Experience with Sybase, Motif/X and the BSC/BTS product family is of advantage. Beside of that we offer an international, modern and open-minded work environment.

Contact: EED/L/BEC Andreas Daun, Memo-id:EED.EEDAND, +49 (0)2407-575-418 EED/H/R or Doerte Kaulard, Memo-id:EED.EEDDKA, +49 (0)2407-575-163

Design Maintenance responsibility from MET, EED/L/F

DESIGN MAINTENANCE EXPERT

● EED/L/F has the full responsiblity for the MMS Subsytem in CME20/CMS40. This includes also the responsibility for Design Maintenance. EED/L/F has formed a new group to carry out this task, /L/F/M. To complete this group, we are looking for a Design Maintenance Expert, to build up the competence within the Design Maintenance at EED/L/F.

We are looking for a person with: at least 2 years maintenance experience, either in Design Maintenance or AXE10 support. testing experience on target machine, preferably also SFT. good ASA knowledge. MHO experience. preferably also software design experience. ability to share knowledge with less experienced colleagues as you will act as a supervisor. good communication skills. good English language skills, both verbal and written.

Contact: EED/L/FC Bjørn Bakken, Memo-id:EED.EEDBJA, +49-(0)2407-575-427 EED/H/R or Doerte Kaulard Memo-id:EED.EEDDKA, +49-(0)2407-575-163

Ericsson Telecommunicacoes, Carnaxide, Portugal

PROJECT MANAGER

● You have 3-4 years experience in Project Management of GSM based systems. We are building up our local competence and we need your experience to work according to the Core Three and Key Account Management concepts. The coming year will be very challenging for Ericsson Portugal and especially for the Project Mangement function. The position includes, except for BR related products, also BN related products, i.e. SLMS, Subscriber Line Management System.

Contact: Kjell Pettersson, +351 1 4249486, memo SEP.SEPKPE.

Telefonaktiebolaget LM Ericsson Sri Lanka Branch

PROJECT MANAGER

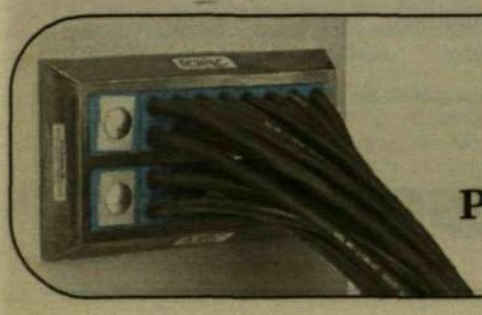
● To our wireless in the Local Loop (DRA 1900) Turn Key Project in Sri Lanka we are now seeking a Project Manager.

It is a Full Turn Key Project of 54000 WLL subscriber lines that will be delivered to Suntel which is partly owned by Telia.

The project will be delivered in two phases, in both urban and suburban areas of Sri Lanka, including the following: AXE switching. Radio link backbone network. SDH radio link feeder network. DRA 1900 (DECT based) access net-work. Project management. Installation. Engineering & design. The network was launched in early December and commercial subscribers have been connected.

Time to market is essential for Suntel's success in the local market which requires a fast and flexible network roll out from Ericsson's side.

Requirements: Previous experience as project manager from implementation projects. Strong in customer relations. Preferably previous experience of "radio projects". Minimum education required is a degree in either engineering or business administration. Excellent interpersonal skills and a strong global and/or a multicultural background is also required.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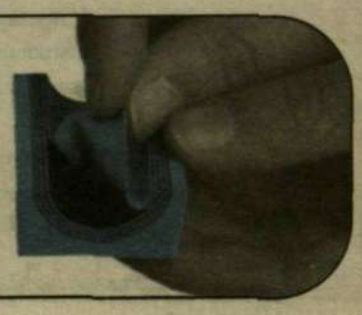

Contact: please contact Jan-Erik Jansson, acting Project Manager, phone +94 71 520 62 or Magnus Lööf, phone +46 (8)764 0789, EBC.EBCLOOF. Application: Ericsson Business Networks AB, Human Resources, Richard Tersander, S-172 87 SUNDBYBERG, Sweden. Telephone +46 8 7640326, Fax +46 8 7640851, memo EBC.EBCTERS. e-mail: ebc.ebcters @mesmtpse.ericsson. se.

Ericsson Inc. Ericsson Private Radio Systems Lynchburg Virginia

SENIOR BUSINESS MANAGER – COMMERCIAL NETWORKS

● Will support commercial Networks operation by developing and implementing a wide array of sales/marketing tools and initiatives aimed at helping Ericsson's Commercial Operatros (SMR's)expand their businesses. Will also maintain efficient interfaces between Commercial Networks, its channels and outside resources on key projects.

Requires BS/BA degree or equivalent; MS/MBS preferred; Demonstrated success in strategy planning and promotions development. Radio system experience preferred; Strong sales & leadership skills; Strong interpersonal skills, as well as strong technical presentation skills and writtein communications skills.

SALES ENGINEER

● 2 Positions located in the Boca Raton Florida area. Individuals will be responsible for developing, planning and implementing pre-sales and post-sales systems technical support services. Will also manage bid and proposal functions, recommend pricing strategies and provide systems technical support & training for direct sales personnel and Latin America customers.

BSEE or demonstrated technical proficiency in Telecommunications & BSBA. Min. 5 yrs. successful exp. in technical support of mobile communications systems. Fluency in Spanish, required. Experience with developing bids, and proposals. Strong negotiation skills, presentation skills and ability to understand a trunking proposal.

MAJOR ACCOUNT MANAGER:

● 1 Position in Albany New York, 1 position in West Chicago Illinois. Will promote the sales of Ericsson products, systems and services in a defined area, as well as develop strategies to meet sales quotas, and generate orders from assigned accounts.

Positions require BS/BA or equivalent, 3 yrs. successful exp. with multi-level direct sales, knowledge if digital and analog telecommunications equipment. Must also have demonstrated proposal development, negotiation and sales presentation skills, as well as completed Sales/Account Development courses, and experience with Fortune 500 and Government accounts.

SYSTEMS PROGRAMS MANAGER

● 2 positions avail. in Lynchburg VA, supporting either Latin American or European regions; Matrix management of planning, scheduling, and implementation of major projects. Will manage the profitability, assets and cash flow for all assigned projects. Develop/negotiate service subcontracts; Assist in preparation & negotiation of bids/proposals; Be the prime customer interface during project implementation.

Must have BS degree in technical field or equivalent with Land Mobile Radio experience. Min. of 3 yrs. successful P&L responsibility and fluency in Spanish or Russian preferred; Demonstrated major project/programming management skills. Land Mobile Radio system design and application skills also required.

CORPORATE SYSTEMS MANAGER

● Lead the sales effort to secure business & Industrial opportunities for a particular N. East territory. Develop and coorindate teaming efforts with Major Account Managers, Manufacturers Representatives, and Sales Agents. Strategically set priorities for account penetration within the geographic area.

Position requires BS/BA degree, min. of 5 yrs. sales experience, 3 + yrs. in the business & industrial market sector; Strong written and verbal communication skills; excellent presentation skills. Strong radio systems/products knowledge preferred.

SENIOR BUSINESS MANAGER

● Will lead the market development efforts for the Business & Industrial marketplace. Put together business strategies for pursuing key National accounts and new market segments and work with Corporate Systems Managers to implement strategy.

BS/BA degree; MBA preferred. Min. 7 yrs. exp. in marketing related field; Strong radio systems/products knowledge preferred. Demonstrated success in the preparation of business and strategic plans. Strong written & verbal communication skills. Experience in identifying and developing new business segments.

Contact: Julie Williams, phone 804-592-3868, MEMOID EUS/EUSJAW, Fax 804-592-6543. Application: Ericsson Inc. Ericsson Private Radio Systems, Ericsson Staffing Department, Room 1401, Julie Williams, Mountain View Road, Lynchburg VA 24502, USA, MEMOID: EUS.EUSJAW, FAX 804-592-6543, Email: Julie_Williams@ena-east.ericsson.se

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Ericsson Australia, Melbourne

EXPRESSIONS OF INTEREST– NETWORK IMPLEMENTATION PROCESS OWNER

Australia (EPA) - 12 Month Long Term Contract. Ericsson Australia (EPA) is a major contributor to the global organisation and is a key telecommunications supplier in its local market and that of South East Asia.

● EPA is currently inviting expressions of interest for the position of "Network Implementation Process Owner". If this position is to go ahead the successful candidate will work in Melbourne Australia for a period of 12 months on long term contract conditions.

Key Areas and responsibilities: Process improvement, implementation and control. Communication with interfacing suppliers/customers. Competence development / knowledge transfer / competency mapping. Resource forecasting /planning from a competence aspect. Develop /maintain Normhours. Cascading and control of process. Set/review quality measurements against Benchmarking. criteria. Setting up routines for collating quality data (PQT) and reporting.

Prerequisites: Very good working knowledge of Network Implementation. Very good knowledge of installation construction, testing (including acceptance testing) and process development. Plant engineering knowledge (for interface work). AXE and RBS systems working knowledge. Working knowledge of PROPS. Excellent English communication skills (written and spoken). Leadership skills & experience. Ability to transfer knowledge/expertise to less experienced team members. Ability to work autonomously and be self motivated.

Contact/Application not later than 970110: Dean Oppedisano of Human Resources, MEMOID EPA.EPADUO Ericsson Australia, P.O. Box 41, Broadmeadows, Victoria 3047, Australia, BY FAX - +61 3 9301 1365.

Telefonaktiebolaget LM Ericsson Libya Branch, Tripoli

SALES MANAGER

Ericsson has been active in Libya for more than 20 years and has ex-panded its operations during the last two years. We are now more than 160 employees.

Our activities include public telecom-munication projects in Tripoli and Benghazi, radio GSM project in the Tripoli area and a turn-key network project in connection with the Great Man Made River system" (GMR) the Eight-Wonder-of-the-World".

● Ericsson Libya Branch has offices in Tripoli and Benghazi as well as a desert camp south of Tripoli. For our Benghazi office we are now looking for a sales manager.

You will have the main responsibility for all GMR marketing- and sales activities regarding variations and extension of the ruling contract, according to the directives and policies specified by the project. You will also manage and coordinate the tender work in collaboration with other units in the project as well as with other Ericsson parties.

You will finalize customer prices and commercial agreements in consultation with superior manager and make up tender overviews. To follow up on offers and participate in contract negotiations and conclusions as well as pursuing the work according to the quality system specified by the project is also your responsibility. You will report to the Ericsson Project Manager (EPM).

Minimum education and experience required is a degree in either engineering or business administration with successful marketing- and sales experience, preferably from Middle East regions. Excellent interpersonal skills and a strong global

"A great challenge! Make a contribution to our activities in Poland."

Ericsson Radio Systems AB have many openings for Project Managers and Engineers for GSM/NMT systems in Poland.

In Gdansk region we need:
Project manager
Transmission manager
Design and planning manager
DXX planning and implementation manager
RBS Integration manager
RBS Integration supervisor
BSS Integration supervisor
RBS Installation supervisor
RBS Implementation project manager
RBS Acceptance responsible manager
RBS Engineering manager

Site acquisition and civil works:
SA&CW manager
SA&CW project manager for Warsaw
SA&CW project manager for Gdansk
3 SA&CW supervisors for both regions

In Warsaw region we need:
Assistant project manager
BSS Integration supervisor
RBS Implementation project manager
Design and planning manager (transmission)
Transmission and planning engineer
RBS Integration manager
BSS Integration supervisor
RBS Integration supervisor
RBS Installation supervisor
RBS Acceptance responsible manager
Technical manager

To be sucessfull in these positions you have a minimum of two years of experience in these areas, good administrative skills and are ready to work under stressed conditions. English, both written and spoken is essential. Knowledge of Polish is appreciated.

For further information please contact:
Anders Åkeson (project management)
EPO.EPOAKEA, phone +48 22 6089710.
Cliff Everingham (transmission)
EPO.EPOCLEV, phone +48 22 6089700.
Conny Forsberg (site acquisition)
EPO.EPOCOFA, phone +48 22 6089700.
Liljana Sundberg (human resources)
ERAC.ERALISU, phone +46 8 757 24 59.

Send your application to:

Ericsson Radio Systems AB
LP/H Liljana Sundberg
164 80 Stockholm

Ericsson's 90,000 employees are active in more than 130 countries. Their combined expertise in switching, radio and networking makes Ericsson the world leading supplier in telecommunications. You can get more information about us on our homepage **www.ericsson.se/SE/**

ERICSSON

and/or a multicultural background is also required.

Contact: Charlotte Curatola, phone +46 (8) 764 0414, EBC.EBCCHCU or Thomas Linnarsson, phone +46 (8) 764 3304, EBC.EBCTHOL Application: Ericsson Business Networks AB, Human Resources, Richard Tersander, S-172 87 SUNDBYBERG, Sweden, Telephone +46 8 7640326, Fax +46 8 7640851, memo EBC.EBCTERS, e-mail: ebc.ebcters @mesmtpse. ericsson. se.

Ericsson Radio Systems AB, Kista

CELL PLANNER TO TAIWAN

● We are looking for a cell planner for a long term contract in Taiwan. The authorities in Taiwan are in the process of issuing eight (8) new GSM and DCS1800 licenses for both regional and island wide operation. To be able to support our customers in the roll-out of the networks, the Radio Network Design function in Taiwan needs to be strengthen.

The work will include production of cell plans and performing site surveys and system tuning. The candidate should have: Experience from cell planning. Good knowledge of cellular systems, in particular CME20. Good written and oral skills in English. Ability to build and maintain good customer relations. Ability to work independently.

Start of contract will be Q1-97, depending on award of licenses in Taiwan.

Contact: Bengt Mäler, phone +46 8 404 50 31, memoid ERAC.ERBMAL. Application: Carin Kasberg LNH, memoid ERAC.ERACASA, Ericsson Radio Systems AB, Torshamnsgatan 23, 164 80 Stockholm.

Ericsson Radio Systems S.A. de C.V., Mexico

TAC2 System Support CMS 8800 Latin America, Mexico City.

TROUBLE SHOOTERS CMS 8800

● We offer an interresting and demanding job in the area of System Support. The basic functions of this job, are to work with solving problems and be expert in at least one product area. Another important part of the job is to transfer knowledge to local staff.

TAC2 is working with System Support for 14 countries in Latin America. The work done at TAC2 are TR handling, Help desk, SW Updates, Emergency handling etc.

The requirements for the job are good trouble shooting skills and long experience of AXE and/or Radio products. Good knowledge of PLEX/ASA/Test System/Writing Corrections. Good AXE System Knowledge needed. Previous experience in CMS 8800 if possible. Language requirement is good knowledge in English, if possible knowledge in Spanish or Portugese.

Contact: TAC manager Claes Nilsson. Application: EMR.EMRCLAS or fax + 52 5 726 2274.

Telefonaktiebolaget LM Ericsson Libya Branch, Tripoli

PROJECT CO - ORDINATOR

Ericsson Libya branch, established since more than 20 years are today executing a number of telecommunications projects. More than 160 people are employed by Ericsson in Libya and our operation has expanded during the last two years.

● A position as Project co-ordinator is now vacant. The project covers engineering, design, supply, installation and supervision och transport networks, PABX systems, radio access systems etc.

The project is organised in different locations. One office in Rome, Italy were all our engineering and design is being done, procurements are handled in Stockholm and the project head office is located in Tripoli, Libya.

The Project co-ordinator's responsibilities will be co-ordination of our engineering/design work performed in Rome and supervision/installation performed in Libya. The project co-ordinator will report to the Executive Project Manager.

Minimum education and experience required is a degree in either engineering or business administation with successful project planning and/or management experience. Excellent interpersonal skills and a strong global and/or multicultural background is also required.

Contact: Magne Fiske, phone +218 22 30800 or Thomas Linnarsson, phone +46 (8) 764 3304, EBC.EBCTHOL. Application: Ericsson Business Networks AB, Human Resources, Richard Tersander, S-172 87 SUNDBYBERG, Sweden. Telephone +46 8 7640326, Fax +46 8 7640851, memo EBC.EBCTERS, e-mail: ebc.ebcters@ mesmtpse.ericsson. se.

Ericsson AS, RQIS Business segment

PRODUCT MANAGER

Ericsson Radio Systems has formed a business segment, Radio Quality Information Systems (RQIS), to integrate business activities at Erisoft AB and Ericsson Norway AS (former Creative Engineering).

A set of tools, cellular air-interface test tools (the TEMS-product family) from Erisoft AB and cellular network analyser (CeNA) from Ericsson Norway AS, form a unique solution to monitor the performance of radio networks.

● We are expanding the product management group responsible for the CeNA product family at Ericsson Norway AS. For this reason we are looking for a person with interest and competence within the following areas:

Ericsson work processes, in particular the product management processes. Product lifecycle concepts. Digital cellular network technologies and structures. Optimalisation of cellular networks. Cellular operator business processes.

We are looking for a person who is able to work both as a team leader and a team player, has an excellent command of the english language and an academic degree or equivalent in computer science or telecommunications. Previous experience with product or system management will be considered as an advantage.

Your main responsibilities will be to maintain and follow up our product management processes, participate in product requirement specifications and decisions, work with product strategies within the RQIS product organisation, sponsor and follow up studies and projects.

We offer great challenges and the opportunity to work with new BR products with a global potential.

Placement will be in Oslo. The position is part of RQIS/P and reports to manager, ETO/M/R/X.

Contact: Rune Berntzen, phone +47 6684 2303, mobile +47 9010 5003, memoid: eto.etober, email: etober@eto.ericsson.se. Applications by memo, email or to Rune Berntzen at Ericsson AS, P.O.Box 34, 1361 Billingstad, Norway.

Ericsson Telecom AB, Infocom Systems, Public Networks, Switching-Provisioning.

KEY FUNCTIONS FOR NEW SOFTWARE DESIGN CENTER IN CHINA

BU Public Networks has decided to establish a software design unit in China. The intention is that the operation will start beginning 1997 and that development of SW products for our AXE-system will be carried out. The unit will include 100 SW-designers by 1999. Our aim is to immediatly achieve CMM-level 3.

● We are now looking for people within the following areas: Finance/Controlling. Systems Management. Systems Verification. Quality and Operational Development. IS/IT.

The design unit will concentrate on Subscriber Access design of software for the global market. This will include modification of old products as well as design of entirely new ones.

The terms for these assignments include both short and long term contracts.

Contact: Dick Frid, phone +46 8 719 1442, Memoid ETXT.ETXDIF, Bo H. Danielsen, Human Resources, phone + 46 8 719 1675, Memoid ETXT.ETXBODS or Magnus Karlsson, Human Resources, phone +46 8 719 9404, Memoid ETXT.ETXMAKN. Application: Ericsson Telecom AB, BU Public Networks, Switching-Provisioning, TN/ETX/X/DH, Bo Danielsen, S-126 25 Stockholm, SWEDEN.

Ericsson Ltd, United Kingdom

AXE SYSTEM DESIGNER - CCS

● The CCS design section are responsible for CCS system development for Global and UK specific requirements within the CCS basic area. We are looking for experienced designers preferably with CCS experience to join our dynamic team to assist in development for AMC (AXE Mobile Core) and other exciting projects for Japan and China. For those with the right experience, we are offering Short Term, Long Term and possibly local employment with ETL.

Contact: ETL/XD/DFC Carl Gray, Product Area CCS Manager. Memo ID: ETLWCJG, Tel: 44 444 234240

Ericsson Radio Systems AB, Sundbyberg

SPECIALISTS - LEBANON

Societe Libanaise des Telephones Ericsson, Cellular Division, Lebanon. Ericsson Radio is the main system supplier of GSM 900 to France Telecom Mobile Lebanon (FTML). The division is executing the contract and maintaining all business issues with customer. The network consists of 3 MSCs, 3 BSCs and some 130 BTSs in service today and OSS and is serving some 103 k subscribers. Installation of the 4th switch is almost completed.

SS SPECIALIST - FSC

● We are looking for SS Specialist to work at the FSC with 3-5 years experience in field support and/or Function test in GSM CME 20. The candidate will have a good ASA and Plex knowledge, MHO experience, TR handling, trouble shooting software problems in the field and emergency support. Preferably also function test SS R6 Experience. The candidates will need to have a good knowledge in spoken and written English, a degree in Electronic/Electrical/Telecommunications or equivalent experience.

BSS SPECIALIST - FSC

● We are looking for BSS Specialist to work at the FSC with 3-5 years experience in field support and/or Function test in GSM CME 20. The candidate will have a good ASA and Plex knowledge, TR handling, trouble shooting software problems and 24 hours emergency support. A BSC R6 experience is a plus. Ability to share knowledge with less experienced colleagues. The candidates will need to have a good knowledge in spoken and written English, a degree in Electronic, Electrical, Telecommunications or equivalent experience.

Contact Lebanon: Johan Hamze, memoid: STL.STLJOHA, phone +961 3 398 413 or Ghassan Karouta, memoid: STL.STLGHAR, phone +961 3 398 400. Contact Sweden: Anita Malmström Wallner, memoid: ERAC.ERAANTA, phone 046 8 4042429 Application: Societe Libanaise ddes Telephones Ericsson S.A.R.L. (STL) Ghassan Karouta, Hayek Round About, Sin El Fil, P.O.B. 55334, Beyrouth.

Ericsson Ltd, Local Switching Systems, Market Design Department

PROJECT TEST COORDINATOR FOR MODULE TEST/SIMULATED FUNCTION TEST

● This is a key project role & reports to the Overall Project Manager & to the Section Manager on line matters. The Test Coordinator is responsible for defining the project module test strategy early on & then ensuring that it is implimented through to release thereby allowing the project to meet its goals.

This will involve identifying required timescales, resources, & introducing new emulator test tools/methods. They must also chair Module Test Entry/Exit meetings. During execution they must ensure that the test documentation is available & updated according to the processes & provide expert technical coaching to testers. They must act as the interface towards Test Configuration Management/FT activities & ensure that the required MT environment is working. All necessary information must be communicated to the project participants to ensure high motivation. The MT Coordinator will be required to monitor the module test progress, analyze it & take action to ensure that the project meets its goals. This will entail chairing MT coordination meetings & reporting status & any unresolved deviations to the Overall Project Manager.

The applicant must be educated to degree level or equivalent in a software engineering related subject. They need a thorough knowledge of design activities, 2-4 years testing experience & an awareness of the subsequent function test activities. Good overall system knowledge of some of our subsystems (CHS, ACCESS, TSS, TCS, SUS) is important as is a working PROPS knowledge. Strong communications skills in English is essential & the applicant must be results orientated & able to perform under pressure.

The workplace is situated in Burgess Hill which is 20 minutes from the holiday resort & University town of Brighton & 1 hour from London.

Contact: Alan Cunliffe, ETL.ETLACE, etlace@etlxdmx.ericsson.se, Tel +44 444 234131

Ericsson Eurolab Deutschland GmbH (Germany)

FUNCTION TEST LEADER AMC & TCS WANTED

EED in Herzogenrath/Germany, close to the university city of Aac hen, offers you as a young and growing company an open working atmosp here with high motivated colleagues.

● The AXE Mobile Network Departement in EED is looking for function test leaders in the new function test group for TCS and the AXE Mobile Core (AMC). This group has the responsibility for TCS function test projects as well as for the function test on main (AMC) project level. Function test in target and simulated environment (SFT) has to b e supported.

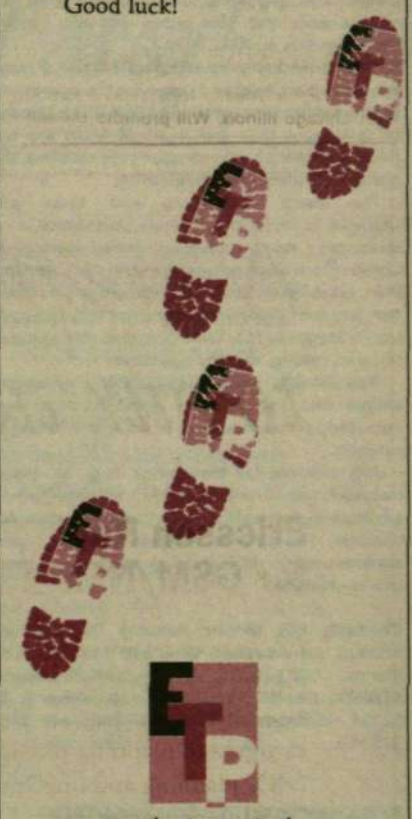
Once upon a time there was a web...

Naturally, we are very proud to release one of the first Ericsson method-documentations on the web. Available for everyone and full of opportunity.

But at the same time, it would be odd if we were not already thinking of new ways in which technology can make it easier to use ETP as a method for external technology provisioning.

One thing is certain. We are heading in the right direction!

Pay us a visit. And don't miss our contest on the web.
(etpweb.ericsson.se/products/contest)
Good luck!



ETP

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Facts: *The ETP documentation is now available as hypertext linked files in PDF format (Adobe Acrobat 3.0) directly accessible for free on the Web. To run the files you need, in addition to Netscape, Adobe Acrobat Reader 3.0 installed. If you need the applications installed you can download them from the ETPweb.*

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Ericsson Infocom AB. Box 1038.
S-651 15 Karlstad. Sweden
http://etpweb.ericsson.se/home.htm
memo lme.lmeetpp

Interested in an ETP-course? Contact Anna Kihlén at +46 54 29 41 34 for more information.

The AMC consists of the core subsystems that are common to the m obile applications CME20, CMS30, CMS40 and CMS88. The general responsibility of the FT Leader is to plan, control and report FT activities of the FT (sub)project.

The main authorities and tasks are: AMC test leader: Plan, control and report FT activities for AMC projects. Initiation and coordination of subproject plann ing and reporting. Initiation of reviews of the FT documents. Technical approval of the subprojects FT plans and reports. TCS test leader: Plan, control and report FT activities of TCS subprojects. Initiation of reviews and technical approval of the FT TSs and TIs. Initiation and coordination of FT specification, design and execution. Selection of test environment (simulated or target). Performance of entry and exit criteria checks.

As a suitable canidate, you are an Ericsson employee and should have experience in function test planning and execution. You should be familiar in working in projects.

Any managerial experience (e.g. as test leader, team leader or project manager) or experience in the traffic control area is a clear advantage. The position requires initiative, good communication skills and a good ability to work under pressure.

Contact: AXE Mobile Network Departement EED/L/U, Jan Rlnnblad, Dial: +49 2407 575 529, Memo: EED.EEDJDR or Human Resources EED/H/R, Doerte Kaulard, Ericsson Allee 1, D-52134 Herzogenrath/Germany, Dial: +49 2407 575 163, Memo:EED.EEDDKA.

GROUP MANAGER TCS/AMC FUNCTION TEST WANTED

● The AXE Mobile Network Departement in EED is looking for a group manager to establish a function test group for TCS in the AXE Mobile Cor e (AMC).

The AMC consists of the core subsystems that are common to the m obile applications CME20, CMS30, CMS40 and CMS88.

The activities of the group will be function test (target and simulated environment) and TCS maintenance test. This group will also include the FT leaders on AMC level

The general responsibility of the group manager is to plan, lead and supervise the operations of the function test group in EED/L/U. He/she has to guarantee that the required goals are fulfilled, the needs of the company are satisfied, the group is efficient and competitive.

The main authorities and tasks are: Leadership: Perform appraisals, participate in recruitment and introduce new personnel. Competence developement of the staff. Testing: Plan, establish and supervise the group's function test activities. Coordinate function test and basic test strategy i in TCS. Control and supervise maintenance testing. Quality assurance.

As a suitable canidate, you are an Ericsson employee and should have good function test knowledge. You should be familiar in working in projects.

Any managerial experience (e.g. as group manager, team leader or project manager) or experience in the traffic control area is a clear advantage. The position requires initiative, good communication skills and a good ability to work under pressure.

Contact: AXE Mobile Network Departement EED/L/U, Jan Rlnnblad, Dial: +49 2407 575 529, Memo: EED.EEDJDR or Human Resources EED/H/R, Doerte Kaulard, Ericsson Allee 1, D-52134 Herzogenrath/Germany, Dial: +49 2407 575 163.

TCS FUNCTION TESTER WANTED

● The AXE Mobile Network Departement in EED is looking for function testers for the new function test group for TCS in the AXE Mobile Core (A MC).

The AMC consists of the core subsystems that are common to the mobile applications CME20, CMS30, CMS40 and CMS88.

The general responsibility of the function tester is to design FT documents and execute function test (target and simulated environment) and TCS maintenance test.

The main authorities and tasks are: Preparation of FT TSs with close coordination to TCS design. Definition of the prerequisites to perform a verification of the test object. Performance of the FT execution. Reporting of the result of the test. Reporting of the result of the test.

As a suitable canidate, you are an Ericsson employee and should have experience in function test execution. You should be familiar in working in projects.

Any experience in the traffic control area is a clear advantage. The position requires initiative, good communication skills and a good ability to work under pressure.

Contact: AXE Mobile Network Departement EED/L/U, Jan Rlnnblad, Dial: +49 2407 575 529, Memo: EED.EEDJDR or Human Resources EED/H/R, Doerte Kaulard, Ericsson Allee 1, D-52134 Herzogenrath/Germany, Dial: +49 2407 575 163, Memo: EED.EEDDKA.

CME20/CMS40 PRODUCT AREA SWITCHING

● If you enjoy demanding work and can respond well to singnificant challenges and responsibilities, why not become a member of our team? Here at EED we have the overall Product Area Switching coordination responsibility for CME20 & CMS40 and we are looking for people to work in system management & operative product management. Please refer to the EED/X/D home page in the EED home page on the www for further information about the department's activities.

We are working with the following mobile applications & study areas: GSM systems. DCS1800 systems. PCS1900 systems. New satellite network applications. Studies about future MSC evolution.

Suitable candidates possess a relevent engineering degree (eg telecommunications, electrical, or software engineering) with a minimum of 4-5 years of AXE development or testing experience and preferabl y at least 2-3 years of experience in system-level technical development or testing. Experience with GSM or other mobile telephony development is advantageous, but not absolutely necessary. Good analytical skills are essential. Ability to meet LPMs and customers from time to time is advantageous.

Within the System & Product Management department we are looking for system engineers in the following areas:

SYSTEM MANAGEMENT

● System Management focuses on a range of system level tasks which are necess ary to ensure progressive and continuous development of Ericsson's CME20 & CMS4 0 switching nodes in an orderly and evolutionary manner. This work involves a broad range of activities including RS writing and system investigations.

We are particularly interested to talk to people who can provide significant competence in one or more of the following areas: Data communications, ISDN development, IN development, Application Modularity development. Other assets would include good knowledge of the ETSI GSM/INAP or ITU-T ISDN specifications/recommendations or any other competence area which you think may be relevant for CME20 and CMS40 system management work within product area switching.

Contact: Leo Garon EED/X/DEC, via phone +49 2407 575 242, memo EED.EEDLEO or Doerte Kaulard EED/H/R via phone +49 2407 575 163, memo EED.EEDDKA.

DIMENSIONING & PLATFORM MANAGEMENT

● Dimensioning & Platform Management has responsibility for system dimensioning and characteristics of CME20 & CMS40 MSC nodes, and for placing of platform requirements towards UAB for product area switching. This includes developing models for estimation of system capability and guidelines for dimensioning. It also includes defining performance strategies (together with SPM) for product area switching and coordinating activities to reach these goals.

We would especially like to hear from people who have experience in one or more of these areas: Capacity estimations/modelling, Dimensioning work, and AXE-10 platform development, management or testing. However people with good technical experience in other AXE-10 areas would also be considered.

Contact: Pieter van Rijnsoever EED/X/DDC via phone +49 2407 575 172, memo EED.EEDPVR or Doerte Kaulard EED/H/R via phone +49 2407 575 163, memo EED.EEDDKA.

OPERATIVE PRODUCT MANAGEMENT

● Operative Product Management has the following responsibilities and main tasks and in the area of product area switching: technical support to LPMs and SP M world-wide, RS writing and coordination, and active participation in ETSI G SM standardisation.

We are looking for people who have significant telecommunications experience in either development, testing, standardisation or product management. Expe rience in GSM, another mobile telephony area or ISDN is highly valued but not indispensible. IN competence would be especially appreciated.

Contact: Stefan Blomqvist EED/X/DOC via phone +49 2407 575 238, memo EED.EEDSTB or Doerte Kaulard EED/H/R via phone +49 2407 575 163, memo EED.EEDDKA.

The Operations & MaintenanceSystems Department EED/L/B is looking for

SENIOR TESTER AND TESTER

● Our most important products are in the area of base station operation and maintenance. Within the TMOS development process EED/L/B is responsible for the test phases Basic integration test and function test.

The B/S group is responsible for the function testing. Distribution List: The main tasks are: Test analysis during feasability study and design phase. Test preparation (test specification, preparing test tools and data). Installation and maintenance of the TMOS test sites. Test execution of new functionality and correction packages. Writing and follow-up of trouble reports.

For the senior position additional tasks are reuqired: Work planning and team leading of a test team. Maintenance and further development of test. processes and methodology.

The positions report directly to the Group Manager /L/B/S.

As a suitable candidate, you gained competence in the area of testing and/or design. For the senior position, at least 3 years of testing competence is a prerequesite. Additionally AXE and/or BTS O&M experience would be an advantage. You should be open minded, team-oriented and have good communication and cooperation skills. For the senior position, work planning and team leading experience is desired. Furthermore, you should be initiative and able to stand pressure. The department and Human Resources will give you support for your implementation and start in our O&M systems department.

Contact: Klaus Schneider EED/L/B via phone:+49-2407-156 EED.EEDKLS or Doerte Kaulard EED/H/R via phone:+49-2407-163 EED.EEDDKA.

Business Area Infocom Systems, BU Public Networks, Switching-Provisioning.

DESIGN CENTER MANAGER SW – CHINA

Business Unit Public Networks has decided to establish a software design unit in China. The intention is that the activity shall start operations beginning 1997 and that development of SW products for our AXE-system will be carried out. The unit will include 100 SW-designers by 1999. Our aim is to immediatly achieve CMM-level 3.

● The person we are looking for should have: Managerial skills. Knowledge of Ericsson. Competence in modern SW design. Ability to work independently.

The task is to: Recruit and build a local design center. Establish routines and methodology.

The design unit will initially concentrate on market adaption design. This will include modification of old products as well as design of entirely new ones. Focus of the operation will be the Subscriber Access area.

The term for this assignment is minimum two years.

Contact: Dick Frid, phone +46 8 719 1442, Memoid ETXT.ETXDIF; Bo H. Danielsen, Human Resources, phone + 46 8 719 1675, Memoid ETXT.ETXBODS or Magnus Karlsson, Human Resources, phone +46 8 719 9404, Memoid ETXT.ETXMAKN. Application: Ericsson Telecom AB, BU Public Networks, Switching-Provisioning, TN/ETX/X/DH, Bo Danielsen, S-126 25 Stockholm, SWEDEN.

Ericsson Ltd, Guildford

ACCEPTANCE SUPERVISOR

● The ESO in Guildford has a vacancy for an Acceptance Supervisor who will be responsible for PCDs, development of personnel and their daily activities. As an Acceptance Supervisor you are responsible for a team of approx 5 people working with GSM.

Main Duties: To develop, maintain, improve processes and personnel in the following areas for all ETL ESO customers: Acceptance planning. Acceptance. First site implementation. FOA planning. Planning of consolidation period.

CUSTOMER VERIFICATION MANAGER

● The ESO in Guildford has a vacancy for a Customer Verification Manager who will be responsible for PCDs, development of personnel and their daily activities. As a Customer Verification Supervisor you are responsible for a team of 8-10 people working with GSM.

Main Duties: Develop, maintain, improve processes and personnel in the following areas for all ETL ESO customers. AS-design, parameter setting. Develop new testing strategies towards our customers. ASR. Correction transfer. Test analysis/customer design. Test Execution of new features, old functionality etc.

COMMON TEST SUPERVISOR

● The ESO in Guildford has a vacancy for a Common Test Supervisor who will be responsible for PCDs, development of personnel and their daily activities. As a Common Verification Supervisor you are responsible for a team of 6-8 people working with GSM.

Main Duties: Develop, maintain, improve processes and personnel in the following areas for Common Verification within the ETL ESO: Test Analysis for all communality between ETL ESO customers.§ Common New feature test. Develop common test. Common Regression/old feature test. Close testing/interworking with "nodes" (development projects).

We are a young and motivated team and work very closely with our main suppliers "the nodes" in Aachen (Germany) and Sweden. You should have previous test experience and be open and flexible. You need to be able to handle more than one thing at a time. Prev ious management experience is a bonus.

Contact: Martin Sadle, etl.etlmnse or Michael Chance, etl.elmlce.

Ericsson Radio Systems AB

ENGINEERS/EXPERTS FOR GSM SYSTEM SUPPORT IN TURKEY

● Your main task will be: Emergency Service, TR handling, implementation of SW updates/upgrades, disturbance investigation and consultation service.

You will also participate in developing, reviewing and improving work methods, processes and procedures within our field support centre (FSC). Finding ways for effective learning to inprove the FSC performance will be an important activity.

You have experience of more than two years in these areas, you have good trouble-shooting skills, knowledge of the GSM-system as well as in SW and data. As an engineer/expert you will assist the System Support Manager and participate in training our staff to increase our competence level.

Contact: Noel Reid. Memoid: ENK.ENKNRE, phone +90 532 2312299 or Mohamad Khattab. Memoid: ENK.ENKMOKA. phone +90 532 2170296 or Anita Malmström Wallner. Memoid: ERAc:ERAANTA pone +46 8 404 2429. Application: Defne KONURALP, Ericsson Telekommunikasyon A.S. (ENK). Buyukdere Caddesi, Spring Giz Plaza, Kat 13-14 Maslak, 80670 Istanbul.

Ericsson Ltd, United Kingdom

SENIOR SYSTEM TEST ENGINEERS

● We at ETL are continuing to expand our abilities to verify more projects then ever before. We are looking for keen Senior System Test Engineers who possess the ability to fault find at a System level.

To succeed in this position, you will have some of the following: Proven system test experience-from at least one market. Knowledge of "AM" based AXE 10 structure. Ideally have worked with local exchange specific functionality. Have had hands on experience with most Ericsson tools used during a Verification phase. Ability to follow fault investigation to it's conclusion.

If you have most or all of the above abilities and desire to work with System Verification Test in the dynamic UK market, we would be pleased to hear from you.

Contact: ETL/XL/FEC Andy Harrison, System Verification Manager Memo ID: ETLAHN Tel: 44 444 234591.

Ericsson Telecommunications Limited, Guildford UK

CME 20 SS R6.1 FOA TEST LEADER

Ericsson Telecommunications in the UK has been appointed the FOA responsibility for CME20 R6.1 SS/BSC.

● We are now looking for a Test Leader within the ETL ESO. The test leader will have the following responsibilities : Planning/executing/follow-up of the ASV/CM/TAcc First site implementation and the Primary consolidation period. The work involves executing all activities according to main project plan. He/She has direct Node/Customer contacts in all technical issues.

As the customer demands are very tough and an early launch is required of IN serv. There is a high focus from the Customer, Marketing and ERA on this project and the Field Tries before commercial launch.

You will be working in an experienced team with dedicated personnel. Which have experience with three of Ericsson's most demanding customers in GSM. The assignment starts as soon as possible and ends 1/8 1997. Or have a long experience as a tester and want a challenging task. Experience in GSM is an advantage.

Besides good communication skills in English, excellent leadership and teamworking skills will be needed.

CME 20 SS R6.1 FOA TESTERS

● *We are now looking for Testers within the ETL ESO.* The testers will perform the following tasks: Test Analysis. Test Design. Correction Transfer. Test Execution. Limited Tr-Shooting. Function Changes.

Within the following areas:ASV/CM/TAcc and primary consolidation.

You will be working in an experienced team with dedicated personnel. Which have experience with three of Ericssons most demanding customers in GSM. The assignment starts as soon as possible and ends 1/8 1997.

As an applicant, you must have previous test experience. Experience in GSM is an advantage.

Besides good communication skills in English, willing to adapt to changes, and teamworking skills will be needed.

CME 20 SS/BSS 6.1 FOA DATA TRANSCRIPT ENGINEER

● *We are now looking for a Data Transcript Engineer.* The Data Transcript Engineer will be responsible for developing and maintaining Test Plant Data Transcript for all UL GSM customers both SS and BSC. The base for your input is the network plans produced by the project in coassistant by yourself. You should learn and develop our test environment to be as flexibl e as possible. Within the following areas:ASV/CM/TAcc and primary consolidation.

You will be working in an experienced team with dedicated personnel. Which have experience with three of Ericssons most demanding customers in GSM. The assignment starts as soon as possible and ends 1/8 1997.

As an applicant, you must have previous Data Transcript experience within GSM. Besides good communication skills in English, willing to adapt to changes, and teamworking skills will be needed. You must be organised and throrough.

Contact: ETL/RO/VC Gustaf Oscarsson ETL.ETLOCE phone +44 1483 305770 or ETL/RO/KC Hakan Norling ETL.ETLKHH phone +44 1483 305757

Ericsson Radio Systems AB, Sundbyberg

PROJECT MANAGERS

We are experiencing great success with GSM, NMT and TACS systems in our Central and Eastern Europe, Middle East and Africa markets.

● We are still expanding and are now looking for Project Managers. We are focusing on shorter lead time, customer satisfaction and profitability. All contract work is done in an international environment together with companies inside and outside Ericsson. The product span ranges from switching, transmission and power to radio base stations (RBSs). You will be responsible for the quality and customer satisfaction.

We are now seeking experienced Project Managers for our offices at Sundbyberg and abroad. We are looking for an individual that has several years of experience as a Project Manager, within a telecommunication and computer systems environment. Prior assignments abroad and knowledge of any of the above markets is desirable. English, both written and spoken is essential, any other language used in our markets would be valuable.

Contact: Ulf Borison (Central and Eastern Europe) phone +46 8 757 1580 memoid: ERAC.ERAUBOR, Mats Storsten (Middle East) phone +46 8 757 3905 memoid: ERAC.ERAMAST, Henrik Moberg (Africa) phone +46 8 757 2919 memoid: ERAC.ERAMOBB or Anita Malmström Wallner (Human Resources) + 46 8 404 2429 memoid: ERAC.ERAANTA. Application: Ericsson Radio Systems AB, LP/H Anita Malmström Wallner, 164 80 Stockholm.

Telefonaktiebolaget LM Ericsson Libya Branch, Tripoli, Great Man Made River project

TRAINING CO-ORDINATOR

● For our Tripoli office we now look for a Training Co-ordinator.

The Great Man Made River is is a comprehensive Turn Key project where Ericsson is responsible for the PCCS (Process Control and Communication System) part of the project. The PCCS part comprises design, installation, test, training and commissioning of five different technical systems: Microwave Radio System, Cable System, Telephone System, Process Control System and Management Control System.

Main Tasks: The Training Co-ordinator will be responsible for all PCCS training related activities with the exception of course development e.g.: Co-ordination of courses, instructors and trainees. Order of training aids, tools and training equipment. Follow-up training progress, instructors and trainee performance.

Requirements: The Training Co-ordinator shall have the following basic competence: Experience in administration of training activities. Some experiences as instructor/teacher. Proficiency in the use of verbal and written English. Working experience from MS Office Package.

It is also desirable that the Training Co-ordinator have a good social competence, i.e. ability to co-ordinate people with different cultural and technical backgrounds.

Assignment: Long-term contract starting as soon as possible. The intention is that the Training Co-ordinator shall, succeed the Training Manager who will end his contract by the end of this year.

Contact persons: Libya: Training Manager Ove Puisto, Phone: +218 22 30 800 or Sweden: Tommy Hall, Phone +46 8 764 3334. Application: Ericsson Business Networks AB, Human Resources, Richard Tersander, S-172 87 Sundbyberg, Phone +46 8 764 0326, Fax +46 8 764 0851, Memo EBC.EBCTERS, E-mail ebc.ebcters@memo.ericsson.se.

Ericsson GmbH, Duesseldorf, Germany

TESTPLANT ORGANISATION CONSULTANT (short term 3-4 months)

Ericsson GmbH (EDD) is the major local company of Ericsson in Germany and is located in Duesseldorf. EDD is responsible for all Telecom activities on the German market. In the area of GSM, our main customer Mannesmann Mobilfunk is operating the largest private GSMTelephony work in the world.

● Creating and ducumenting processes and work instructions in the area of STP provisioning, booking, maintenance, and resource planning. Interviewing internal STP users. Introducing processes within our support organisation. Short term assignment for appr. 3 month, starting asap.

Min. 5 years experience in STP provisioning. Strong writing skills (English). General knowlegde of AXE for GSM and fixed networks. Experience in

"Leading stars in the service control area!"

Ericsson Radio Systems AB are looking for Systems Managers.

The Product Unit "Digital Switching Systems and Applications", (DSA), provides competitive switching, service control and application products to GSM/ DCS/PCS operators through Ericsson/RMOG marketing and sales channels.

The product area Service Control and Management (SCM) is responsible for nodes controlling services in the network like the HLR (Home Location Register) in GSM. In addition to own products, SCM is responsible for the DSA requirements towards "external" products like the IN infrastructure, SCP (Service Control Point) and SDP (Service Data Point). In the central system management for SCM we are now looking for:

Systems manager, Mobile Intelligent Networks (MIN)

We are extending our System management team for Mobile Intelligent Network (IN) platforms. We currently see big opportunities in new products based on open architecture as well as solutions supporting telecom and datacom applications.

Your work will consist of tasks like technical studies, support to internal and external organisations including customer presentations and market support. You will also build a broad technical competence in the area of IN.

You will probably have a couple of years of relevant experience (IN, GSM or similar) and would like to work as a generalist and co-operate with a big contact network. You are used to take own initiatives and enjoy working within a unit where new tasks constantly comes up.

We are also looking for experienced engineers or similar to strengthen our GSM systems management for SCM to the following positions:

System Manager/Senior Specialist, Service Management

With the introduction of new services and network elements within the GSM/PCS solutions and at the same time the rapidly increasing number of subscribers in our customers networks the need for efficient support for service management increases.

We consider knowledge about UNIX platforms and management systems as a merit.

System Management GSM&PCS

The positions are in the area of technical co-ordination/prestudy management, technical investigations, network architecture and standardisation for the GSM/PCS development. Introduction of new features and application like IN, data- and business communication for the GSM/PCS networks are the key drivers for our work.

Experiences from AXE and other platforms, as well as leadership in line or project work are a merit.

Ready for a challenge? Please contact:
Anders Blomgren, phone +46 8 757 12 81, ERAC.ERABLO
Ulrika Carlsson, phone +46 8 757 13 13, ERAC.ERAUCAR
Erik Lönnheim, phone +46 8 758 12 80, ERAC.ERAERLO
Human resources contact is: Kjell Gunnar Königsson, phone +46 8 404 79 46

Send your properly marked application before 14 February 1997, to:

Ericsson Radio Systems AB
LK/HS Mia Hjertén
164 80 Stockholm

e-mail: erac.eramihj@memo.ericsson.se

Ericsson's 90,000 employees are active in more than 130 countries. Their combined expertise in switching, radio and networking makes Ericsson the world leading supplier in telecommunications. You can get more information about us on our homepage **www.ericsson.se/SE/**

ERICSSON

"Take the next step, join us in Älvsjö and take part in the development of the GSM network."

Ericsson Radio Systems AB are looking for SW designers and testers.

The Product Unit "Digital Switching Systems and Applications", (DSA), provides competitive switching, service control and application products to GSM/DCS/PCS operators through Ericsson marketing and sales channels.

As the result of the continued success for Ericsson's GSM systems, the Business Unit for GSM, NMT and TACS (RMOG) has started a new Design Centre for development of AXE 10 products for Mobile Switching, Service Control and Satellite based Systems. The organisation is based in Älvsjö. In this new Design Centre there are open positions within the following areas:

Software Development

We are looking for AXE 10 designers with one to five years of experience from AXE 10 development.

You will be a member of a Design Team that will design, implement, and test new functions in our GSM system. You will either work with functions for transferring text messages (Short Message Services, SMS) or functions in the central network database (Home Location Register, HLR).

You will participate in the complete software development cycle from requirement specification and feasibility study through all development phases.

We are working in an international environment together with other Design Centres in Germany, Spain, and USA.

For further information please contact Hans Carlsson, phone INT +46 8 719 93 68 or Lars Marklund, phone INT +46 8 719 91 97.

Simulated Function Test (SFT)

You will be a member of a Testing Team. The main task will be to perform function test in a simulated environment.

All testing activities will be done in close cooperation with the Design Teams.

1–4 years experience of AXE 10 testing is required and previous experience from simulated test environment is a merit.

For further information please contact Claes Lillerskog, phone INT + 46 8 719 91 80.

For all positions it is essential that you are open-minded, flexible and enjoy working in a fast growing organisation. A good knowledge in English is a requirement. Previous experience within GSM is not required but considered valuable.

For all positions Human Resources contact is Christina Höglund, phone +46 8 404 78 41, memoid EXTR.QRACHOD.

Please send your application to:

Ericsson Radio Systems AB
LK/H Mia Hjertén
164 80 Stockholm

e-mail: erac.eramihj@memo.ericsson.se

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ERICSSON

"Many of our local companies have received quality awards. Do you want to be part of our future successes in Romania?"

Ericsson Radio Systems AB have many openings for managers/engineers in Romania.

We are starting up business in Bukarest. We will therefore expand our Romanian local company, ETR. We need:

1 Local Project Manager, *expatriate, 1 year*
Cooperation with Project Manager in Sweden, deciding with local manager in whether or how different tasks in the project should be made.

1 BTS Implementation Manager, *expatriate, 1 year*
Responsible for the BTS roll out including 4 subproject.

1 BTS Technology Manager, *expatriate, 1 year*
Assist the customer in optimizing the radio network with Ericsson's BTS products.

2 Radio Network Engineers, *expatriate, 1 year*
They will make network schedules, all design data and the coverage verification.

1 BTS Engineering Managers, *expatriate, 1 year*
Responsible for the work with site investigation and installation engineering.

1 FSC Manager, *expatriate, 2 years*
Responsible for the organisation which will give qualified support to the customers operation of the GSM network.

1 MSC/BSC expert, *expatriate, 1 year*
AXE-manager shall respond to the customers need of problem solving in the MSC and BSC.

To be successful in these positions you have a minimum of two years of experience in these areas, good administrative skills and are ready to work under stressed conditions. English both written and spoken is essential. Knowledge of Romanian is appreciated.

For further information please contact:
Thomas Lundin, phone +40 1 337 30 00.
Lars Nordén, phone +46 8 404 20 31.

Please send your application to:

Ericsson Radio Systems AB
LP/H Liljana Sundberg
164 80 Stockholm

Ericsson's 90,000 employees are active in more than 130 countries. Their combined expertise in switching, radio and networking makes Ericsson the world leading supplier in telecommunications. You can get more information about us on our homepage **www.ericsson.se/SE/**

ERICSSON

usage of test tools. Ideally, experience in introducing procedures into a support organisation.

Contact: Thomas Linden EDD.EDDTL, +49-211-534-1327, Fax -1335

Ericsoon Telecomunicatie B.V. (ETM), Netherlands

TECHNICAL SUPPORT SPECIALIST GSM

● For placement in Rijen, Netherlands, We are looking for persons to deliver support on SS (R6) and BSS (R6) Contract period: 12 months starting Q2 or Q3 1997. The work includes e.g. Trouble report handling, writing emergency coorections, on site installation of patches (emergency) corrections and updates, 24 hour support.

The candidate should have knowledge of Plex (HLplex) and ASA. Candidates should be customer oriented and be able to work independently.

Contact: ETM/OPL Angeline Wijns-Petit, Memoid: ETM.ETMANPE

Ericsson Telecomunicazioni, Roma, Italy

FRAUD MANAGEMENT SYSTEMS EXPERT

● Job description: Project management and requirement analysis for a Fraud Management system for a very big fixed line operator. The system shall have to detect and manage Fraud situations coming from Credit card, international calls and base telephony usage.

Required skills and experience: Fraud Management systems, Software projects management, Unix

Contact: Maurizio Montani, EITA.TEIMAMO

Ericsson GmbH, Germany

Ericsson GmbH (EDD) is the major local company of Ericsson in Germany with the Head Office located in Duesseldorf. EDD is responsible for all Telecommunication activities in the German market.

The business unit Mobile Telephone and Data Systems is a key supplier in its local market and will continue to grow during 1997. For the services to new customers we are looking for additional employees in the following areas:

PROJECT CONTROLLER

● In our projects we have to focus on customer satisfaction, short lead-time and profitability. The projects are executed in an international environment together with Ericsson organisations world-wide and external companies. The product range comprises switching (AXE), transmission (Radio Links), power equipment and Radio Base Stations. The project controlling function includes preparation and progress analysis of time schedules, resource schedules and project budgets to ensure that the project goals are met. Information must be collected from the different sub-project areas and communicated to the project organisation and the customer.

The job requires a degree in engineering and at least 5 years experience in mobile telephone network implementation and/or project management. Knowledge about PROPS, MS Office and MS Project are essential. The candidate should have excellent interpersonal skills and a good command of the English language.

PROJECT MANAGER QUALITY

● Reporting to the Total Project Manager the Project Manager Quality is responsible for the preparation and execution of the project quality plan. He analyses existing processes/procedures and ensures its use within a project. He assists the project organisation in analysing and solving of process related problems and controls/performs quality audits on sites to ensure implementation standards and quality.

This job requires a degree in engineering, at least 5 years experience in mobile telephone network implementation, knowledge of Ericsson's quality standards for implementation and/or process management. The candidate should be open minded, flexible, organised and analytical and should have good English communication skills.

TRAINING COORDINATOR

● Training activities are required for customer staff, sub-contractor and Ericsson staff. The Training Co-ordinator has to ensure that contracted training obligations are in accordance with the contract and meet customer requirements. He should provide an effective interface to the customer and the involved Ericsson organisations. He assists the organisation in identifying ongoing training needs, establishes appropriate training programmes and monitors the effectiveness of these programmes.

The position requires a formal education in Telecommunications, 3-5 years experience in Mobile Telephone Networks (CME 20) and experience/capability in the technical training environment. The candidate should be motivated, flexible and posses, to a high degree planning and negotiation skills, effective communication skills in written and oral English. Knowledge of standard PC applications (MS Office) are mandatory.

PROJECT MANAGER BTS & TRANSMISSION

● Reporting to the Total Project Manager the Project Manager BTS & Transmission is responsible for the implementation of Radio Base Stations and its transmission links within a project. He is the interface to the performing line organisation and the customer, specifies the required resources and controls the progress of the project in compliance with the project schedule and budget.

The job requires a degree in electrical engineering, good knowledge of Ericsson's BTS products and 3-5 years experience in BTS & Transmission implementation. The candidate should be flexible, organised, customer and result oriented. Good English communication skills and knowledge of standard PC applications are required.

RBS INSTALLATION ENGINEER

● For the installation of Radio Base Stations (RBS 2000) including antenna system and transmission equipment (Radio Link) we are looking for RBS Installation Engineers who are interested to contribute to a demanding project implementation schedule.

Requirements to the candidates are an education in telecommunications, at least 2 years experience in implementation of radio base stations, knowledge of Ericsson's radio product range and quality requirements. Candidates should have good interpersonal skills, be self-motivated and have good English communication skills.

PROJECT MANAGER SWITCHING

● Reporting to the Total Project Manager the Project Manager Switching is responsible for the implementation of all switches in the network. He is the interface to the performing line organisation and the customer. He is the interface to the performing line organisation and the customer, specifies the required resources and controls the progress in compliance with the project schedule and budget.

The job requires a degree in electrical engineering, good knowledge of Ericsson's AXE products and 3-5 years experience in Switching implementation. The candidate should be flexible, organised, customer and result oriented. Good English communication skills and knowledge of standard PC applications are required.

RBS TEST ENGINEER

● RBS Test Engineers are required for testing of new radio base stations and extensions , performing of customer acceptance tests and solving of technical problems on site.

Requirements for the function are a telecommunications education with 3-5 years experience in testing RBS. Candidates should have good interpersonal skills, be self-motivated and have good English communication skills.

PLANT ENGINEER AXE

● For the planning of new switches and expansions Plant Engineers AXE are needed. Major activities are planning and specification of A- and B-packs, preparation of the relevant documentation as well as room layouts and cabling plans.

The candidate should have a degree in telecommunications engineering with 3-5 years experience and good knowledge in AXE (CME 20). Knowledge of MS Office and excellent knowledge of AutoCAD and PLEASE are mandatory. Candidates should have good interpersonal skills, be selfmotivated and have good English communication skills.

SWITCH CONSTRUCTION ENGINEER

● For the installation of new Switches (AXE) we are looking for experienced Switch Construction Engineers.

Requirements to the candidates are an education in telecommunications, at least 2 years experience in implementation of AXE switches and good knowledge of Ericsson's quality requirements. Candidates should have good interpersonal skills, be self-motivated and have good English communication skills.

TEST ENGINEER AXE

● Test Engineers AXE are required for testing of new sites and extensions, solving hardware and DT problems on site and participating in customer acceptance tests.

Requirements for the function are a degree in telecommunications engineering with 3-5 years experience, good knowledge in AXE (CME 20) and standard PC applications. Candidates should have good interpersonal skills, be self-motivated and have good English communication skills.

PROJECT MANAGER LOGISTICS

● Reporting to the Total Project Manager the Project Manager Logistics is responsible for the preparation of the project procurement and delivery plan. He ensures -by interfacing to the central logistics department- deliveries in accordance to the project schedule based on logistics procedures used for the project.

This job requires excellent knowledge of ERA's Logistics Processes, its Business Support Systems (particularly GOLF) and at least 5 years experience. Besides managerial and administrative skills the candidate should be able to lead and motivate a team. Good English communication skills are required.

SALES & MARKETING ENGINEER

● A new Account Sales & Marketing group requires ambitious Sales & Marketing Engineers. Main tasks includes preparation of tenders, participation in negotiations, contract preparation, commercial support during project execution, market analysis and customer presentations.

A technical degree accomplished with a business education (e.g. MBA) is required. A 3-5 years experience in telecommunications industry and sales & marketing are mandatory. Besides knowledge of standard PC applications (MS Office) candidates should have a high level of sensitivity for customer needs, Ericsson's business opportunities and good command of English and German language.

PRODUCT MANAGEMENT SPECIALIST

● For a new Account Product Management group we are looking for Product Management Specialists for the areas access network, switching and enduser services, operations & maintenance, radio and transmission. Main tasks are the support of the account organisation in respect of all product related issues (incl. customer presentations, product promotion, tender preparation, handling of customer enquiries, evaluation of new market demands) as well as the establishment of an excellent customer relation.

Besides a good technical background in telecommunications and a fundamental knowledge of Ericsson products the candidate should have excellent communication skills, a high level of sensitivity for customer needs and Ericsson business opportunities as well as good command of English and German language.

The work places for the above positions are located at Ericsson offices in Germany, mainly in Munich and Duesseldorf and on customer sites all over Germany. Contracts will be offered for a period of 12 or 24 months on long term conditions. The ability to transfer knowledge to built up local competence is required for all positions. Knowledge of the German language is an advantage if not required as mandatory.

Contact: Hans-Juergen Vratz (Human Resources) MEMO-ID EDD.EDDHJV, phone +49 211 534 1441; Dieter Sieber (Customer Projects) MEMO-ID EDD.EDDDISI, phone +49 211 534 1541

Ericsson Eurolab Deutschland, Mobile Network Development at Aachen, Germany

If you enjoy demanding work and can respond well to significant challenges and responsiblities, why not become a member of our team? We have the responsiblity for the Software development for the mobile switching system within the GSM-standard. We are looking for

SOFTWARE DESIGN ENGINEERS

● We are working with the GSM-system in the area of the MSS, dealing with the design, development and test of telecom software or design complete telecom systems. Programming experience (C++,C), background in telecommunications preferred with a working knowledge of structural design methods is required for this position. Relevant Ericsson experience is a plus.

If you are interested in joining a young & international team and you have good communication as well as good interpersonnel skills please send your resumee via mail or memo to:

Contact: Gina Roege, EED/L/MJC, Memo-id EED.EEDGINA, Tel.:+49(0)2407-575-254 or Doerte Kaulard, EED/H/R, Memoid EED.EEDDKA, Tel.:+49(0)2407-575-163. Application: ERICSSON EUROLAB DEUTSCHLAND GMBH. Ericsson Allee 1, D-52134 Herzogenrath.

Ericsson Communications Inc., Canada

VACANCY

● A vacancy exists in the APZ Support group in Montreal. The job involves Technical Support for North America and Canada, within the APZ field. We require a self motivated person, with in depth knowledge of Trouble shooting methods as well as the ability to perform technical investigations into all aspects of APZ Software/Hardware problems in the CP/RP/EMRP.

The candidate must have proven ability in Test System, CPT and System Stoppage Handling. It will be necessary to handle ongoing Trouble Reports, therefore knowledge of MHS would be an advantage. The position will take the form of a two year contract and will be based in Montreal, although some travel will be required as wel as pager rotation and interwork with other Support groups within LMC.

It is essential that the candidate be fluent in English. If you possess the above characteristics and have the ability to Communicate with tact and diplomacy.

Contact: Adrian Gilli LMCADGI or Christian Giroux LMCCGIR

Ericsson Telecom AB, Operations and Complete Customer Projects, Operations Control, CEP – Compania Ericsson S.A., Peru

In the peruvian market we have passed from 180.000 lines end 94 to 850.000 lines actually. And in a similar way the company CEP has grown from almost 15 employees to almost 180 today. In our department Quality and Customer Services, to strengthen our technical support section, we are looking for you:

SW EXPERT & TROUBLE SHOOTER

● You will be working with the following functions: SW problems trouble shooting, TR analysis, 24H. emergency service, Introduction of ASM, creation and introduction of EC, Disturbance investigation. Our application systems are based on FMPA and BM2.4, so a lot of activities and problems concern diffrent subsystems such as ISDN, BGS and subscriber services.

This assignment period is for one year to start with, and we expect it to start as soon as possible, we offer an expatriate contract and the location is in Lima. Spanish language is very importent. If you feel that you have the knowledge and the will, and you are customer service minded let us know.

Contact: CEP/QC Victor Morkos, tf: +51 1 2641665, Memo: CEP.CEPVSM Or Anne Rundqvist tf: +46 8 681 2697, Memo: ETX.ETXARU

Ericsson Communicaitons Pvt Ltd, New Delhi

SYSTEM SUPPORT EXPERTS

India today is one of the fast emerging telecommunication market in Asia and with liberalisation of licenses for fixed and cellular networks,a number of vacancies have risen to strengthen our System Support department in India.

Our network consists today of GSM CME 20 systems for cellular and Locall Transgate application systems for fixed network.The positions are for a long term contract (1 year) in India. We are looking for people in following areas:

SS/BSS SYSTEM EXPERTS

● We are looking for one SS and and one BSS System Support expert to strengthen our support activities for CME20 GSM application product line. It is essential that candidates have a good knowledge of CME20 where at least three years have been spent in testing or customer support of CME20.

SYSTEM EXPERTS FOR FM AND BM PRODUCT LINES

● Two vacancies needs to be filled as soon as possible to handle our increasing support activities for local and transgate application systems, based on FMP and BM product lines. It is essential that candidates have good FMP and BM product line support experience with ISDN/ISUP TSS skills.

For all positions following applies:

OBJECTIVES: To provide technical expert support to Ericsson's customers and Field Support Centre within the coverage of the Field Support area. To be accountable and responsible for the efficient running of the System Expert function within FSC in order to reach a higher level of customer satisfaction.

RESPONSIBILITIES: To assist in building up the expertise and to transfer knowledge within the department. To make judgement of the most efficient way, technical and economical, to solve a problem. Full reporting shall be done.

MAIN TASKS : To review, develop and improve the procedures in Field Support. To ensure that all activities within the department meet the Ericsson quality standards. To identify, investigate and report or solve problems of a complex nature in both hardware and software. To able to explain highly technical issues to different levels within the organisation. To be part of 24 hrs emergency support service.

REQUIREMENTS: Long term technical experience in AXE support environment, preferable with FSC assignments abroad or extensive experience gained

in testing and verification of the products on the product line. It is essential candidates have good System skills knowledge e.g. switching, traffic concepts, telecommunications networks,inter exchange signalling and product functional demands.

System expert needs to be familiar with the product structure at a level equivalent to the components of a function block (software and hardware functions)

Personal skills as a thorough and methodical approach to work, be able to work as a team member, be flexible and responsive to changing work patterns and demands. Very good knowledge of English is a must.

Contact/Application : Nalin Taylor , Memo id. ECI.ECINALT, Phone : +91 11 645 1006 or +91 11 9810049912 Fax : +91 11 645 1005. Ericsson Communications Pvt Ltd, E-28/B-1, Extension Mohan Co-op, Indl Estate, Mathura Road, Badarpur, New Delhi-110 044, India.

Ericsson Eurolab Deutschland, System Management, Aachen, Germany

AXE MOBILE CORE, THE PLATFORM FOR ALL DIGITAL MOBILE SYSTEMS

AXE Mobile Core System Management is responsible for the system development of the core products used commonly by all Ericsson's digital mobile systems ie. CME20 (GSM), CMS30 (PDC), CMS40 (PCS) and CMS88 (D-AMPS). We are facing a lot of new challenges!

Fixed Mobile Convergence is driving us into environment combining the best out of two worlds. Fixed accesses like Primary and Basic rate ISDN, Transit and International Gateway functions are being combined with Mobile Systems like GSM, PDC, PCS and D-AMPS.

Our Data Services will need to provide higher bandwidth over the Radio interface, Packet data to the Mobile creates new challenges for our System Architecture.

Multiprocessing, 3rd Generation Wideband Cellular, Satelite Systems, In Service Performance need our strong system support. For more detailed information please refer to our Web Page http://www.eed.ericsson.se/services/eed-l-u/U-S

GROUP LEADER AMC SYSTEM

● AMC System activities are steadly expanding. To meet this challenge we want to split up the group to allow much more focus on the different areas.

We are looking for a group manager to take over a significant part of the AMC System activities.

As a suitable canidate, you are an Ericsson employee with at least 5 years of working experience and should have good system knowledge.

Any managerial experience (e.g. as group manager, team leader or project manager) or experience in the system area of a mobile or fixed Application is a clear advantage. The position requires initiative, good communication skills and a good ability to work under pressure.

AXE10 SYSTEM DESIGNER (ISP)

● AMC System Management has an overall responsibility to provide a technical superbe software to all Digital Mobile Systems.

We are expected to provide Software that exceeds the customers expectations on In Service Performance. ZERO DOWNTIME, that's the challenge, we gone make it. But we need your support to coordinate, drive and elaborate our efforts as well to keep our communication from AMC to the Mobile Applications, UAB and BX in such a shape that we can get the best synergie effects for Mobile.

We are looking for a system designer with at least 2 years of Ericsson experience.

AXE10 SYSTEM DESIGNER (Internet)

● Everybody is surfing on the Internet! We have to provide this service to Mobile subscribers connected to our switches. We plan to go for combined efforts with BU-X to develope and utilize the new INAX product. We need to integrate the INAX product into our AMC System.

Your role will be to keep the whole system view on this solution, to actively work towards BU-X, our Datacom Product area and support responsible Product Committees and Requirements definition for this area.

We are looking for a system designer with at least 3-4 years of Ericsson experience. Solid AXE-10 Software design experience is required. Work in the Mobile or Datacomm area and an interrest for Dataservices and Internet would be benefitial.

AXE10 SYSTEM DESIGNER

● We are participating in Pre- and feasibility studies. Investigating future possibilities and are often asked to take over tasks which require high competence, flexibility and professional work.

To strengthen our capabilities for this type of system work we are looking for an experienced system designer with more than 5 years of Ericsson experience in APT design to extend our technical expert team.

We are particularly interested in people who can provide significant competence in one or more of the following areas: AM System development, Signalling, Data Communication, O&M, Resource Module Platform, IN Development, Hardware Modernization, PDC system, D-AMPS system.

AXE10 SYSTEM DESIGNER (PC-AXE/PC-APT)

● Running PC-AXE 106 Mobile, PC-APT 210 25 as well as overall technical coordination of the Projects in the AXE Mobile Core (AMC) are responsibility areas of the system group.

To secure the long term responsibility of running PC-AXE 106 Mobile and PC-XSS 210 25 we are looking for an technical expert supporting the technical work on these competence centers. The main tasks will be participation in PC-AXE 106 Mobile and PC-APT meetings and support of the current chairman and technical experts in this committee. This is to prepare yourself to take over the full responsibility for running PC-AXE 106 Mobile or PC-APT 210 25 in the near future.

We are looking for an experienced system designer with more than 5 years of Ericsson experience. Good knowledge in at least one mobile subsystem in APT 210 15 or APT 210 25 would be benefitial. Previous work with a PC-ANT in APT 210 15 or APT 210 25 would be an additional interresting qualification.

AXE10 SYSTEM DESIGNER (PC-AXE/PC-APT)

● Running PC-AXE 106 Mobile, PC-APT 210 25 as well as overall technical coordination of the Projects in the AXE Mobile Core (AMC) are responsibility areas of the system group.

To secure the long term responsibility of running PC-AXE 106 Mobile and PC-XSS 210 25 we are looking for an technical expert supporting the technical work on these competence centers. The main tasks will be participation in PC-AXE 106 Mobile and PC-APT meetings and support of the current chairman and technical experts in this committee. This is to prepare yourself to take over the full responsibility for running PC-AXE 106 Mobile or PC-APT 210 25 in the near future.

We are looking for an experienced system designer with more than 5 years of Ericsson experience. Good knowledge in at least one mobile subsystem in APT 210 15 or APT 210 25 would be benefitial. Previous work with a PC-ANT in APT 210 15 or APT 210 25 would be an additional interresting qualification.

Contact: Hartmut Boehmer, EED/U/SC, phnoe:+ 2407 575 231, EED.EEDHBO or Doerte Kaulard, EED/H/R, phone:+ 2407 575 163, EED.EEDDKA.

The AMC organization is responsible for the development of AXE 10 products commonly used by all Ericsson's digital mobile systems i.e. CME20 (GSM), CM S30 (PDC), CMS40 (PCS) and CMS88 (D-AMPS). We are looking for

STRATEGIC PRODUCT MANAGERS AXE MOBILE CORE

● The general responsibility of this position is to work with the competitive ness and economical performance of products within the area's of AMC i.e.

Traffic Control, Intelligent Networks, Charging, Data Comunication, Network Signalling, ISDN Access and Network Operator Products .

The main authorities and tasks are:

- packaging Assignment Specifications received at AMC from the mobile applications to projects,
- participation in the AMC Project Steering Group,
- making sure that competitiveness and economical performance of products in the source system(s) are best possible over the life cycle of the products,
- to define the direction of development of products within AMC,
- creation of development plans for AMC,
- preparation of financial agreements on development and maintenance of products within AMC,
- representation of AMC in Tollgate meetings for projects financed by AMC,
- revision of financial agreements proposed by other business units,
- overall requirement responsible for AMC projects which includes participation in AMC Change Control Board,
- writing and inspecting detailed Requirement Specifications,
- approving Function Specifications.

The SPM reports directly to EED/L/U/XC. As a suitable candidate you have worked with front end activites and have a minimum of 3 years job experience. Both local and expat contracts will be offered. Experience from any of the areas above is a merit. In this position you will need initiative, good communication and cooperation skills and a good ability to work under time pressure.

Contact: Ulf Henell, EED/L/U/XC, Memoid EED.EEDUGH, Tel:+49-(0)2407-575-256 or Doerte Kaulard, EED/H/R Memo-id:EED.EEDDKA, Tel.:+49-(0)2407-575-163.

Ericsson Eurolab Deutschland GmbH, Germany, Aachen, Herzogenrath

Due to the increased responsibility of the Test & Support department for 1997 we are looking for two

CME20 SS PRODUCT LINE MAINTENANCE HELP DESK TROUBLE SHOOTERS

● PLM fills an intermediate role between the support (ESO and FSC) and design worlds assisting with, and coordinating the support of released products. One of our tasks is to provide Help Desk Support mainly in the form of "Hot" TR Troubleshooting. We are looking for two senior testers with good AXE10 troubleshooting experience. CME20 specific and previous support experience would also be an asset.

Contact: Peter Lopez, EED/X/SLC, Memo-Id:EED.EEDPELO, +49-(0)2407-575-201 or Doerte Kaulard, EED/H/R Memo-Id:EED.EEDDKA, +49-(0)2407-575-163.

Ericsson Communiations Inc., Montreal, Canada

UNIX HLR SYSTEMS ENGINEER

● LMC is now looking for a UNIX HLR Systems Engineer. The incumbent will be responsible for the overall platform specification, development and characteristics. This responsibility spans from the analysis of the system to verifying its characteristics during system testing characteristics measurements and/or field measurements.

Requirements are: a University degree or equivalent combined to 7 years of relevant experience, knowledge of TMOS Development Proce ss, of software development and testing, of Competitor/ External technology and industry standards, of general processing computers specifically UNIX based systems.

CHARACTERISTICS SYSTEMS ENGINEER

● We are now looking for a Characteristics Systems Engineer who will be reponsible for the system characteristics of the overall subsystems and product. This responsibility spans from the analysis of the system to quantify the present system characteristics to verifying this data during system testing characteristics measurements and/or field measurements.

Requirements are: A University degree or equivalent combined to 7 years of relevant experience, Knowledge of AXE 10 design, of LMC Development Processes and/or MEDAX Development Processes, of software development and testing, of competitor/external technology and industry standards.

Contact: PIERRE HACHE (LMCPIHA).

Ericsson, UK

ETL TECHNICAL TRAINING CENTRE

The UK Market place is a dynamic, evolving and strategically important market for Ericsson. As part of this evolution, ETL has decided to consolidate its customer training activities into a new premium quality training centre closer to London. This exciting new venture has created a number of opportunities for suitably qyalified candidates.

● We are looking for AXE TECHNICAL TRAINING INSTRUCTORS with a wide range of expertise eg. Overview and introductory courses, CME20 O&M Courses, O&M Advances etc. You must be able to quickly understand and interpret individual customer requirements and translate those into training solutions.

You will have at least 3 years experience in AXE 10, preferably in CME20 systems. You should have spent at least 2 years in a technical training capacity.

Contact: John Griffin - Head of Training +44 0831 638248

Ericsson Eurolab Deutschland, Germany

Our young Research & Development Centre in Herzogenrath, near Aachen, Germany, offers the following vacancies:

EARLY DESIGN PHASE PROJECT LEADER, CME20/CMS40 DEVELOPMENT

● The System and Product Management Department at EED (ie EED/X/D) has the responsibility to organise and run PAX (RMOG DSA Product Area Switching) projects before TG1. This includes the development phases Pre-prestudy and Prestudy. We are currently looking for a project leader to start as soon as possible, latest , for our MSC8.0 project (part of the DSA8.0 project). A similar role for future projects is a possible eventuality.

The suitable candidate will be someone who has good experience as a project leader and, if possible, experience in early design phase development (especially requirement definition phase).

The nature of Pre-prestudy and to a lesser degree Prestudy is that the project content is changing significantly and continuously.

In addition some aspects of the methodology during these early phases are not yet as well developed and clear as in later phases. As well the nature of this work is that it requires a project leader who has a good grasp (on high level at least) of the technical content of the project to help him/her make sound project management decisions. All these factors make for a very challenging position.

Contact: EED/X/DC Ari Peltonen Memoid: EED.EEDATP +49(0)2407-575-222 or EED/H/R Doerte Kaulard Memoid: EED.EEDDKA +49(0)2407-575-163.

System and Product Management Department (EED/X/D)

TOOLS, METHOD AND PROCESS DEVELOPER

● X/D department requires a tools, methods and process (TMP) developer to work with PAX early phase design (including pre-prestudy and prestudy). In addition the person shall work with *"system level" design TMP aspects, according to* AXE106 design model, for PAX development. This includes the System Modelling process (during feasibility study phase) and the System Coordination process (during execution phase).

The X/D TMP developer shall work closely with complimentary developers in AMC and later phase TMP developers in PAX to ensure that PAX has a set of tools, methods and processes for early phase design which is well coordinated with our key development partners.

Suitable candidates should have a significant level of experience in development (especially early phase design) and ideally some experience in tools and methods and/or process development. Nevertheless anyone who is interested in this sort of work and who believes that he/she can make a valuable contribution in this area will be considered.

This position will be located in the PAX system management group (EED/X/DE).

Contact: EED/X/DC Ari Peltonen Memo-Id: EED.EEDATP, +49-(0)2407-575-222 or EED/H/R Doerte Kaulard Memo-ID:EED.EEDDKA,+49-(0)2407-575-163.

Operation & Maintenance Systems Department EED/L/B

SENIOR DESIGNER

● Our most important development area is base station management for the OSS world. Within the TMOS development process, EED/L/B is responsible for Requirement Analysis, Design, Implementation, Basic and Function Test. The B/E and B/F design groups deliver the products to our inhouse Function Test group.

The position reports directly to the Group Manager. As a suitable candidate, you gained competence in OO design and C++. Experience with Sybase, Motif/X and the BSC/BTS product family is of advantage. Beside of that we offer an international, modern and open-minded work environment.

Contact: EED/L/BEC Andreas Daun, Memo-id:EED.EEDAND, +49 (0)2407-575-418 EED/H/R or Doerte Kaulard, Memo-id:EED.EEDDKA, +49 (0)2407-575-163

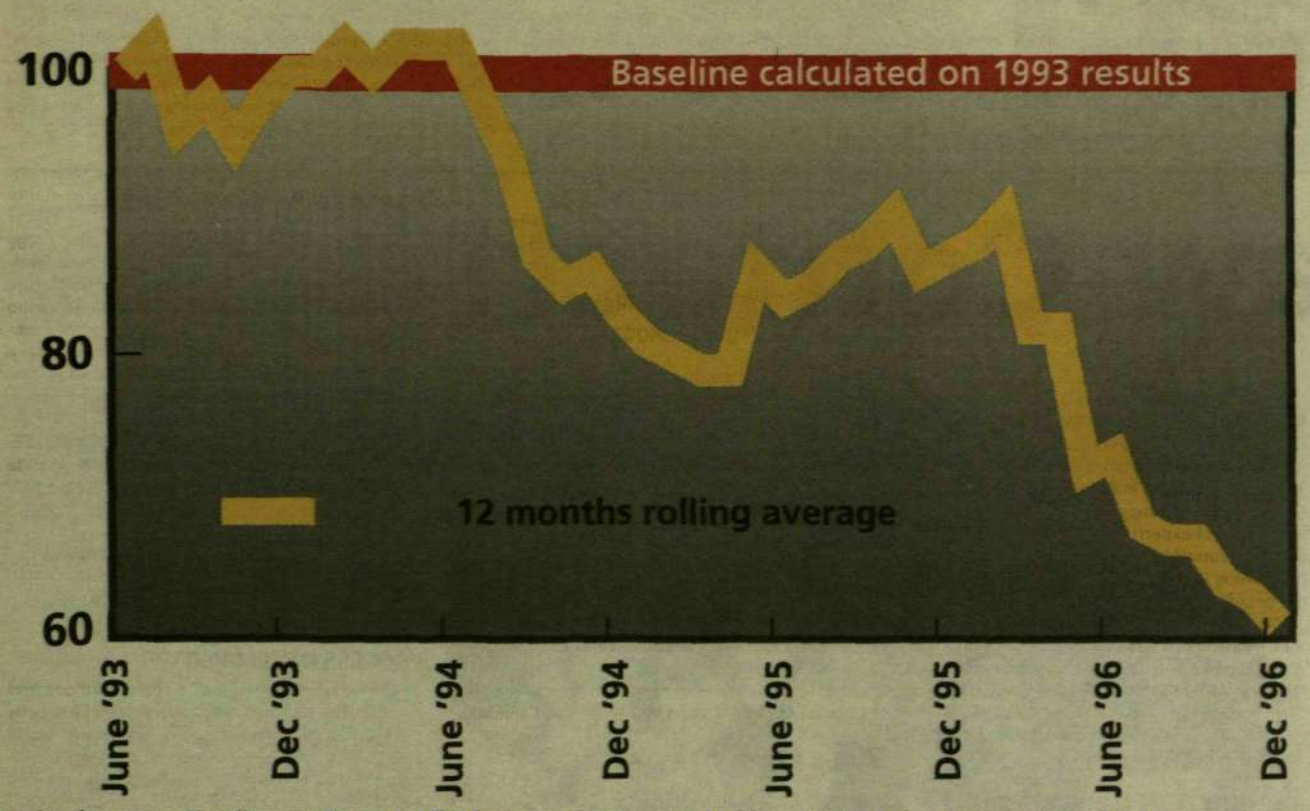
Design Maintenance responsibility from MET, EED/L/F

DESIGN MAINTENANCE EXPERT

● EED/L/F has the full responsiblity for the MMS Subsytem in CME20/CMS40. This includes also the responsibility for Design Maintenance. EED/L/F has formed a new group to carry out this task, /L/F/M. To complete this group, we are looking for a Design Maintenance Expert, to build up the competence within the Design Maintenance at EED/L/F.

We are looking for a person with: at least 2 years maintenance experience, either in Design Maintenance or AXE10 support. testing experience on target machine, preferably also SFT. good ASA knowledge. MHO experience. preferably also software design experience. ability to share knowledge with less experienced colleagues as you will act as a supervisor. good communication skills. good English language skills, both verbal and written.

Contact: EED/L/FC Bjørn Bakken, Memo-id:EED.EEDBJA, +49-(0)2407-575-427 EED/H/R or Doerte Kaulard Memo-id:EED.EEDDKA, +49-(0)2407-575-163



A pleasing curve: The diagram illustrates the fault density compared with June 1993, when introduction of Essi bagan. The result is undeniable: the error percentage in Ericsson software has fallen sharply.

Curve shows quality improvements

Problems related to software quality cost Ericsson and other software companies a great deal of money. In 1993, fault report processing expenses alone cost Ericsson SEK 1.5 billion. In an effort to improve conditions, Ericsson System Software Initiative (Essi) was introduced in June 1993 as a tool designed to increase quality and lead-time precision for software development.

Since its introduction three years ago, Essi has contributed strongly to a 50-percent improvement in lead-time precision and software quality. During 1996 alone, Ericsson saved hundreds of millions of kronor through improvements made possible by Essi .

Ericsson accounts for more than half of Sweden's total investments in software, with 15,000 engineers working exclusively on software development projects. The success of its development efforts, obviously, are extremely important to future products and operations. And especially now, since Ericsson has declared a shift toward greater concentration on software cultures, with software comprising a growing part of Ericsson products and development costs.

Objective not unrealistic

Bo Hedfors, former Senior Vice President, Corporate Technology, was the father of Essi, which made Ericsson the first company in Sweden to focus on the importance of software development. The cost-savings potential was recognized at an early stage, and Ericsson concentrated with full force from the very beginning.

In 1995, Ericsson determined that its objectives had not been achieved, and efforts to improve software quality were intensified. It was not until 1996 that curves started to point upward. Substantial savings have now been made by eliminating the need to trace faults and correct them.

"In brief, Essi is designed to improve quality and lead-time precision by 50 percent annually at every Ericsson design center. The objective is not unrealistic, we are proving that point now. There are also examples of other companies that have succeeded with similar efforts," says Anders Wästerlid, the man responsible for Essi's practical implementation in the parent company.

He explains: "There are different methods to measure quality. For example, we can count the number of faults per 1,000 lines of program code, or see how well we meet deadlines. To make comparisons between different units and different companies, we often use CMM levels (CMM: Capability Maturity Model), which are a form of maturity ladders that provide objective readings of progress in quality improvement by Ericsson's design centers."

Anders Wästerlid is responsible for ESSI's practical implementation.

More than 40 Ericsson design centers use the Essi method today.

Netherlands leads

"Maturity levels are beginning to provide a common platform to serve as the basic yardstick for measuring improvement," Anders Wästerlid continues. "Spain and the Netherlands have made the most progress. Program development personnel in the Netherlands were the first in Ericsson to reach CMM level 3."

Keith Dyne is development manager at Ericsson's Dutch R&D center in Rijen.

"Essi came along at the right time for us. In 1993, we started to experience some quality problems and delays. We faced serious challenges. When we heard about Essi, we knew immediately it was the tool we needed to solve our problems. We volunteered to serve as a test center for the new method," Mr. Dyne explains.

Big difference

"Once we started working with Essi and CMM models, our project leaders and software development engineers recognized a big difference in results almost immediately. In the beginning of 1994, independent auditors classified our design center at Level One on the CMM scale. At year-end 1995, we became the first Ericsson unit to reach Level Three," says Keith Dyne.

"We have worked hard to succeed with Essi, but we wouldn't have been able to do it alone. Parent Company personnel working with Essi have been a tremendous help."

Management support

It's not easy to implement continuous improvements, which is precisely what Essi is all about. Many have failed because of inadequate support from management, or insufficient visible support, which can also be caused by limited resources or unrealistic expectations.

"I believe Ericsson has excellent potential for continued success in this area. We know management supports and understands the importance of first-class software development programs," Anders Wästerlid explains.

It is also a key requirement for good profitability. Software dominates Ericsson's development costs, accounting for 70–80 percent of R&D expenses. During recent years, costs incurred to correct software faults after delivery have also increased dramatically.

"To achieve significant success in this area, it is essential that we don't try to do everything at once. We must concentrate on a few important elements at a time. Every year, we gather more information from Ericsson design centers using Essi , and compile a few points that we consider important for operations during the next year," Anders Wästerlid concludes.

PATRIK LINDÉN

FOOTNOTE: More information about Essi can be found on the home page of Ericsson's intranet: (http://lmeq.lme.ericsson.se/eqi/new_essi.main.btm).

Not solely for systems developers

Essi is not directed solely at software developers. Since software makes up a large portion of Ericsson's products, everyone has an interest in ensuring Essi's success.

"When we analyze the causes of operating failures in AXE nodes, we find that half result from faults in the software programs," explains Mats Köhlmark, head of the business unit for Japanese-standard mobile telephony at Ericsson Radio Systems, who is also a member of the Essi management group. "We can go a long way toward achieving our goal of entirely eliminating operating failures by ensuring that the objectives of Essi are fulfilled."

He is not alone in recognizing the value of Essi. His feelings are shared by Göran Olsson, head of AXE development in the Switching business unit at Ericsson Telecom.

"Our customers themselves face demanding time requirements," explains Göran Olsson. "It can happen that their business concept is only valid for a limited time, so it is crucial that we, as their supplier, do not let them down. If we cannot be ready on time, they are simply not interested in doing business with us. And if we fail to meet the Essi objectives, we stand to lose a large sum of money."

Jan Mikael von Schantz, head of Ericsson Finland, comments: "It is no longer the case that we can pick and choose our customers. We have to be good enough to ensure that they choose us. Essi is a good way to keep our standards high. It isn't just a question of working harder but also of working more effectively. Essi can help us to spot ways of achieving this."

Both Göran Olsson and Jan Mikael von Schantz are members of the Essi management group.

Wise words

■ While it is true that software quality and keeping to lead times are important factors, given the cost of delays, it is still worthwhile pondering the words of industry guru Tom DeMarko:

"Your future does not depend on how you build your software, but on what software you build upon!"

contact

Ericsson, HF/LME/I, Rum 811023, 126 25 Stockholm POSTTIDNING A

The new Contact!

Welcome to Contact 1997. At first glance, it might look the same as the old Contact in many respects but, trust me, this is a new publication!

We have reached the year 1997 and Ericsson has a new organization. When the former organization with five business areas, was put to rest, some of Contact's former business area enclosures were also left behind. Publiken, Vår Business and BK Dialog – all just fleeting memories. Era Nyheter, maybe under a new name, and Sensorn will probably survive.

New year, a new publication

In place of business area supplements, Contact will present a wide variety of local news you were accustomed to reading in the now-defunct features. Under the heading "Ericsson worldwide," we will report all kinds of news that takes places everyday throughout Ericsson. To fill the pages with newsworthy material, and to broaden our perspectives, we have also started a program of close cooperation with information personnel working on local publications at different locations. Recently, 30 of them gatherered at a special meeting to mark the start of regularly scheduled group meetings.

If you have some interesting news for "Ericsson worldwide," contact any of the persons listed below. You are also welcome to call Contact's editorial office, but your local representative is the channel of choice.

Theme supplements

Another new Contact feature will be the type of theme supplement you will find enclosed with this edition. Every other edition of Contact will include a complete review of a topical subject. Not unexpectedly, we have started with "2005 – Ericsson Entering the 21st Century." The next theme will be Ericsson's various forms of product supply. We shall review the comprehensive changes that already characterize production operations – outsourcing not to be overlooked.

Also included as a novelty in the new Contact is our coverage of world news in the Tele/Infocom industry. News coverage will include reports about our competitors and the restoration of an old institution in Contact, the "Outlook" section, featuring columns and contributions about the telecom industry by well-known journalists and industrial analysts. Several different names will be seen atop this column, some more often than others.

Standing from the left: Nils Sundström, Gunilla Tamm, Inger Björklind Bengtsson, Patrik Lindén, Britt-Marie Wihdén, Thord Andersson, Anneli Krantz, Lena Widegren and Lars-Göran Hedin. Seated Pia Rehnberg.

More publications outside Sweden

Our readers outside the Swedish-language Nordic countries will see a big improvement in information services.

The English-language version of Contact will be published as often as the Swedish, which is every two weeks. To gain time in terms of proofreading and language editing, Contact will be published one week after the Swedish version. With its circulation of more than 20,000 copies distributed throughout 88 countries, the English-language version of Contact is an extremely important asset for the creation of "a sense of belonging" in Ericsson's international organization, in the way we hope the swedish Kontakten fulfills the same purpose.

We'd like to hear from you!

For those of us who work in the editorial office, nothing is more important than staying in touch with our readers. If you have an opinion, a good idea or any other form of contribution, do not hesitate to contact us. Our mailing and e-mail (memo) addresses are always found on page 3 of the newspaper, as well as the names of the crew that comprises Contact's editorial staff – Pia, Patrik and myself, as well as Anneli, Britt-Marie, Gunilla, Inger, Lena, Nils and Thord, who work at various vantage points throughout Ericsson's vast organization.

I hope our efforts to renew and vitalize our publication will meet with your approval. Did you know, by the way, that Contact will celebrate its 60th anniversary in just a few years. The newspaper was started in 1939!

LARS-GÖRAN HEDIN

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end line

Without the keys, it's a computer jungle

Ericsson is one of world's leading companies in the field of information technology." That's what it says in the description of where Ericsson hopes to be in the year 2000, halfway between now and 2005. Not a shocking statement, actually, for a company that already ranks as a world leader in telecommunications. But still, it seems so remote, so far in the future, for us who struggle with the everyday realities of here and now, especially when it comes to computer support and LAN functionality.

I find it difficult to imagine that there is any other major Swedish company as woefully endowed as Ericsson's Parent Company in terms of computer support and computer networks.

For the past few years, we have been blessed with something called LME-LAN, our own intranet. Through the years, we have become more dependent on the system. However, in parallel with its growing importance, network stability has been undermined.

We keep our fingers crossed every time we produce address material for Contact, hoping against hope the system will not crash during the two hours required to complete the process.

If a password can be changed without having to call LAN support, we're overjoyed. We're even happier if a call to the support unit gets answered.

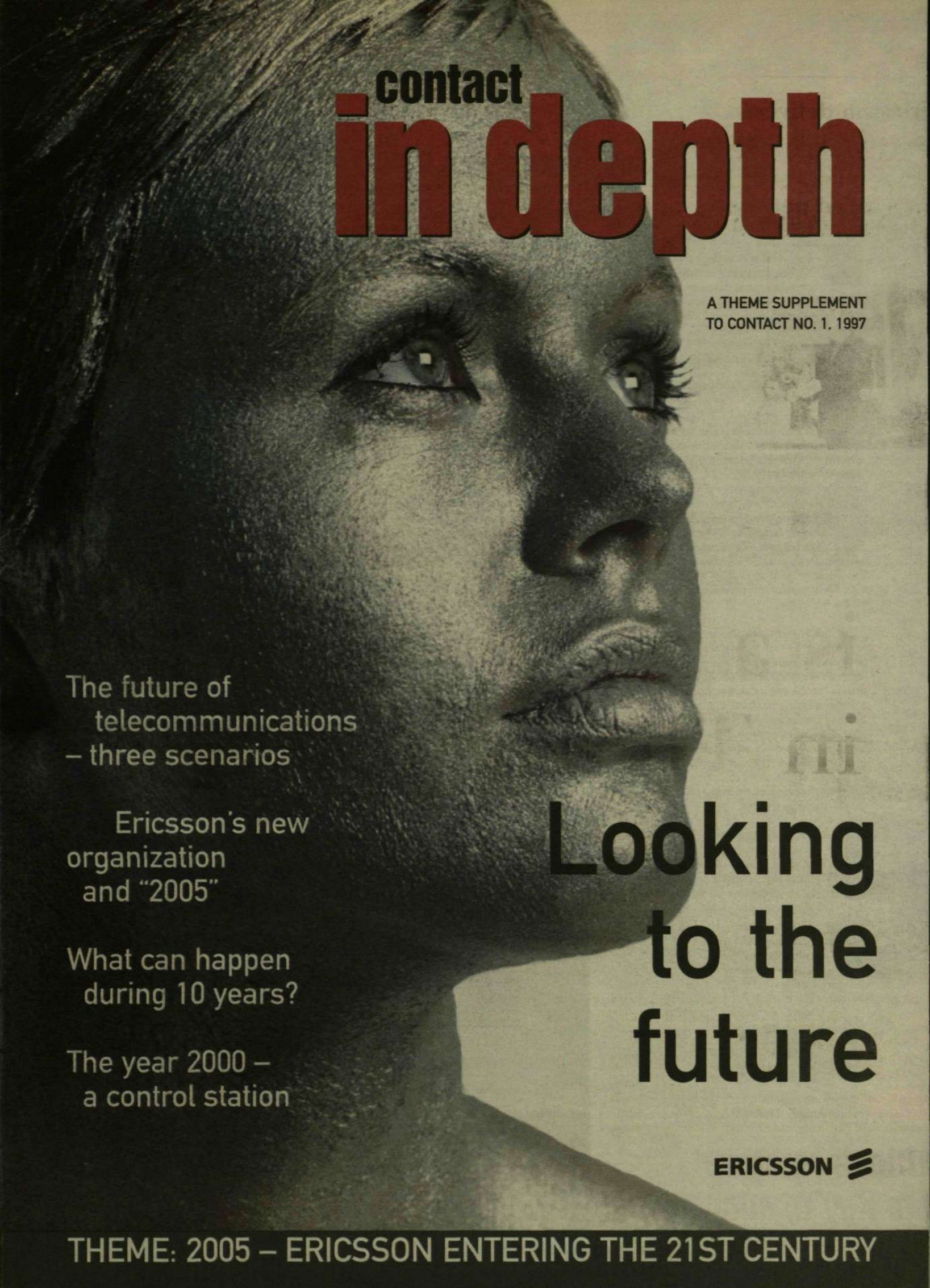
I absolutely do not wish to question in any way the competence of my colleagues in the support organization. I am also extremely reluctant to say that people in charge of the intranet are incompetent.

However, I am convinced that somebody, higher up in one hierarchy or another, does not have a firm grasp of what's really going on down here. Many of our problems are due to the actual organization, of that I am also convinced.

I could spice up this column with a variety of anecdotes to describe the IT inequities that abound at Telefonplan, but there is neither time nor space.

I only hope this little look into the mess that prevails will make some responsible person somewhere in the organization look into the situation. All other attempts have been in vain, and we're beginning to get a little bit desperate.

LARS-GÖRAN HEDIN



contact in depth

A THEME SUPPLEMENT
TO CONTACT NO. 1, 1997

The future of telecommunications – three scenarios

Ericsson's new organization and "2005"

What can happen during 10 years?

The year 2000 – a control station

Looking to the future

ERICSSON

THEME: 2005 – ERICSSON ENTERING THE 21ST CENTURY

"2005" – does it concern me?

Our world is changing constantly. And especially our industry. Forecasts are made continuously by different analysts, and the common denominator for all forecasts is: they're always wrong. As for "2005 – Ericsson Entering the 21st Century," you might ask: why is this probe of future business trends more interesting than others and how does it concern me? And is it worth an entire supplement in Contact?

There are several reasons why "2005" is special. First of all, it is the most ambitious effort in the history of Ericsson to study and understand the future. Secondly, "2005" is not an etched-in-stone forecast or a rigid 10-year plan outlining future operations. It is an attempt to improve our understanding of future business conditions in the telecommunications industry. The knowledge and insights provided by "2005" will enable us to adapt quickly to changes in the world around us, without necessarily providing a clear picture of the future.

The "2005" study will make us more flexible and fleet-of-foot. In simplified terms, it will make us more vigilant and receptive to changes in our world. Large organizations always run the same risk that victimized many prehistoric creatures that couldn't adapt to change and eventually become extinct. To retain its position of market leadership, Ericsson's entire organization must be aware of common business pursuits, continue to strive for the same objectives and understand philosophies that will apply in future business operations.

This entire Contact supplement is devoted to "2005 – Ericsson Entering the 21st Century." It is an attempt to show the significance of "2005" efforts and, hopefully, conjure up constructive thoughts about the future and how it will affect everyone of us.

PATRIK LINDÉN
Editor of this Supplement

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Cover photo by: Gunnar Ask

A new age in telecommunications

BY: LARS-GÖRAN HEDIN
PHOTO: GUNNAR ASK

Ericsson's business operations are concentrated in one of the most dynamic industries in the world– telecommunications. The industry is characterized by rapid and sweeping changes that make it extremely difficult to forecast future trends. To provide basic information on evaluations of future market conditions, Corporate Management took the initiative to conduct a comprehensive look into the future. The study is called "2005 – Ericsson Entering the 21st Century."

One of the most dominant trends in Ericsson's world of business operations is the ongoing confluence of telecommunications and data communications. As the two industries approach each other to form a new "Infocom industry," several different technologies are being created that address one and the same need – demand for multimedia communications.

- Mobile or fixed telecommunications
- IP (Internet Protocol) communications or other forms of data communications
- Cable-TV or satellite-based radio/TV

As a result of market diversity, many new players are entering the arena. One way to understand more easily the changes now taking place is to study the so-called "value chain" in telecommunications. Traditionally, the value chain has been divided into three clearly defined sectors where three different categories of companies have operated: suppliers of components, suppliers of telecom equipment and systems and, finally, telecom operators. Ericsson and its competitors have always operated in the middle of the chain, while telecom operators have managed the largest sector closest to end-users.

DEREGULATION OF TELECOM MARKETS HAS FORCED operators to focus more strongly on competitive services for end-users. As telecom operators advance their positions in the value chain, they relinquish parts of their traditional operations to other players.

The withdrawal of operators from various market segments has created new business opportunities for Ericsson in network construction, telecom network operations and administrative support systems. The components industry is also advancing its positions. With the increasing intelligence and functionality now built into silicon chips, it is easier today for components companies to manufacture complete telecom products.

Telecommunications networks are of little value to users if there is no information to transmit. It is interesting, therefore, to examine the value chain that applies to information content, which comprises five distinct areas:

- the contents as such
- packaging of contents and services
- distribution of contents
- services and software that provide access to contents
- equipment for end-users.

THE VALUE CHAINS FOR TELECOMMUNICATIONS and technical content can be combined with each other. Every step in the content value chain can be divided into underlying steps that correspond to the telecommunications value chain – from components and subsystems via systems and platforms to services and applications. In its work with "2005," Ericsson used the combined value chains to analyze opportunities and threats presented by future market conditions.

"2005" analyzes future scenarios

Ericsson's present operations are concentrated in two different areas. In the distribution sector, the Company conducts business operations in all three underlying segments, with components, line interface circuits, AXE exchanges, mobile telephony systems, intelligent networks and related operations. Today, Ericsson is also firmly established in the sector comprising equipment for end-users, with mobile telephones and computer modems.

There are several areas in the combined value chain in which Ericsson has no operations whatsoever. "2005" was designed to analyze and study more carefully various future scenarios and possible business pursuits in the value chain. ■

Lennart Grabe, Senior Vice President, Corporate Business Development, headed the analysis of future business scenarios in "2005 – Ericsson Entering the 21st Century." More than 500 experts, including external consultants and Ericsson employees, took an active part in the project, which involved thousands of hours.

Scenario 1
SERVICE MANIA

Scenario 2
GRAN TRADIZIONE

Scenario 3
UP AND AWAY

Choosing a path into the future

Considerable efforts were focused in "2005" on different views – scenarios – of future business prospects and operations. With the help of various scenarios, Ericsson hoped to create a foundation to evaluate which scenarios may become the most profitable segments of future business operations in the Infocom industry. And to examine the effects on business opportunities if development trends veer off in different directions.

LARS-GÖRAN HEDIN
PHOTO: GUNNAR ASK

One scenario contains absolutely no visions or predictions of the future. Instead, it comprises a description of a possible future. A good scenario is credible, despite being basically speculation about the future. It must have an inherent consistency and logic, placing special emphasis on uncertain factors, such as "who will win the battle for end-users?" or "how far will deregulation be extended in the telecommunications industry?" Or, perhaps the most burning issue: "how successful will the Internet be?"

Ericsson's scenarios were based on strong trends in today's telecommunications industry. Several current trends will have a very strong impact on future development. They can be summarized as eight driving forces behind future development.

- Increasingly intelligent microelectronics
- Computer industry expansion
- The Internet's incredible growth rate
- Growing importance of end-users in the telecom industry
- Increasing wave of internationalization
- Continued strong growth for mobile telephony
- Deregulation of telephony continues
- The borders between the three industries, telecommunications, media and computers become increasingly blurred.

The three scenarios presented differ by assigning greater or less emphasis on certain of these driving forces. The main points of these three scenarios are presented on the following pages. As in all scenarios, these are an expression of what we believe may be ahead in the future. The three scenarios are called Service Mania, Gran Tradizione and Up and Away. ■

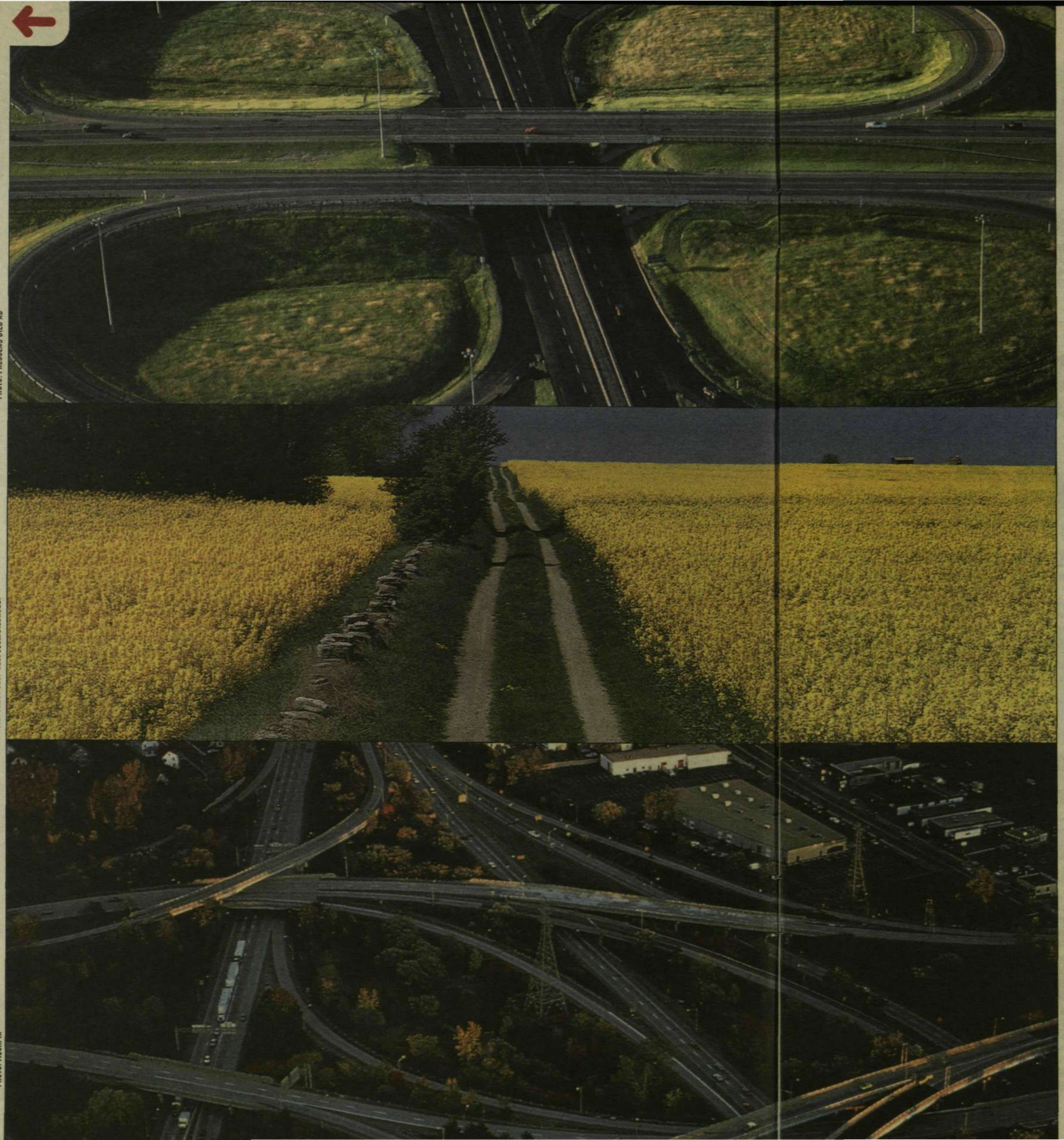


PHOTO: PRESSENS BILD AB

PHOTO: BENGT OLOF OLOFSSON/BILDHUSET

PHOTO: MEGAPIX

Brokers will help us find our way

Scenario 1
SERVICE MANIA

The scenario called Service Mania focuses on access to information and services that dominate the interest of end-users. In this scenario, end-users in the year 2005, including private persons and corporations, turn to brokers, or agents, to help them find and gain access to suitable information packages and interactive services. Professional users prefer to sign contracts with specialised communications networks. TV channels successfully defend their positions against the Internet.

In this world, end-users do most of their business with brokers, who contract companies that provide the actual information, package and distribute it. Brokers might also provide customers with appropriate terminal equipment. Users are offered several alternative methods to access the network, depending on which service package they choose. Network operators also serve as suppliers to brokers.

The broker's role attracts a large percentage of traditional telecom and cable-TV operators. They work in cooperation with other media companies that provide and create the actual information, or package it.

Economically, companies that supply the contents and services are the big winners in this scenario. A large part of revenues will also be transferred to distribution, however, based mainly on the anticipated intensive growth of mobile telephony. The end user, in turn, will not even notice what happens in the background; he/she will simply pay for information and services. ■

People more important than technology

Scenario 2
GRAN TRADIZIONE

Traditional values are the controlling factors for end-users in this scenario. It has been said that human beings are basically conservative. If human conservatism prevails in the control of market development, it seems feasible to assume that end-users will rely on their traditional operators. The operators, in turn, will provide end-users with the basic services they need, and end-users will purchase their own equipment. Internet has in this scenario not really taken off in a way that many had predicted.

Behind this behavioral pattern, there is a strong tendency among human beings, particularly in the western world, to place greater emphasis on such values as the environment and family, rather than technology.

The Gran Tradizione scenario projects declining prices for communications services, compensated by increased traffic and continued cost rationalization by operators. The result is a sharp reduction in the number of operators on the market. Surviving operators will be strong companies that offer both cordless and wired communications services.

End-users will turn increasingly, but only on a limited basis, directly to companies that sell information to satisfy the need for electronic information services.

Because end-users will pay primarily for actual communications, substantial investments will be made in traditional networks. This will be particularly true in developing countries, where cordless access to networks will make a major breakthrough as a cost-efficient means of expanding networks. ■

Advertising makes information inexpensive

Scenario 3
UP AND AWAY

In the Up And Away scenario, end-users gain access to sophisticated communications solutions virtually free of charge. The only cost items will be their terminal equipment. Manufacturers of the equipment pay for the communications and provide end-users with access to communications networks.

Commercials and advertising will cover the cost of content and its presentation. End-users will accept the fact that advertising appears on their terminal screens whenever they log on or connect to one of countless information banks, entertainment services or other services offered on the network.

People with money will be willing to pay extra for access to premium services, for example, exclusive sections of the Futurenet, a worldwide communications solution predicted be many analysts as the Internet's successor. The Futurenet, a broadband network, will handle everything from multimedia and video to conventional TV transmissions and telephony.

A large percentage of end-users will prefer mobile access to the Futurenet. In the Up And Away scenario, mobile access provides the same range of services and functionality as wired networks.

Technical development will make actual communications simple and inexpensive. Several traditional telecom operators will fall by the wayside and drop out of the market, leaving only a few regionally based operators.

With new technologies, it is no longer necessary to make large financial investments in networks. And the manufacturers of terminals and other equipment for end-users will be the industry's big money makers. ■

10 critical issues

How will various "2005" scenarios affect Ericsson's business opportunities? On which issues must we act to meet future demands?

ILLUSTRATIONS BY: JAN OLSSON

BY: LARS GÖRAN HEDIN

New business opportunities increase demands on Ericsson

FUTURE DEVELOPMENT TRENDS in the telecom industry will create new business opportunities for Ericsson. The three scenarios of future market conditions strengthen the Company's prospects. In its "2005" analysis, Ericsson compares its present capabilities and skills with projected future demands on business operations. To limit analytical efforts, Ericsson concentrated on six business segments considered to be the most attractive for its future business pursuits. Basic demands on skills and expertise comprise a common denominator for future efforts in all six segments and the core technologies that apply to their implementation.

THE IDEAL FUTURE WORLD FOR ERICSSON varies a great deal, depending on which business segments are identified. In most cases, it involves a combination of all three scenarios and their respective support of the Company's business segments. The theory is beneficial to Ericsson, since the most probable trend of development will not follow any of the defined scenarios, but rather will fall somewhere in between all three. History may also prove that various parts of the world will follow different development trends.

Regardless of how various prospective scenarios materialize and dominate future business trends, Ericsson has a strong point of departure. With its broad customer base and the strength of installed systems, Ericsson has a relatively strong starting position. Nevertheless, the choice of Ericsson's strategic path is extremely important as we approach future market conditions in new areas that offer highly promising commercial opportunities. To further support fundamental philosophies for future business strategies, Ericsson has identified several critical issues on which the Company must focus to become even stronger in the future – regardless of which scenario proves to be the most accurate. There are 10 issues critical to Ericsson's future success. ■

Corporate Management "on the road"

BY: PATRIK LINDÉN

"My job is to serve as the extended arm of Corporate Management in Asia. My sphere of responsibility stretches from Pakistan to Japan," says Bo Landin, Senior Vice President, Corporate Managment, responsible for Asia/Pacific.

For the past year, Bo Landin has been working from an office in Hong Kong, as opposed to Stockholm where all other members of Corporate Management are based.

Bo Landin carefully emphasizes that his base of operations is not a new regional unit in Ericsson's organizational structure, but rather an extension of Corporate Management designed to establish closer proximity to customers and local companies in the Pacific Basin.

"You might think Corporate Management doesn't really need a hands-on representative in Asia, which is only an airline flight from Stockholm. Appreciating the fact, however, that Stockholm is situated in a completely different time zone and a totally different culture, it's easier to understand the importance of my presence in the region."

THE PURPOSE of Bo Landin's presence in Hong Kong is to gain a greater overall insight into regional perspectives and to help Ericsson companies recognize synergies, or operational areas in which all Ericsson units can benefit from greater coordination. Bo Landin strives to establish Ericsson companies in the region as experts in various aspects of overall business operations. To cite just a few examples, Ericsson's company in Singapore specializes in various aspects of project financing, while Ericsson Malaysia concentrates on training programs for employees in all parts of the Asia/Pacific region. Specialized resources in various countries are made available to all Ericsson companies in the region.

"I haven't built up a staff of any kind. It's just me and a secretary; we really don't need any more. We might lose sight of our mission here," Bo Landin explains. "I'm 'on the road' most of the time, visiting companies throughout the region," he continues.

REGIONAL DIVERSITY

Ericsson needs to deploy resources and competence closer to the customers in all regions of the world. ●

"An important part of my job is to 'open doors' to contact people at higher levels, politicians, for example, and other powers that be throughout the region. There is a certain advantage in maintaining some continuity in having the same person, in this case me, coming back to visit every time. Local presence is always important, and perhaps even more important in Asia. Swedes talk about an Asia culture as if there is only one. After having worked here for a while, I understand there are several different Asian cultures in every Asian country," says Bo Landin.

ERICSSON HAS ASSIGNED special priority in 1997 to improving its understanding and influence in commercial blocs in all parts of Asia. In free trade areas of the world, for example Europe and North America (EU and NAFTA, respectively) Ericsson has relatively strong influence and insights, as well as full-time lobbyists protecting the Company's business interests.

It is now time to acquire better knowledge and enhance opportunities to exercise greater influence in APEC and ASEAN, two of the most important commercial trading blocs in Asia.

"We simply must recognize the irrefutable fact that Asia will account for the greatest surge in world market growth and that 25 percent of Ericsson's total invoicing is booked in this region. It's only natural, accordingly, for me to make sure that resources and expertise are transferred to Ericsson's local companies in parallel with overall growth in this dynamic market region," concludes Bo Landin. ■

New design for personal pagers

BY: LARS ERIKSSON AND NILS SUNDSTRÖM

UNDERSTANDING END-USERS

Ericsson's customers compete with each other for end-users. Their needs and demands, accordingly, not technology, will be a major force in future market development. ●

First impressions usually have more lasting effects. As differences between technical functions for various personal pagers on the market become fewer, colors and esthetic design features will become more important to consumers. Ericsson asked consumer groups to test various proposals in preparation for the launch this spring of its first personal pagers for nationwide networks.

"We have chosen what we consider a young style, not totally conventional in terms of appearance, for our new personal pager. At the same time, however, the market profile we have established with mobile telephones is readily identified as an Ericsson product," says Kary Warnerman, manager of nationwide personal pagers at Ericsson Radio Messaging.

Technical development continues on pagers designed for large standards, but Ericsson's first personal pagers comply with the new European Ermes standard (European Radio Messaging System).

Market introduction is planned in conjunction with the large CeBIT data and telecommunications exhibition in Hannover in March.

Ericsson pagers are available in two different models: numeric and alphanumeric, the latter of which displays text and graphics. As opposed to many square pagers now on the market, Ericsson's pagers are asymmetric and project streamlined design features.

"We wanted Ericsson pagers to stand out, compared with other models on the market. More extreme designs are also state of the art in everything from cars and cameras to electric shavers. And we believe the overall trend in product styles and designs is here to stay," continues Kary Warnerman.

All research and development work on pagers is concentrated in Emmen, at Ericsson's plant in the northeastern region of the Netherlands. Close coordination of research, production and marketing was established early in Ericsson's development of personal pagers.

Before the basic design was established, Ericsson tested several proposals with selected consumer groups to determine exactly which features appealed to consumers.

"The groups comprised persons representing different age groups, and the surveys were conducted in Europe, the U.S. and Asia," Kary Warnerman explains.

Every participant in all surveys was interviewed for at least two hours and answered questions about why and how they use personal pagers.

"The answers reflected various lifestyles, but they also pointed out large differences between different countries. In the U.S., for example, a more mobile lifestyle was accentuated, as well as greater requirements on accessibility, compared with corresponding surveys in the Netherlands, for example.

The objective of various user groups was not focused on compiling isolated statistics.

"We were trying to gain insights into what people think and what sort of products they prefer. However, when a company develops a product and wants to introduce it on the market within the next few years, it has to exercise caution with various consumer reactions. There are always risks involved with the launch of something new and different. The general public cannot possibly know if a product will be marketable and attractive three years from now, since their answers are based on their perceptions and comparisons here and now."

Long development cycles for new products always run a greater risk of making a wrong turn somewhere along the way, coming on the market too soon or too late.

"You have to find a technical solution with esthetic features that can be adjusted and adapted to shifting market demands," says Kary Warnerman.

Why would anybody need a personal pager today, when mobile telephones have become more sophisticated and capable of transmitting voice, text and data?

"It's cheaper," Kary Warnerman answers simply. "The price tag makes personal pagers attractive now and in the immediate future. It's also relatively inexpensive and less time-consuming for operators to build personal paging systems that cover large areas and make the service cheaper for end-users."

There are about 90 million personal pagers in use throughout the world. By the year 2000, there will be 200 million. Some will be supplied by Ericsson.

"We hope to become a major player," Kary Warnerman concludes. "Since Ericsson sells personal paging systems, we want to support the systems by marketing pagers, which will also provide a supplement to sales of mobile telephones. By expanding Ericsson's product range, we can also increase our market presence and strength."■

Open platform to supplement AXE

BY: LARS CEDERQUIST

"It's almost too good to be true," says Jorma Mobrin, who works in the Parent Company's technical engineering unit, referring to Ericsson's new OTP telecom platform. The platform is already being used efficiently in several projects, successfully adhering to time schedule requirements.

In compliance with established policies that recommend open systems and standards in the emerging new world of telecommunications, Ericsson has developed its own Open Telecom Platform (OTP).

OTP PROVIDES VIRTUALLY COMPLETE FREEDOM to combine different machines and software products. Erlang, a programming language developed by Ericsson, comprises the core of OTP, but the open platform is by no means dependent on a single language.

"We developed OTP in Erlang simply because is was highly suitable for our purposes," explains Jorma Mobrin. "It's an extremely powerful tool used to produce prototypes free of defects and imperfections."

OTP was created in one of Ericsson's controlled bidding procedures.

"In the autumn of 1995, we had to choose a platform for construction of broadband ATM products," Jorma Mobrin continues. "Three platform proposals were submitted, including the new OTP and Ericsson's tried and tested AXE 10 platform"

Ericsson's made its final decision at year-end, and OTP emerged as the overwhelming choice in terms of scheduling aspects and price performance. The open system was superior to the closed AXE 10 concept for purposes reviewed in the bidding contest. The new platform was described as a 180-degree reversal, compared with traditional platform systems used in the old, closed world of telecom.

"The choice of OTP does not question the integrity of the AXE 10 track, not in the least," Jorma Mobrin emphasizes.

On the contrary, AXE platforms will continue to be used for traditional applications such as heavy switching nodes in mobile and wired networks, while OTP serves as a supplement for special ATM nodes. It is also feasible to "tandem-connect" the two platforms with each other.

"OTP will provide Ericsson with a second main track, and we are concentrating on formulations of decision-making criteria to determine the most suitable applications for the different tracks. Generally speaking, C-code is still preferable when functionality is critical in time considerations," Mr. Mobrin continues.

It should also be noted that old, "closed" systems adapted specially for Plex, the AXE language, have undergone considerable developmental updates, and the new "high-level Plex" version has upgraded the language to levels comparable with Erlang. The entire AXE concept is being opened and, today, only the system's central processor remains closed.

OTP WAS A SORT OF PAPER PRODUCT for a long time, but the platform has now been tested in several projects. Initial tests were conducted on mobility servers in business networks, and OTP is now being used successfully in commercial operations.

Early results are promising, but the true test for OTP will come in 1997, when the open platform concept combined with Erlang will prove to be the right choice, leading to reduced lead times, increased productivity and high-quality software.

In conclusion, Jorma Mobrin places special emphasis in explaining that OTP is not some monolith, or a form of solid unit; it can also be used on top of several different operating systems, including Windows and Unix. OTP will also support Java and C programming languages.

"It's important to remain open and find the best solution for individual applications. We are a systems supplier, and our customers don't care what parts are included in our systems." ■

SOFTWARE CULTURE AND OPEN SYSTEMS

Software accounts for a growing percentage of products sold by Ericsson. In the past, our corporate culture was dominated by hardware production operations. We must adjust, accordingly, to a new culture for software-oriented operations, a culture characterized by more open systems than we are accustomed to from operations in the traditional telecommunications industry. ●

This is OTP

■ OTP (Open Telecom Platform) is a software platform based on Erlang, a programming language that offers a broad range of functionality.

Erlang/OTP contains:

- Support and regulations for building fault-tolerant applications.
- Design patterns, comprising built-in framework codes for various types of common processes.
- Support and regulations for configuration and start-up/restart.
- Distributed systems, which means system components designed for OTP do not have to be run physically on the same processor.
- Distributed real time MNESIA database.
- Support for coordination of parts/components developed in programming languages other than Erlang. Other languages can be included in OTP systems as regular subsystems. For purely theoretical purposes, all parts may be written in programming languages other Erlang. However, an Erlang run-time-system must always be up and running since OTP is implemented in Erlang.
- Functionality for changing codes during operations, i.e., release-upgrades of system parts or the entire system.
- SNMP (Simple Network Management Protocol).
- Internet-related functionality (for example, HTTP servers).

The art of communicating with customers

BY: JOSÉPHINE EDWALL-BJÖRKLUND

CUSTOMER-DRIVEN SOLUTIONS

Ericsson's products should help customers achieve their business objectives.

The AXE User Forum is a successful example of how operators and Ericsson work together to solve problems. The forum provides Ericsson with valuable information and knowledge it uses to develop complete solutions for telecom customers.

Years ago, Ericsson was not held in the same esteem it now commands from AXE customers. Today, based on the AXE user Forum, overall tones in the marketplace are much improved. Operators on the User Forum agree that Ericsson is moving in the right direction and becoming more receptive to their needs.

"You have understood our problems and started to think like us," says Silvio Valeau, a management representative of Telecom Italia and AXE User Forum member for the past six years.

Telia holds the gavel when telecom operators from all parts of the world meet with Ericsson representatives to pursue a common goal: more satisfied customers. The fact that many Forum members compete with each in the telecom market is immaterial. The focus is placed on improving technologies and increasing customer satisfaction.

The AXE User Forum was established in 1982 by British Telecom (BT) to study global issues related to AXE technology. Operators with local and international exchanges are represented on the Forum, which comprises 18 telecom operators.

Most participants are highly influential decision-makers employed in operations and maintenance activities. Rolf Johansson, Telia's Vice President of AXE Quality at Telia Nättjänster AB, is Chairman and "Nestor" of the User Forum. Lotti Steenbuch-Kvisterud and Göran Dahlström, employees of Customer Services in Ericsson's new Infocom Systems business area, are also members of the Forum. They process customer questions and provide rapid answers from various Ericsson sources.

"It's extremely important for Ericsson to receive impulses and maintain direct contact with operators. We have highly responsible positions as members of the AXE User Forum, which comprises many of Ericsson's most important customers. We have to be receptive, provide answers to their questions quickly and disseminate the User Forum's message throughout Ericsson," say Lotti and Göran.

All representatives of the AXE User Forum meet once a year. Important contacts are established in parallel with enthusiastic discussions and the formulation of improvement programs. The overall objective is to improve AXE system quality. Many operators also meet at various times during the year, working together with Ericsson on various improvement projects.

"It is gratifying to see the growing interplay between Ericsson and telecom operators," says Chairman Rolf Johansson, and continues: "Communications within the User Forum and with Ericsson have improved significantly. Joint projects have been started for the benefit of all parties concerned. As telecom operators, we sense much greater responsiveness from Ericsson." ■

Customer loyalty in a mass market

BY: PATRIK LINDÉN

MASSMARKET LOGIC

Price pressure, standardized volume products and new customer segments have necessitated drastic rationalization measures in the supply chain and improved marketing skills.

Ericsson products characterized most clearly by mass market appeal and a large customer base are naturally our mobile telephones. Sales of telephones to private consumers are a far cry from marketing large telephone systems to national and international telecom operators. Ericsson Mobile Phones has learned some valuable lessons in mass market operations during recent years.

Among other responsibilities, Göran Andersson heads up international advertising for Ericsson's mobile telephone activities.

"We have learned a great deal about consumers, their behavioral patterns and how the retail supply chain functions," says Mr. Andersson.

"We define consumers as men and women who choose their own telephones, and we try to win the hearts of consumers," he continues.

Consumers cannot be classified as a uniform group of customers easily accessed with advertising messages. There are many different kinds of consumers who can be reached through a variety of channels, for example, advertising, sponsorship arrangements, other types of external activities and through retailers. The latter is a very important channel, since growing numbers of consumers make final decisions on telephone purchases when they are physically in retailer stores.

"Satisfied retailers sell more telephones than retailers who are dissatisfied with their suppliers," Göran Andersson explains.

In this context, it's important for Ericsson to consider carefully what types of retailers we want. Should Ericsson telephones be sold in our own exclusive shops or, for example, in gas stations? What feelings should be conjured up by an Ericsson telephone?

In today's mass markets, especially the market for mobile telephones, companies simply have to do more than supply products to meet customer demand. We also try to foresee what customers will want in the future in order to defend our present position.

Mobile telephones are more than just a mode of communications differentiated from each other by technical performance standards. Image is everything, says the noted American tennis player in worldwide commercials for camera products. Design and packaging are other important elements.

"We have noted a growing trend whereby mobile telephones, in certain market segments, have become status symbols used to project a certain image, a tool used to establish a form of identity. The trend is similar to established consumer patterns for designer clothing and sunglasses, which often reflect different life styles," says Göran Andersson.

Mobile telephones are extremely different in comparison to Ericsson's other products, since they have much shorter life cycles. New models are introduced constantly and life cycles are measured in months, not years.

"The market for mobile telephones has started to show some signs of maturity, to the extent that many customers now have their second or third telephone. Customer loyalty is assuming greater importance, accordingly. Ericsson's trademark is generally associated with the values we strive to project. We like our image. In Sweden, for example, nearly 40 percent of Ericsson telephones are bought by customers who are not first-time buyers," Mr. Andersson concludes. ■

Costs awearness in focus

BY: LENA ZACCO-BROBERG AND LENA WIDEGREN

LOW COST OPERATIONS

Ericsson must establish cost leadership in activities where value leadership cannot be held exclusively through product performance unique standards.

The Telecable Division of Ericsson Cables in Hudiksvall, Sweden, is a prime example of Ericsson's low-cost philosophy. Ericsson Cables has created a operative organization that works successfully to increase productivity and product quality in its cable manufacturing activities. The result has been impressive growth and higher productivity. In 1988, when the Telecable Division turned its hierarchically structured activities upside down, it indirectly took the first important step toward more cost-efficient production.

The organizational structure of the Division's production unit was flattened out, the number of management personnel was cut in half, and goal-oriented groups were introduced in parallel with job rotation and a new wage system based on delegated responsibility, more decision-making authority at lower management echelons and richer, more fulfilling job assignments.

Today, the company is characterized by creativity, greater independence, higher morale and employee commitment. Successful efforts have been implemented to create a learning organization and personal development plans.

Anders Larsson is technical manager of the company:

"There's no doubt we are the most technically sophisticated cable company in Scandinavia today, with exceptionally high levels of employee skills and expertise. It's extremely important to maintain the levels we have reached, on a par with our customers or, ideally, one step ahead of them. In parallel, we focus strongly on optimizing."

The Telecable Division is quick to absorb new techniques and strives to conduct product development that extends throughout the entire chain to final industrialization of original concepts. Its approach helps to keep costs at a minimum.

The open corporate culture has proved to be highly fertile ground for creativity, providing the Division with a flourishing product and process development portfolio.

Kalle Jonsson, Kicki Peterson and Thomas Åkesson are three of the Telecable Division's nine production managers. They present additional concrete examples throughout the factory to illustrate the significance of cost-efficient production.

Kalle Jonsson: "In the past, a color coating was applied in four different stages to the four optical fibers contained in so-called ribbon cable. In cooperation with an independent supplier, we have now developed a new machine that color-coats all four fibers in one work phase, yielding substantial savings in both time and money.

"In addition, we are now preparing to start test operations with optical fiber cable in an uninterrupted production process, basically from the ingredients to final product," says Thomas Åkesson. "If we succeed, vast amounts of time and money can be saved."

"There are also other ways to achieve time savings," explains Kicki Peterson.

"The production managers re-

New rules will shape future business operations

BY: KARI MALMSTRÖM

THE DATA PARADIGM

The computer industry's mode of operations will have a strong influence on the converging Infocom Industry. It is imperative for Ericsson to understand and adapt its operations to shifting trends in the industry.

The data paradigm is a relatively new concept and the subject of increasing speculation. But what does it actually mean? In simplified terms, it means the computer world's rules, regulations and patterns will also set the standard for future trends in telecommunications. The data paradigm theory will apply to technology, customers, markets – and it will include Ericsson, if the Company is to remain abreast of new development. One segment of Ericsson's business operations that has always reacted and adapted to change and new development in the computer industry is the Eripax computerized exchange.

"We are not in competition with the computer industry – we're already part of the computer industry," declares Rolf Johansson, a member of the new Data Networks and IP Services unit of Infocom Systems, one of Ericsson's three new business areas. Rolf and two of his colleagues, Lars-Erik Lögdberg and Ragnar Erkander, are three of "the Ericssons" now active in the computer industry. Eripax and ATM networks are their fields of operation.

"We have been working for a long time with private customers, meeting many different decision-makers – not all of whom have the same coordinated purchasing plans – and working at a hectic pace both in terms of decision-making and installation times," says Rolf. "Today, we see a clearly defined trend whereby solutions of this kind are being shifted from the private to public world."

Datacom has established itself as a new mode of communications, a channel for disseminating information and marketing. Companies are building their own intranets and connecting them to the Internet. It's taken for granted today that all companies should have their own web sites accessible to anyone and everyone. The "extranet" concept is now emerging, whereby companies, partners and key customers are creating jointly operated web sites.

The boundary separating data and telecom is also becoming smaller.

"We have to be prepared for technological advancements that allow for the packaging and transport of voice transmissions as data traffic. It is necessary for Ericsson to proceed, entering the new world opening up on a daily basis," says Lars-Erik Lögdberg.

"It's important that we are receptive to other philosophies," continues Ragnar Erkander. "Packet-based IP networks will be able to carry all types of communications in the future, including mobile telephony.

Trends in technical development are not the only factors listing toward datacom. General business and marketing logic is headed in the same direction. The computer industry has also been extremely

adept at establishing de facto standards quickly and efficiently. Dominating market players like IBM, Microsoft and Cisco have shown the way, but the market remains wide open for new players if they can stay abreast and develop niche products, applications and systems compatible with products sold by large suppliers.

Ericsson's corporate culture was formulated to serve large customers with whom we conducted rather long-term planning and coordination activities. The IT/computer market is characterized by a much greater degree of volatility and flexibility; it constantly tests new and different solutions and it's extremely difficult to make long-term plans.

Perhaps its most important characteristic is the readiness, willingness and, above all, ability to reconsider and revise," continues Lars-Erik Lögdberg. "Look at Microsoft, for example. There's a company that didn't believe in the Internet as a tool for the average person's computer. But customers showed them otherwise and convinced Microsoft to change its outlook. And it didn't take for the company to develop an Internet Explorer that was virtually integrated with the market's best-seller, Windows 95.

Ericsson has to be prepared to make similar revisions and changes, and react with the same speed.

"All of Silicon Valley in California is like one large corporation," Rolf Johansson adds. "The labor force is constantly on the move. People go from one company to another, changing employers about every other year. It's a form of informal cooperation that constantly creates new opportunities. For Ericsson, it's important that we capitalize more strongly on our global presence to create similar forms of cross-cultivation of skills and expertise." ■

cently decided, for example, to work in teams comprising three managers each. It was actually Kalle Jonsson's idea, based on something he saw on an educational TV channel. The teams have been put together with a view toward meeting demands on Ericsson management personnel.

"We put people with different management characteristics together to form a solid management profile. As a result, all three management team members don't have to attend the same meetings; two can remain available for other jobs. The teams also support each other as a sounding boards for various ideas."

Process-oriented work methods are another example of low-cost philosophies. One representative from every major function in the planning chain, comprising planners, designers, procurements personnel, process technicians and salespeople, form a team that works together in a central office situated in the middle of the factory. They work in close proximity to production, creating shorter decision-making processes, greater flexibility and are able to answer customer questions quickly and accurately.

Team leaders and rules. Clearly defined goals and reviews of goals have been required ingredients in changes implemented throughout the Telecable Division, a process of change that has yielded impressive results.

Productivity during the 1990s has nearly doubled and lead times have been reduced 30 percent. During the past two years, sales invoiced by the Division have nearly doubled, with projected sales in 1996 of more than SEK 1 billion.

The Telecable Division of Ericsson Cables has 570 employees, and has become one of Ericsson's most profitable units. Results from Compass and customer surveys have been highly satisfactory. In addition, the Division was awarded the Swedish Quality Medal in 1995. ■

Standing alone not always a symbol of strength

BY: LENA WIDEGREN

JOINT BUSINESS DEVELOPMENT WITH PARTNERS

Ericsson should concentrate on developing solutions only in areas where we can keep positions of world leadership. Development in other areas should be conducted in cooperation with business partners. ●

Ten years ago, Ericsson signed long-term cooperation agreement with Texas Instruments, an American manufacturer of microelectronics. Through the years, the agreement has become a broad and comprehensive business relationship. The companies avail themselves of each other's skills, expertise and experience through a well-developed network of contacts at all levels of both organizations.

"Our cooperation with Texas Instruments has given Ericsson access to leading technologies and excellent components. It has helped reduce costs and lead times, and provided mutually beneficial effects on our various modes of operations," says Jan Tufvesson, Vice President, Parent Company Purchasing. "The agreement is built on working together to create value added for both partners."

In the past, cooperation programs like the agreement between Ericsson and Texas Instruments were relatively uncommon in the telecommunications industry. It was not until increasing competition began to put greater pressure on companies to reduce lead times between order bookings and deliveries to customers that formations of alliances began to emerge, enabling companies to cut costs and secure their long-term survival.

Strategic alliances and cooperation agreements are more commonplace in other industries, however, as exemplified by the automotive industry. Car manufacturers buy parts from suppliers that specialize in automotive components ranging from brake systems and engines to dashboards components, offering fast and reliable deliveries at competitive prices. The suppliers also maintain high quality standards by concentrating their operations exclusively on certain components and customers. Cooperation agreements may also include product development programs and other forms of joint activities.

"The automotive industry is highly adept in the art of partnerships, and we can learn a great deal from car manufacturers," continues Jan Tufvesson. "In parallel with deregulation throughout the telecommunications industry and constantly increasing sophistication of products and systems, a natural need has been created for standardized components and products. Ericsson, quite simply, must concentrate on areas that bring its most important skills and expertise to the forefront. We shall strive to be a world leader in our established areas of operation, and cooperate with prominent, independent suppliers in other areas.

"Ericsson has excellent business relations with several suppliers that, in time, may become partnerships," Mr. Tufvesson continues. "We have a strong starting position, and can only benefit from strategic cooperation programs. Ericsson is also a very attractive cooperation partner for many suppliers."

Texas Instruments was one of the first suppliers with whom Ericsson entered a long-term, strategic agreement. The American company also made valuable contributions of process know-how when Ericsson invested in a new semi-conductor production plant for Ericsson Components.

The road leading to joint development work has been an arduous endeavor. Various forms of cooperation did not crystallize until both parties finally started concrete discussions to determine which technologies Ericsson needed to manufacture its products. The commitment of both companies' executive management has been a major factor in the partnership's success.

Today, the partnership between Texas Instruments and Ericsson has become a close and intense relation that provides significant benefits to both companies.

"We have learned more about each other's organizational structures at several different levels," explains Jan Tufvesson. "And we have formed work groups to discuss new routines that might lead to cheaper and more efficient deliveries, for example, or various ways in which Ericsson might improve its business potential by reacting more quickly and utilizing readily available technologies.

"The usually informal tone of contacts between the two companies has created an aura of candor and trust. Other partnerships similar to our relations with Texas Instruments would contribute strongly to Ericsson's future potential. Partnerships are short-cuts to new market shares," Jan Tufvesson concludes. "Alliances and partnerships with strategic suppliers will assume much greater importance in the future, because it's simply impossible to be the very best at everything." ■

Rolling stone gathers no moss

BY: EIJA PAULIN

Ericsson is undergoing sweeping changes in Finland, some prompted by new market conditions and others that we started ourselves," says Seppo Ruotsalainen, Executive Vice President of the Finnish subsidiary.

Demands today are much different from those placed on the Company only five years ago.

Seppo Ruotsalainen's division, Network Solutions, has made comprehensive changes in its mode of operations and corporate culture during recent years.

"Ericsson has to convert quickly from its traditional status as a supplier of hardware to a supplier of services, a telecommunications consultant and cooperation partner that offers an attractive value proposition. We are trying to make the change easier by creating an organization designed specifically for efficient, customer-oriented business operations," explains Mr. Ruotsalainen.

ORGANIZATION DEVELOPMENT AND CULTURE

Business orientation, the data paradigm, rapid changes in market conditions, globalization and other factors have underlined the importance of being able to make rapid changes in our organization and corporate culture. The development of skills and expertise increases job motivation and the ability of our employees to adapt quickly to new conditions. ●

In the new operations model, customer-oriented business activities are combined with activities based on products and services, both of which are formulated to complement each other. Cooperation is more intensive and work distribution is more clearly defined.

"Our experience showed that cooperation between the line organization and process operations often left much to be desired in terms of efficiency," Seppo continues.

"We decided, therefore, to develop a process-based organizational structure. The line organizations and processes clearly support each other today."

Operations of the Network Solutions Division are divided into different projects, for example, marketing, sales, volume products and management. Structures of line organizations are divided into similar operating units.

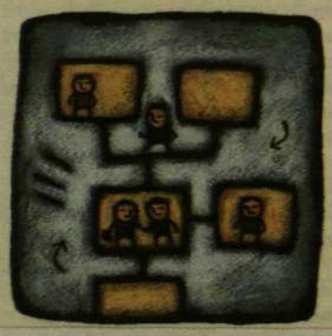
The new format has made it easier to maintain adequate skills levels in the Division's most important areas of operation.

"Expertise is key to our success. In the new organization, all resources for core skills and expertise are coordinated. The format allows us to learn from each other, also from our mistakes," Seppo explains.

"We encourage employees to assume greater responsibility and take personal initiatives in decision-making processes. The traditional line organization was too time-consuming and tedious when rapid-fire decisions were required. We have to accept that some mistakes are inevitable. The key here is to learn from the mistakes," continues Seppo Ruotsalainen.

To effectively utilize all available skills and expertise, barriers between different organizational units must be eliminated. The objective in Finland was to develop an operating model that would create natural forms of cooperation. Operational indicators were also formulated so that results are achieved only through various forms of cooperation.

Measuring, or evaluating, the operations of the Network Solutions Division is a fundamental part of overall operations. Decisions that affect business operations must be based on fact – not guesswork – and customer satisfaction levels are measured at regular intervals, as well as progress in the development of personnel and processes. To facilitate evaluations of results, separate indicators will be established for every Division employee this spring.



A good plan or mode of operations is not worth its salt if everyone involved does not think and work in accordance with its objectives. Everybody should have a clear perception of his/her role and individual goals in relation to the grand scheme. As soon as everybody is working and pulling in the same direction, we can expect to see strong results.■

Chips enhance performance

BY: INGER BJÖRKLIND BENGTSSON

The prevailing trend in microelectronics is characterized by accelerated development and constantly increasing capacity at lower prices. Manufacturers of microelectronics in all parts of the world are talking about the future in terms of "one system on one chip." For certain purposes the future is already here. Now the critical issue for companies today is to become No. 1, the first company to develop systems with built-in capacity to communicate.

One of Ericsson's primary objectives is to secure reliable access to microelectronics with world-class performance standards in relation to cost. In parallel, we have to protect the security of important expertise, which will enable the Company to utilize microelectronics as a competitive tool.

"Ericsson must have the world's best design engineers who can produce the parts and components needed to make total systems as efficient as possible," says Bernt Ericson, Senior Vice President, Corporate Technology.

The basic ingredients are cost, performance and other important factors such as packing density and power development.

MICROELECTRONICS

Our products contain a growing number of generic components, but significant competitive advantages can still be established by developing improved silicon solutions for vital parts of our systems. Ericsson must conduct a careful review of its own components production program to decide which components should be produced and designed in-house and purchase all other components from independent suppliers.●

One way to make products less expensive is to build the functions, the system, into the silicon. The small size is naturally an advantage, but the true gains would come from reduced energy consumption. The systems would have higher performance standards and their reliability would be built into the chip.

"Ericsson shall continue to develop the building blocks that we know are superior to other products and systems on the market, but it's not as self-evident that we will make all the building blocks ourselves," continues Bernt Ericson.

In this context, it is extremely important to protect Ericsson's system products under intellectual properties laws, for example, with patent protection that also covers microelectronics solutions. This type of protection can be vital in determinations of what Ericsson finally decides to manufacture in-house and/or purchase from independent suppliers.

Microelectronics comprises an ambiguous concept used in conjunction with software, hardware and design methods. Delineations between software and hardware will eventually be erased when functions can be programmed or built into silicon chips. A growing number of traditionally individual components will disappear and become incorporated in microelectronics through integration in silicon.

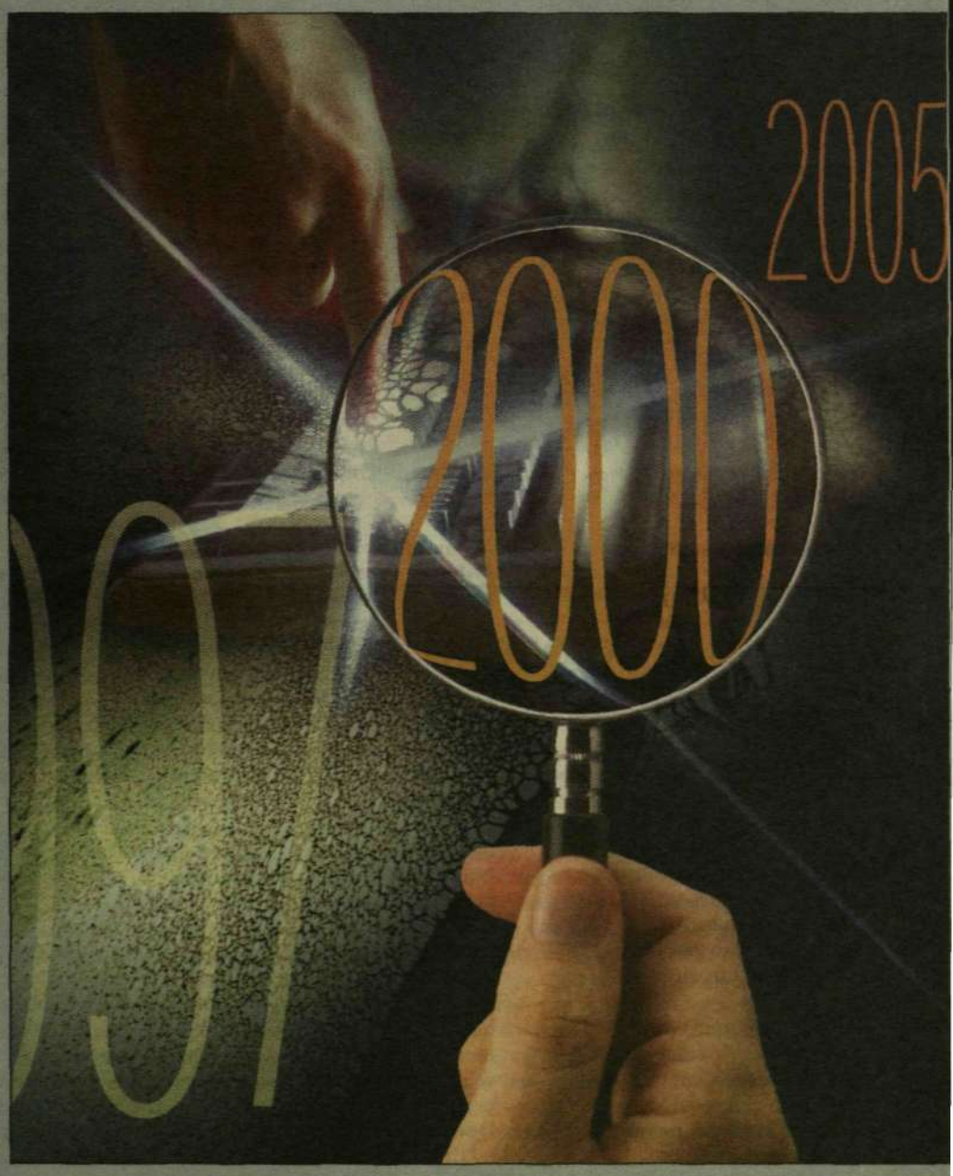
"When the chip creates opportunities for software to dominate, its appetite for functionality is increased and, occasionally, software becomes the major factor in pricing. It's important, however, to keep silicon costs at a minimum, for example, through access to efficient production with high volume capacity," he concludes.

By the year 2005, function and performance will have increased by a factor of 10, at the very minimum. The key to consumer markets will be in the hand of companies that offer the best communications products – comprehensive, easy to operate products – and the best service available.■

BY: LARS-GÖRAN HEDIN
ILLUSTRATION BY: ANDERS F. RÖNNBLOM

The year 2000 – a control station

The work with the "2005" project was not aimed solely ten years in the future. In order to enhance the potential for Ericsson to achieve its goal in ten years, a number of goals have been formulated regarding Ericcson's position in the year 2000.



"What position should Ericsson achieve by the year 2000 to be best equipped as possible for the ongoing development in the industry?" was the question addressed during work with the "2005" project. In developing an answer to this question, Ericsson was viewed from three perspectives, business, our employees and structure.

The following are the desired positions which the company should have attained within five years, viewed in the three perspectives:

BUSINESS

1. The business partner of choice.
   • We are perceived as the preferred and best business partner by customers in the markets/segment we choose to serve.
2. The number one supplier
   • We are the number one supplier and regarded as the industry leader – a prime innovator, setting new standards, introducing solutions and obtaining patents and other intellectual rights – in fixed and mobile infocom.
   • We use the strength of our brand, including image, to create competitive advantages in each market.
   • We use partnerships in all areas of business where they add to and secure competitiveness and leading position.
3. Competitive return for shareholders
   • We provide our shareholders a competitive return on investment and generate a strong positive cash flow.

OUR EMPLOYEES

1. Life-long learning for our proactive employees.
   • We have an environment of continuous learning and development which fosters life-long learning for our employees.
   • We have people who proactively take initiatives.
2. Competence when and where it counts.
   • We have the right competence available at the right time/quantity/place/cost.
   • We have developed world-class innovators and an environment which fosters creativity, thereby positioning the company to attract additional top talent.
   • We recognize and support entrepreneurs to effectively connect innovation and early commercialization.
3. Leadership for empowerment, motivation, speed and flexibility.
   • We develop and enhance leadership characteristics (vision, holistic view and strategic focus) to improve speed, flexibility and business success.
   • Leaders' behavior and actions match and reinforce Ericsson's values.
4. Strong culture and common values
   • Our culture is based on common values - professionalism, respect and perseverance and allows for flexible and entrepreneurial approaches to working in different markets, segments, product areas and new business.

STRUCTURE

1. Customer-focused networked organization
   • We have developed a "solutions and services for our customers" organization with dedicated local and global networked resources "one face to the customer."
   • Our borderless organization fosters open communications and promotes networking and teamwork.
2. Geared for responsiveness and world-class implementation
   • We continuously develop our organization and processes to achieve world-class implementation (best customer solutions, low-cost operations, world- class quality and an ability to change direction quickly).
   • We use IT, based on a common architecture, as a major enabler to achieve business excellence and we are recognized as a leading-edge user of IT.
   • We have a management information system for steering, supported by multi-dimensional reporting which allows us to respond quickly to meet the needs of our customers.
   • We have a fast, reliable and state-of-the-art financial reporting system.■

Four men with vision

Effective January 1, 1997, Ericsson adopted a new organizational format, converting from five to three business areas. The new structure is designed to react more efficiently to customer demands and serves as a reflection of rapid change in the world around us. Ericsson's President/CEO and the three men in charge of our new business areas have their own thoughts and visions about "2005" and the new organization.

ILLUSTRATIONS BY: HENRY JOHANNES

LARS RAMQVIST
PRESIDENT AND CHIEF EXECUTIVE OFFICER

The first step

BY: LARS-GÖRAN HEDIN

"2005 – Ericsson Entering the 21st Century" is the most ambitious study ever conducted by Ericsson to comprehend and prepare for the future. Never before have so many people been involved in efforts to foresee future trends and business opportunities. Ericsson's enormous expertise and skills resources were supplemented in "2005" by volumes of lessons about the telecommunications markets of today and tomorrow. We have every intention of capitalizing on the lessons learned in "2005."

The new organization is the first visible result of new lessons learned. It will add considerable strength to our future competitive power.

Infocom Systems Business Area is Ericsson's answer to the convergence of data and telecommunications, a process already in progress. Mobile Telephones & Terminals comprise one unit in which we have concentrated all activities focused on end-user equipment. And last, but certainly not least, Mobile Systems represents the focal point of all Ericsson resources in what is now our most successful area of business operations – systems for mobile telephony.

Ericsson is already a company in transition. We have proved we are able to make necessary adjustments in our organization to meet new market demands. What we have accomplished during the past two years, with more than 20,000 employees changing job assignments, is unparalleled in recent industrial history. Change, however, is becoming a fact of life, something with which we shall have to become more accustomed – shifting resources to new areas where they are needed. "2005" will be one of many lodestars in our efforts to adjust and adapt.

We have many adjustments and steps remaining as we approach the year 2005. We shall need to muster all our forces at all levels of Ericsson operations to meet the new market conditions. Working together, we shall meet the challenges and conquer new markets that will emerge in future years. We shall become the world's leading supplier of telecommunications equipment! ■

Logical adjustment to future demands

BY: GUNILLA TAMM

"The division of Ericsson's former Radio Communications business area into two new business areas, Mobile Systems and Mobile Telephones & Terminals, was a logical adjustment to reality," says Kurt Hellström, Executive Vice President, Mobile Systems Business Area. "Mobile Telephones comprise a relatively independent area of operations that feeds off a consumer market. System sales are focused in a different market segment with a lower pulse rate."

Kurt Hellström is also quick to emphasize the need for continued close cooperation between the two units. The importance of all business transactions should be focused on their benefit to Ericsson as a whole.

China and Ericsson's operations there, offer a good example of the need for cooperation between systems and mobile telephones. "China is an important markets for mobile telephony," says Kurt Hellström. "Our initial success in penetrating the market was based on systems and, after several years of Ericsson's successful efforts, we achieved a breakthrough in the market for mobile telephony. Without the strong foothold Ericsson established through system sales, mobile telephony would never have achieved the same degree of success we now enjoy in the Chinese market."

Cooperation between systems and terminal operations will become even more important in the future. New standards and new systems will require new subscriber equipment, and companies with more holistic marketing programs will gain much stronger market positions than specialists that focus exclusively on systems or terminals.

"When Ericsson started to manufacture and market mobile telephones, our experience and knowledge of consumer products was extremely limited, but we learned some valuable lessons in the years since we embarked on our new venture," continues Kurt Hellström. "We have brought the same knowledge with us in the Mobile Systems business areas, and will derive continued benefits from sales of telecom systems. With our new organization, we shall concentrate on development and sales of mobile systems in endeavors to achieve even greater success."

KURT HELLSTRÖM EXECUTIVE VICE PRESIDENT, MOBILE SYSTEMS

Ericsson Microwave Systems AB, based in Mölndal, Sweden, has been incorporated in the new Mobile Systems business area. Non-military operations, including radio development and Minilink applications, will strengthen mobile telephone operations.

"We have conducted highly fruitful programs of cooperation with Mölndal for several years," adds Mr. Hellström.

In reply to a question about Ericsson in the year 2005, Kurt Hellström stressed his positive approach to, and the need for, broader perspectives and the ability to look farther into the future. Although the three scenarios envisioned in "2005" do not cover all possible contingencies, they provide a certain degree of readiness as Ericsson embarks on its voyage into the 21st Century.

"Based on past experience, we know it's extremely difficult to foresee future market trends," Mr. Hellström summarizes.

"With ongoing programs conducted under the auspices of Ericsson's Strategic Planning (ESP), we are able to chart a general course of future business pursuits, but we have been surprised more than once by rapid and favorable changes in mobile telephony." ■

Infocom and the future

BY: LENA WIDEGREN

INFOCOM SYSTEMS BUSINESS AREA will enable Ericsson to establish stronger market positions. The merger of two business areas into one more powerful unit has increased our potential to become a leading supplier of systems, products and solutions for multimedia communications and a market leader in terms of profitability," declares Anders Igel, Executive Vice President, Infocom Systems.

"Based on Ericsson's rich history with more than 100 years of experience in the telecommunications industry, its global market presence and strong product portfolio, featuring Consono MD 110 and AXE, which rank as the best exchange systems in the world today, Infocom Systems has excellent potential to emerge as the information society's leading supplier of sophisticated system solutions," Mr. Igel continues convincingly.

INFOCOM SYSTEMS comprises four independent business units equipped with the expertise and resources needed to address customers and markets in a manner never before possible. The business area's only remaining task is to formulate and define its operations so they may achieve established goals that coincide with Ericsson's visions of "2005."

"A comprehensive program of structural change is now in progress throughout the telecommunications industry, a transformation process that will affect Ericsson and all our competitors," Anders Igel explains. "Traditional telecommunications are converging with data communication operations to form a new industry, while barriers between private and public networks are crumbling, and we know the Internet Protocol will gain greater success primarily in data communications, but also in what formerly comprised traditional telecommunications.

"In parallel, we have watched the emergence of completely new players, mainly among small and large companies in the computer industry. The merger of Public Telecommunications and Business Networks was a natural means of creating more fleet-of-foot and cost-efficient operations better prepared to meet new market conditions. Ericsson is more dependent than ever before on the commitment of its employees and their individual contributions," Mr. Igel continues.

"We have to abandon hierarchic forms of management from the past and give people greater freedom and authority to take personal initiatives. We have to accept the fact that mistakes will be made," Anders Igel says.

ANDERS IGEL
EXECUTIVE VICE PRESIDENT,
INFOCOM SYSTEMS

"THE 'BOTTOM LINE' is to keep the entire organization informed about how we should conduct ourselves in joint efforts to reach our objectives. Management has the ultimate responsibility for conveying our main message to all other employees, and it's important that our message is spread throughout the organization, that we meet lower echelon employees, explain our message to them, listen to their questions and provide answers. All of us in the Infocom Systems business area should practice what we preach, and avail ourselves of internal multimedia communications as much as we can. Only then will we be able to gain the insights we need to understand customer demands."

In the immediate future, Anders Igel anticipates particularly strong expansion in two business units, Public Networks and Business Networks, which are also expected to yield strong profitability. Transport & Cable Networks and Data Networks & IP services will need a little more time before reaching their maximum potential.

"We intend to make substantial investments in Transport & Cable Networks, and we anticipate strong results from our efforts. Data Networks & IP Services need more time. In the long-term perspective, however, we firmly believe significant progress will also be made in this area."

The concept of getting all employees to pull in the same direction, striving in unison to achieve common goals, will be an extremely important factor in the new business area's continued growth. A completely new corporate culture is needed to meet future demands on business operations. Key assets will include enterprising skills, higher tempo and lower costs.

For additional information, reference is made to the Infocom Systems Business Area's strategies for growth, which contains a detailed presentation of strategies and objectives.■

Much greater importance for terminals

BY: NILS SUNDSTRÖM

JOHAN SIBERG
EXECUTIVE VICE PRESIDENT,
MOBILE TELEPHONES & TERMINALS

"THERE IS A COMMON DENOMINATOR in the various scenarios formulated in management's vision of "2005:" terminals will assume much greater importance in Ericsson's future business operations," says Johan Siberg, Group Executive Vice President and headof Ericsson's new Mobile Telephones & Terminals Business Area.

The volume of Ericsson's mobile telephone operations has doubled in each of the past three years, and continued strong expansion is projected in 1997. Ericsson is the market leader today for digital mobile telephones and ranks third in worldwide sales of mobile telephones.

"Concerted efforts to position Ericsson as a leading supplier of consumer products have yielded highly favorable results," continues Johan Siberg.

Ericsson's new organizational structure is focused on operations in mobile telephony, cordless telephones for homes and other applications as well as consumer products of the future in a separate business area. Mobile telephones and peripheral equipment account for 99 percent of the new business area's sales and operations.

"AS WE LOOK TO THE FUTURE and the New Millennium, we see an expansion and renewal of the product range. We see various new terminals with DECT connections and other fixed cellular terminals (using mobile telephony as fixed networks, set-top boxes (TV reception units for private homes), modems and Internet products sold directly to end-users," Johan Siberg says.

"Creativity is based on the exploitation of technical know-how and skills available within Ericsson, and applying these skills and expertise to create integrated solutions. We shall also work in close cooperation with other business units to make sure Ericsson pioneers the introduction of new holistic solutions that embrace both systems and terminals," he continues.

The "2005" vision is an indication of future development trends, but Johan Siberg also emphasizes the importance of cultivating today's market under present market conditions.

"We mustn't lose sight of continued and very rapid expansion trends in mobile telephony. We have to stay abreast of market developments, constantly renew our products and cost-rationalize the product range in a market where prices are declining 20-25 percent annually."

"With our new business areas concentrated on different sales sectors," Mr. Siberg summarizes, "Ericsson is better equipped to meet and conquer future challenges."

"There are distinct differences between systems operations and business activities concentrated on consumer products," he adds, "for example in the various modes used to cultivate markets. But there is no doubt that we shall remain closely connected with Mobile Systems, with several joint management and service functions. We also have the potential to become a marketing channel for Infocom Systems, through sales of fixed cellular solutions and multimedia applications." ■

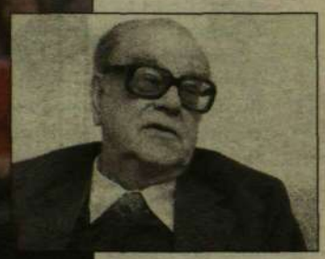
contact
in depth
A Supplement of Contact, a newspaper for Ericsson employees

It was ten years ago...

BY: PATRIK LINDÉN

When work was first started on "2005 – Ericsson Entering the 21st Century," the year 2005 was 10 years in the future. And a lot can happen in 10 years, especially in our industry, which is characterized by rapidly accelerating development.

Naturally, we don't know what will happen during the next 10 years, but Ericsson's concerted efforts with "2005" will help us prepare for a variety of contingencies. Nevertheless, to create a sense of what might happen 10 years from now, let's look back at the year 1985, 10 years before Ericsson embarked on "2005."



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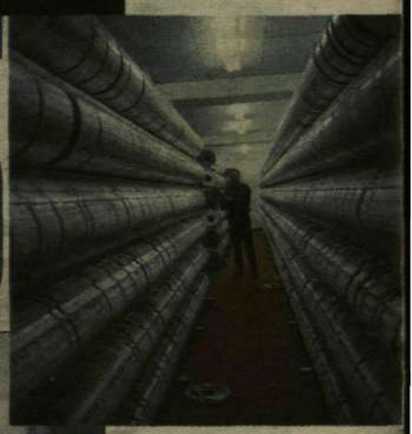


In the 1985 Annual Report, we found a few news items that now seem far more remote than slightly more than 10 years ago. For example:

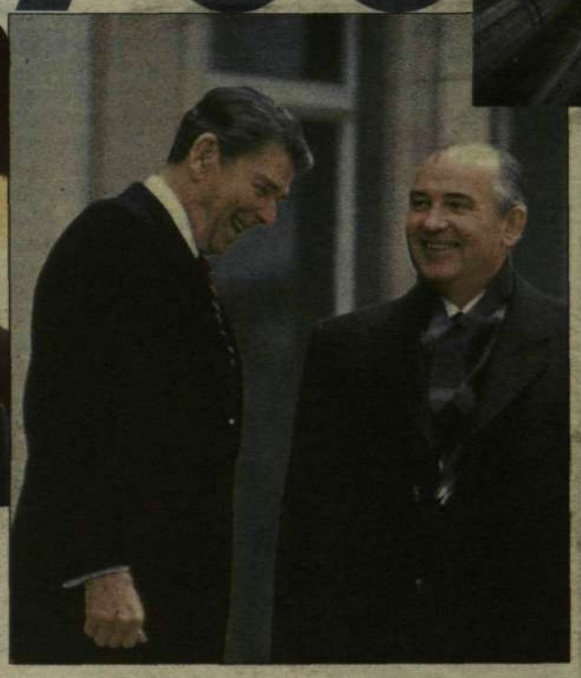
"There are more than 500,000 mobile telephones in the world today," and "Ericsson's personal computers made a major breakthrough in Europe during 1985, despite tough market conditions."

Also in 1985, Ericsson divested business activities that were not considered strategically important, for example the production of office furniture. It may be interesting in light of discussions today to look back at what comprised core operations 10 years ago.

Radio Communications accounted for 7,5 percent of total sales. The corresponding figure today is much higher. In 1985, Ericsson had 17,449 employees in Sweden, compared with more than 40,000 in 1986.

Obviously, things have changed over the past 10 years. And today, there are no indications that changes during the next 10 years will be less dramatic or comprehensive. Some other major events of particular note during 1985 included the following.

Michail Gorbachov was elected Secretary General of the Communist Party of the USSR. Also during 1985, the first major summit meeting was held between Gorbachov and President Ronald Reagan. Later in 1985, Reagan and the U.S. entered a major controversy with Nicaragua. On the silver screen, the first Rambo movie made its debut to huge audiences around the world.



PHOTOS: PRESSENS BILD

In England, Margaret Thatcher celebrated 10 years as the Leader of Britain's Conservative Party. Later in 1985, Mrs. Thatcher signed the agreement that will surrender Hong Kong to China in 1987.

Mexico City was ravaged by a devastating earthquake.

And Boris Becker, an unheralded 17-year old German, won his first singles title at Wimbledon.

In Sweden, former Prime Minister Tage Erlander, one of the fathers of Social Democracy in Sweden passed away. Tage Danielsson, a beloved Swedish author and entertainer, also died in 1985.

Ten years from now, we shall look back on 1987 and think nostalgic thoughts of persona and events that caught our attention today. ■

...First summit meeting between Reagan and Gorbachov

...Tage Erlander passed away

...Boris Becker won Wimbledon for the first time