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ERICSSON PUBLICATION FOR EMPLOYEES WORLDWIDE

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Photo: PRESSENS BILD

Ericsson on location at Nagano games

The 18th Winter Olympic Games are well under way. With 3,500 athletes and thousands of spectators, the host city Nagano's telecommunications system is being put to the test. The Japanese operators have made heavy investments in order to use the Olympic Games to help promote the launch of their services. Japan's largest mobile operator, NTT DoCoMo, has purchased micro base stations from Ericsson to handle its enormous capacity needs during the Games. **Page 5**

Slumbering market wakes up

Ericsson gains ground in India. When the Indian market was deregulated in 1995, Ericsson quickly built up an organization with foreign employees. However, local employees are quickly emerging on the scene and a locally based organization is being established. **Pages 12–13**

Fact Special:

Mobile standard in Ericsson's favor

The European Standardization Telecommunications Institute's (ETSI) choice of the third-generation mobile telecom system means promising future possibilities for Ericsson. The ETSI delegates opted for Ericsson's standard of choice – WCDMA technology. This issue of Contact contains eight pages of background information regarding the significance of the decision, how the technology works and what it is used for. **Pages 18–25**

Infocom Systems cuts back

The Infocom Systems business area needs to cut costs. A new savings program called Trim-98 has therefore been implemented. The costs of travel, consultants and conferences are to be slashed. Efficiency and profitability must improve. Ericsson Telecom and Ericsson Business Networks in Sweden must save at least SEK 500 million through the program. **Page 2**

VACANCIES SEE PAGES 28–31

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Infocom to cut costs

The high level of costs incurred by Ericsson's Infocom Systems business area has become unacceptable. A new program called Trim-98 has been initiated to cut costs in Ericsson Telecom and Ericsson Business Networks by at least SEK 500 million. The program is not focused exclusively on reducing costs, however. Other objectives include increased operating efficiency and greater job motivation to achieve improved profitability.

The business area's financial situation is critical, and it's important to initiate cost-saving measures as soon as possible.

Management has resolved to reduce the labor force, and Trim-98 will offer additional support for cost-saving measures, with particularly strong emphasis on the two Swedish companies mentioned above. Everyone has a personal responsibility to reduce costs that now burden the operations.

Göran Svensson

"It's easy to forget that small costs incurred at individual levels become large amounts for the company as a whole," says Göran Svensson, who will organize and manage Trim-98.

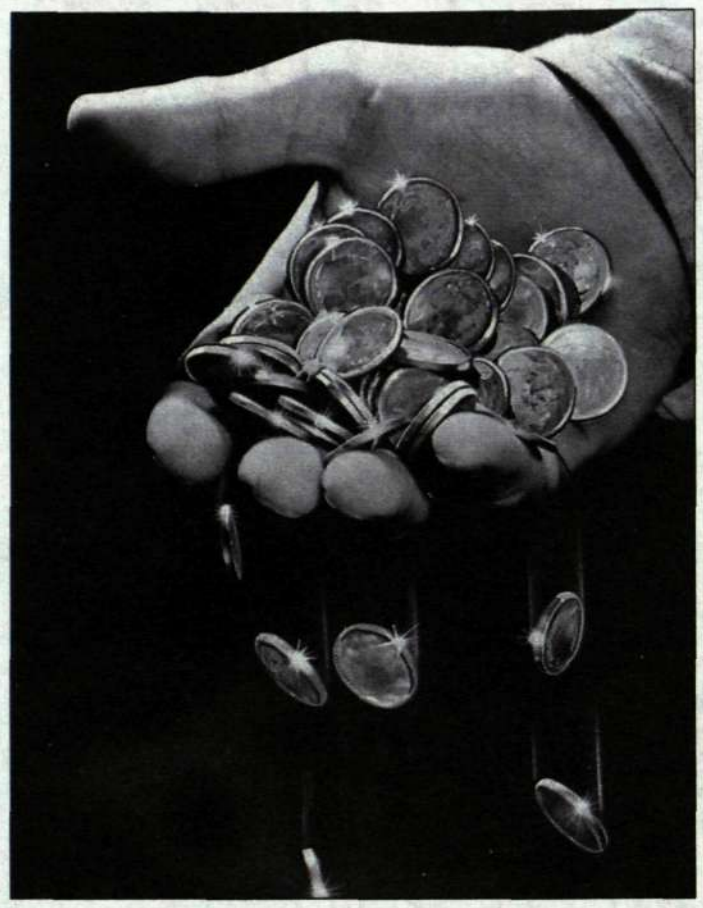
During his first few weeks of intensive work, Göran Svensson concentrated on targeting and analyzing substantial cost items in the business area's list of expenditures.

Particular attention was drawn to such areas as travel, consultant services, conferences, business facilities, IS/IT (which include costs for mobile telephones) and overtime, all of which offer considerable potential for cost savings.)

"Costs for consultant services, for example, constitute a very heavy line item," Göran Svensson continues. "It is my impression that we are not using the skills and expertise available in our purchasing departments to negotiate conditions and prices. As a result, we are losing control of procurements and costs incurred by the company."

Coordinate purchasing

To exercise greater financial austerity in purchasing patterns, the procurement function of Infocom Systems has developed its own order system, which will assume central and substantial importance in Trim-98. It comprises a web site tool called Click-to-Buy, and initial electronic purchases are expected to start in the beginning of April.



"It's easy to forget that small costs incurred at individual levels become large amounts for the company as a whole," says Göran Svensson in regards to *Infocom Systems'* cost-cutting measures.

Photo: IMAGE BANK

The new system offers several potential gains, including better statistical control over orders, shorter internal lead-times and immediate access to the system for all concerned. Attest routines will also be processed via the web site. The cost of actual purchasing routines will be reduced through increased coordination of orders.

"Today, there is a very large flow of orders that is never seen by personnel in purchasing departments before invoices arrive. In our operations, only about 40 percent of all invoices can be traced to purchase orders," says Christer Hallqvist, manager of Service Sourcing, the business area's purchasing department for goods and services.

"Costs incurred by a large company to process invoices without purchase orders average about SEK 500–600," Mr. Hallqvist explains.

While purchase functions are responsible for reaching the most favorable terms in agreements with selected suppliers, it is management's job to decide the full extent of procurements. Every management function has established its own cost-savings objective, and progress will be monitored in monthly reports during the year.

"Greater cost awareness is the main objective of Trim-98. In parallel with efforts to cut costs, however, we must also continue to forge ahead with investments in product development and marketing. We have excellent potential to remain a growing and profitable part of Ericsson. We need the commitment of all employees, therefore, in both cost-savings and new investment programs," says Ingemar Nilsson, head of the Public Networks business unit.

"As managers, you can change and influence work methods in the organization and eliminate unnecessary costs. A good example is greater scrutiny of business trips. In many cases, the same meetings can be held via video conferencing," Göran Svensson continues.

"Avoiding geographically dispersed projects is another means of reducing costs incurred for business travel. Global cooperation is a natural element in our operations, but it's far more effective to delegate responsibility to other parts of Ericsson," he continues.

Motivate employees

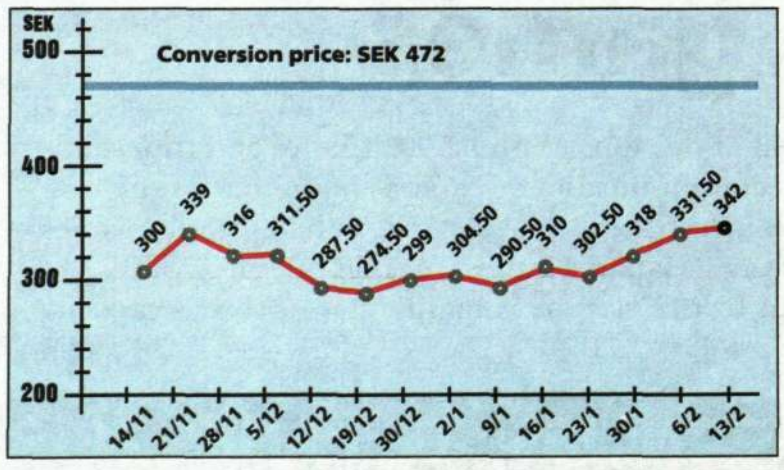
Management's ability to motivate employees and encourage them to work effectively is just as important as plans to cut costs. Ultimately, operating efficiency is the key to increasing the business area's competitive power.

"Efforts to cut costs should not lead to the abandonment of common sense," Göran Svensson says in conclusion.

More information on Click-to-Buy is available at the following address: http://bnsourcing.ericsson.se.

LENA WIDEGREN

Share prices week by week in Contact



■ **Ericsson's stock market valuation has indirect effects on all employees of the company. Now that nearly 50 percent of employees in Sweden and many worldwide have a chance to become shareholders in the company through the convertible issue, Contact believes interest in the price of Ericsson shares will increase.**

On September 9, 1997, an extraordinary meeting of shareholders approved a proposal to issue convertible debentures to employees in Sweden. The conversion price was fixed later at SEK 472 per share (see diagram). Contact will show share price trends in future editions of the publication. The share price quoted will be the Friday closing sale price for Ericsson's B-shares at the Stockholm stock exchange.

The conversion period extends through June 30, 2003.

New President of Components

Sigrun Hjelmquist, manager of the microelectronics operations at Ericsson Components, has been appointed President of Ericsson Components, effective April 1, 1998. She will succeed Bert Jeppsson who, in turn, will succeed Lars Ramqvist as Chairman of the Board of Ericsson Components.

Ms. Hjelmquist joined Ericsson after earning her engineering degree in 1979, working initially for Ericsson Telecom. After an interruption of five years for research studies, her masters degree in 1984 and the births of her two daughters in 1983 and 1985, she rejoined the company in 1986 and has since held various management positions in Ericsson Components and Ericsson Radio, working primarily with quality assurance, marketing and product development. Sigrun Hjelmquist was appointed manager of microelectronics operations in 1994.

Sigrun Hjelmquist, 42, has been appointed President of Ericsson Components, effective April 1, 1998, with particular management responsibility for Microelectronics, Energy Systems and Distribution. Photo: ANDERS ANJOU

Head of three business units

As President of Ericsson Components, she will assume management responsibility for three business units - Microelectronics, Energy Systems and Distribution, operations with total annual revenues of SEK 7 billion.

"Our mission is to serve as a world-class supplier in important areas where the company is trying to create knowledge about systems and expertise at the component level. The work is enjoyable, since we are able to benefit from development efforts conducted throughout all parts of the company," Ms. Hjelmquist says. She never hesitated to accept the offer as President of Ericsson Components.

"We are strictly a business-oriented company, conducting transactions with external communications companies to secure our ability to compete and defend our position as a world-class supplier," she continues.

Tremendous potential

Sigrun Hjelmquist sees tremendous potential in the company's three business units, as well as opportunities for additional synergies.

"While Microelectronics and Distribution are now in the process of establishing global operations, Energy Systems is characterized by much greater complexity, working in close cooperation with Ericsson's local companies in all parts of the world. This will be a new experience for me," explains Ms. Hjelmquist, who sees an exciting challenge in developing the operations of Ericsson Components and striving to achieve common goals established throughout all of Ericsson.

INGER BJÖRKLIND BENGTSSON

Making the brand name heard

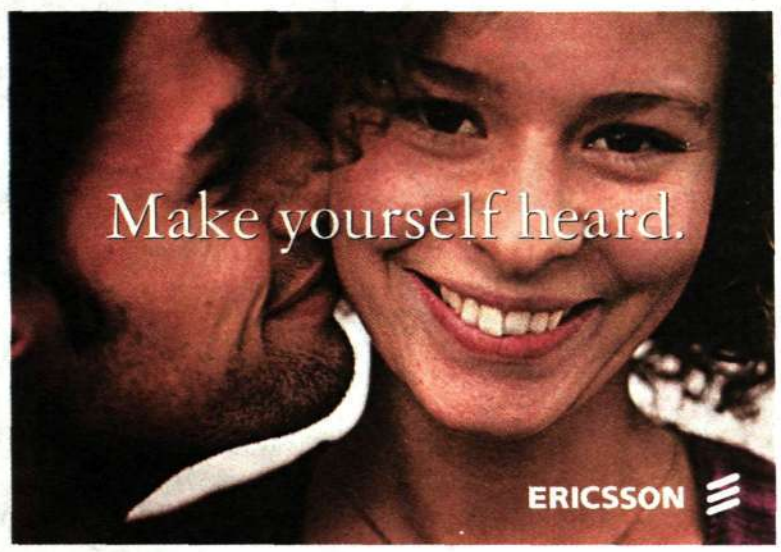
It's high time for Ericsson Mobile Phones and Terminals to project an image that reflects what it stands for and represents. A new campaign conducted under the theme "Make yourself heard" is designed to elevate Ericsson's values and strengthen our brand names in all parts of the world.

This month, Ericsson Mobile Phones and Terminals will initiate its first global campaign to promote and enhance Ericsson's worldwide image. Daily newspapers, billboards and TV advertisements will announce Ericsson values loud and clear to the world around us. The campaign will be conducted in more than 60 countries through international media and local advertising outlets.

The campaign is predicated on a concept that emphasizes humanity, respect for the individual and a relatively new English language term called "empowerment." All efforts are aimed at strengthening Ericsson's brand name.

Perhaps the most unusual aspect of the campaign is the total absence of telephones. We will also see ordinary people, not fashion models.

As opposed to traditional advertising campaigns, which immediately induce positive or negative opinions and reactions to whatever might be presented, Ericsson's approach in the new campaign is based more on a thought-provoking process.



"We want people to think twice. We hope our message will appeal first and foremost to the mind, and secondarily to the heart," says Cecilia Lund, manager of advertising and media relations at Ericsson Mobile Phones and Terminals.

GISELA ZEIME

news briefs

New rules for GASK2

■ New rules and regulations are being enforced regarding access to Ericsson's GASK2 electronic file, effective February 7, 1998. The database contains information about all Ericsson products. In the next edition of GASK2, new access authority regulations will be introduced, includ ing a new "access code" to regulate various forms of access to documents.

Read more about the new rules at the GASK2 home page at: http://gask.ericsson.se.

Swedish Navy buys radar from Ericsson

■ The Swedish Navy has ordered five marine versions of the Giraffe radar reconnaissance systems, valued at several million USD, from Ericsson Microwave Systems. The equipment will be used onboard Sweden's Visby-type corvettes, a new model now under production.

SDH to Thailand

■ Ericsson has booked an order for SDH transport network equipment valued at USD 3.5 M in Thailand, the second SDH order booked in the Thai market in six months. The orders represent Ericsson's breakthrough in a new market. Prior to receipt of the recent orders, Ericsson had never sold SDH equipment in Thailand.

news briefs

S&S announces layoffs in Stockholm

■ Segerström & Svensson, a mechanical engineering company serving Ericsson, has announced the layoffs of 220 workers at the Telefonplan plant acquired from Ericsson on January 1, 1997. The company also announced the creation of 110 new jobs at its installation in Jönköping.

Cutbacks in the company's Stockholm labor force are attributed to increased competition and internal rationalization opportunities following the acquisition of Tryggarps, another mechanical engineering company, last autumn. The magnitude of orders received by Segerström & Svensson from Ericsson has not decreased since the operations were taken over last year.

AXE contract booked by Telia

■ Telia has signed a contract to purchase AXE equipment and functions valued at approximately SEK 1 billion (USD 127 million) to cover its need for AXE equipment over the next two years.

"The contract will enable Telia to remain competitive and cost efficient in terms of our telecom network, one of the most modern networks in the world," says Olof Ulander, Director of Telia Network Services.

Upgrades will be implemented in all parts of Sweden, with completion expected by the end of April 1999.

Brazilians choose D-AMPS

■ Three mobile telephone operators in the Telebras Group of Brazil have contracted Ericsson to expand and digitize their mobile telephony systems. The expansion program will be based on the digital technology D-AMPS (IS-136).

The improvement will enable Brazilian operators to introduce new mobile services. The operators are Teleron, based in the Brazilian state of Rondônia, Telemat in Mato Grosso and Telems in Mato Grosso do Sul.

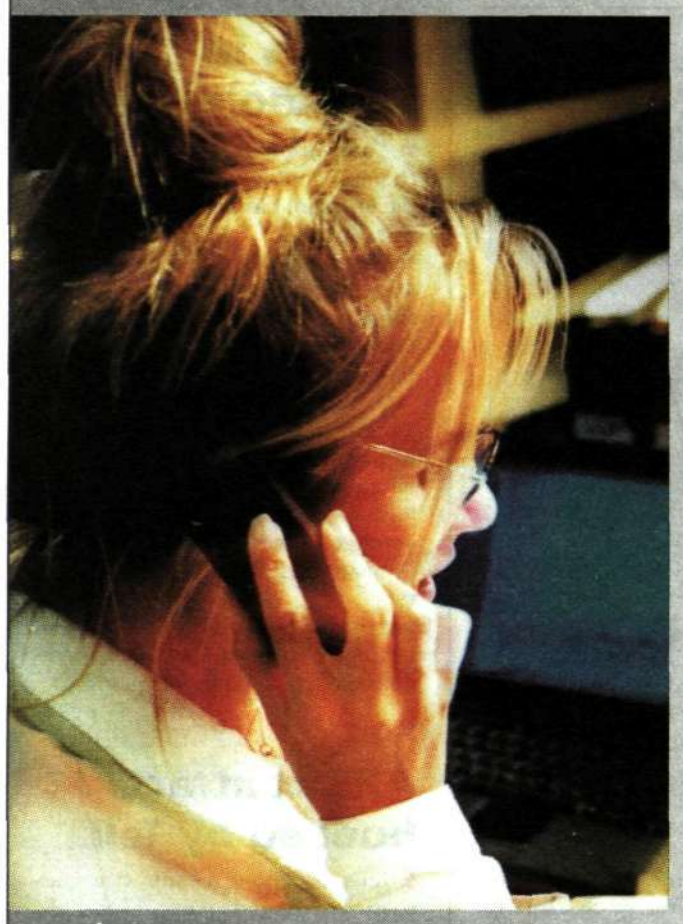
Expansion in Panama

■ Cable & Wireless, a telecom operator in Panama, recently opened a new mobile telephony network based on the digital technology D-AMPS (IS-136. The network is part of the Panamanian operator's five-year investment program to improve mobile services.

The 800-MHz network will enable end-users to access such services as SMS messaging and wireless Internet services.

Ericsson de Panama S.A. is a new company established by Ericsson in Panama to meet growing market demand in the Central American nation. It is Panama's largest supplier of wired and mobile networks and the country's leading manufacturer of mobile telephones.

This is the last of a series of six ads published consecutively in Contact.



WE MANUFACTURE PRODUCTS, BUT OUR SERVICES MAKE US SPECIAL

Flextronics operates to a great extent as a service company. Although we manufacture sophisticated electronics products, the services backing all of our operations are what provide added value.

Besides offering complete solutions incorporating design, procurement and distribution, we can also adapt our organization to suit our customers. We build up a dedicated project organization for each customer, within the framework of our own organization. A Program Manager, who functions as a coordinator between the customer and Flextronics, is responsible for customer contact. In this way the customer has a personal spokesperson within our organization.

We use information technology in all its forms. Through the Internet and Intranet, we create the means of communication that will be in future demand.

E-mail is used for a large proportion of our external communications, EDI to suppliers and customers and FTP (File Transfer Protocol) for the transmission of technical documents.

We manufacture products – but as a service company we give customers added value.

Flextronics International Ltd has 10,200 employees and facilities in North America, Asia and Europe. We are one of the world's largest contract manufacturers of advanced electronics for the communications, computer, consumer and medical electronics industries. In addition to Ericsson, our customers are among others Cisco Systems, Microsoft, Nokia and Philips Electronics.

Our business concept is simple. We let our customers concentrate on their core operations. Flextronics takes care of the entire manufacturing process from procurement to distribution. A staff of 1,000 works at our European Head Office in Karlskrona, where we manufacture among other things Ericsson business communications products such as the MD110 PBX and Packet/Frame Relay switch family, as well as components for radio-based DECT systems for business cordless and radio access. We deliver directly to customers worldwide.

Flextronics International Sweden AB, PO Box 532,
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Ericsson Microelectronics has over 20 years experience in manufacturing and marketing micro and opto electronic products. Acting as an independent business unit, Ericsson Microelectronics intends to be the principal supplier to major communication companies.

The group has an impressive track record in fiber optic telecomms devices for the transport network, ie. 1310/1550 opto electronic components. Since the late 80's, much of our research has been focused in InPs resulting in state-of-the-art active 2x2 and 4x4 switches, optical drop devices, multi-wavelength cascade lasers and DFB/EA lasers for 2.5, 10 and 40GB/s. All this, together with advanced SDH components and modules, gives Ericsson customers the edge when addressing D-WDM and other future transport applications.

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Ericsson Components AB, Microelectronics Division, Isafjordsgatan 16, S-164 81 Kista-Stockholm, Sweden.

Nagano demands Ericsson basestations

The world press and tens of thousands of tourists from all parts of the world have placed enormous demands on mobile network capacity in Nagano. Using micro base stations from Ericsson Microwave, Sweden, the network has been reinforced in areas where large amounts of people gather and traffic density is high.

Time was a critical factor in efforts to complete assembly of the micro base stations before the first snow came – and before the Winter Olympic Games began.

The eyes of the world are focused on Japan and Nagano, host city of the 18th Winter Olympic Games. During the two weeks of competition, throngs of journalists and other sports enthusiasts will converge on Nagano, situated at the foot of Mt. Hida, about 150 kilometers from Tokyo.

Japan's largest operator, NTT DoCoMo, which commands more than 50 percent of the Japanese mobile telecom market, made substantial investments to market its telecom services during the Olympic Games. DoCoMo strengthened its regular network with micro base stations from Ericsson to meet increased demand for cellular capacity.

"Micro base stations are extremely well-suited for temporary capacity surges in a mobile network," says Erik Löwenadler, manager of the MDE base station division of Ericsson Microwave in Mölndal.

The first micro base station was delivered to NTT DoCoMo early in the autumn of 1997. The customer was anxious to receive deliveries as soon as possible and install the new base stations before the first snows came and disrupted assembly work.

To meet the demands of NTT DoCoMo, work conditions at Ericsson Microwave in Mölndal and Ericsson Radio's factory in Gävle, where the base stations were produced, approached a feverish pitch on several occasions.

"Last summer, we were forced to work through the industrial vacation period to meet deliveries. There's no denying the stress and tough tempo gave rise to a few problems that we worked hard to resolve in order to satisfy our customer," Mr. Löwenadler continues.

For NTT DoCoMo, the micro base stations from Ericsson have become an important weapon in ever-increasing competition for Japanese subscribers. During 1998, new operators will offer mobile telephony based on the IS95 standard and, to meet the threat, NTT DoCoMo is working hard to expand to its mobile system and enable the company to offer subscribers a nationwide, full-coverage network.

"Although more new standards are emerging constantly in the Japanese market, with IS95 and WCS broadband systems of the future, I am convinced there will be a market for our products adapted in accordance with the PDC standard for many years to come," Erik Löwenadler says. Based on a growth rate of nearly one million subscribers every month, Japanese operators are forced to invest in existing systems to meet growing mobile market demand.

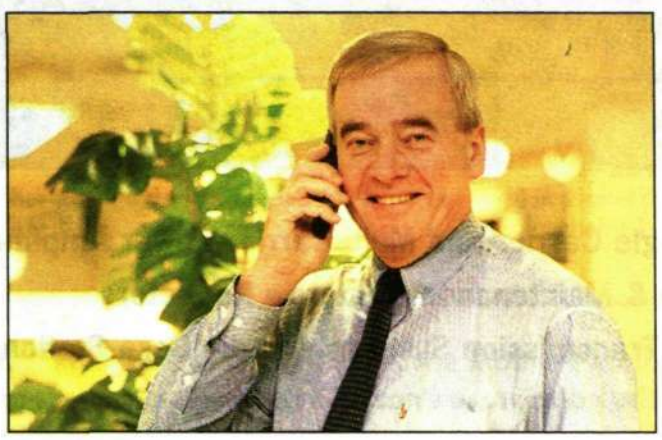
Ericsson's success with the micro base stations in Nagano will be a key element in continued business dealings with NTT DoCoMo. The Japanese operator normally relies on several suppliers of base stations, but Ericsson is the only company that sells micro base stations in Japan. The product's success has opened doors to DoCoMo's local companies in all nine regions of the Japanese market.

NICLAS HENNINGSSON

hello there!

China calls Stig to new management job

When Stig Fägerborn, recently appointed President of Beijing Ericsson Communications Systems Company, begins his new job on March 1, he will have jump-started his presidency by attending a Board of Directors meeting on February 24, 1997.



Stig Fägerborn will begin his new assignment as President of Beijing Ericsson Communications Systems Company on March 1, 1998.
Photo: ROLF EK

He will be introduced to Board Chairman Bau Yu Tong at the meeting, assisted by April, as appointed interpreter. Stig Fägerborn does not speak any Chinese, and Bau does not speak English. April will be the link between the two men.

Contact met the amateur violinist and incumbent president of Ericsson Business Systems recently for an interview.

• You will be one of only a few Swedes in a company staffed by more than 500 Chinese employees. Describe your feelings as the assignment approaches?
"I think it's all very exciting. It will also be a fantastic and extremely interesting experience to learn a completely new culture and conduct business in a very different environment."

• What do you consider the most interesting aspect of working in China?
"The country's size and potential to conduct business on a very large scale if we are successful. It won't happen overnight, however. It will take a great deal of patience, diplomacy and sensitivity to the intricacies of Chinese culture."

• Do you know anything about China?
"Not enough, that's for sure. I'm trying to learn much more about the country and its culture before I start my new assignment. I was particularly attentive to the word of wisdom imparted by my predecessor Gunnar Wenneberg. I am fascinated by the way Chinese people regard time. Time is a precious commodity in China, and I have been told never to arrive late at meetings, for example. By the same token, a normal course of events may take as long as necessary to complete. My patience will probably be tested, particularly when changes are introduced."

• Your new company is Ericsson's largest supplier in terms of MD110 lines. Where do you see future growth?
"Our present volumes are small in relation to market potential. In the medium-term perspective, I expect to develop a distribution network for sales of smaller BusinessPhone products, an area with strong potential for volume growth.

"Perhaps our greatest opportunity, however, lies in the DECT market for cordless telephones. We are striving to become the Chinese market's dominant player in DECT. We have been granted all the required licenses, and the products will be fully developed in the near future. DECT telephones are manufactured today by Flextronics in China."

THORD ANDERSSON

industry news

Cooperation on NMT

■ Ericsson, Nokia and Benefon will cooperate on further development of the analog NMT450/900 mobile telephony system, which will be upgraded in close cooperation with NMT operators. During 1997, 15 new operators started using the NMT system.

The latest addition to the NMT standard include calling line identification and SMS. A new series of small NMT telephones will also be produced. With its new functions and good coverage at low costs, NMT offers operators strong business potential despite the system's longevity on the market.

China buys lines from Alcatel

■ Alcatel of France has been contracted to deliver 100,000 wireless access lines based on the point-to-multipoint technique for installation in China. The order was booked by the post and telecommunications administration in the Province of Sichuan, one of China's most densely populated areas. Installation of the new lines will continue over the next two years.

Free competition in telecom markets

■ About a month behind schedule, the World Trade Organization signed an agreement endorsing free competition in the telecom sector on Thursday, February 5, 1998. The agreement has been adopted by 73 countries, of which 93 percent are included among the world's leading telecom markets.

The agreement encompasses 57 member nations in the initial implementation stage. Free competition in all of the world's telecom markets will probably not be achieved until a few years into the next century. All member nations of the European Union have endorsed the agreement.

BT helping in health care sector

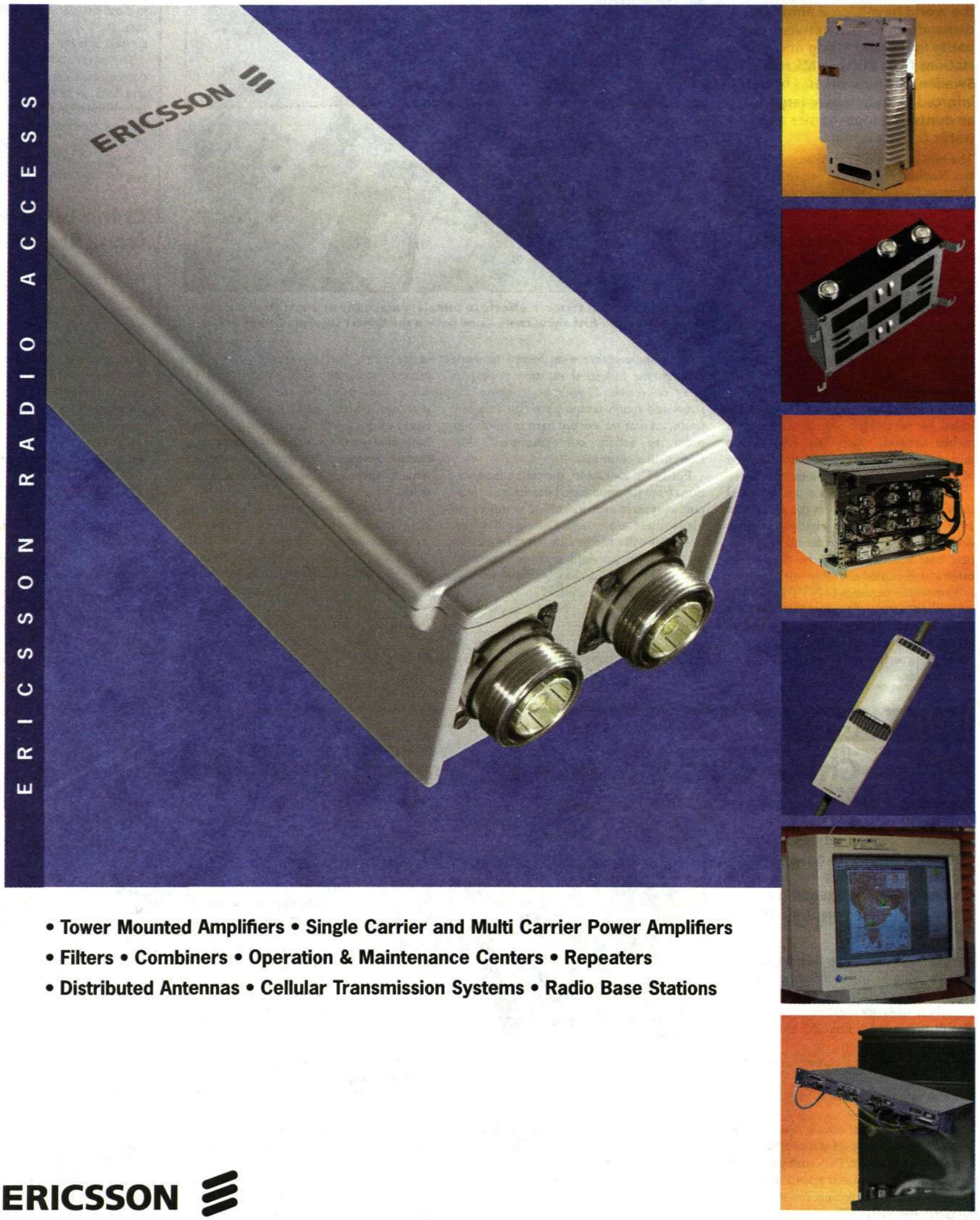
■ The National Health Service (NHS) of Great Britain recently opened a Web site to make more information available to the general public. BT, a leading British operator, is sponsoring the service. According to the British telecom operator, general health and medical information has finally entered the "on-line age."

The Web site will provide information and opportunities for patients and health authorities to communicate with each other. The new facility will be officially inaugurated in conjunction with the 50th Anniversary of NHS.

Nortel produces 10 millionth phone

■ The 10 millionth Norstar Telephone made by Nortel left the Canadian telecom supplier's factory recently. Walgreen Company, a leading distributor, will sell the 10 millionth telephone. Nortel has manufactured business telephone systems under the Norstar name since 1988.

A passion for technology



- Tower Mounted Amplifiers • Single Carrier and Multi Carrier Power Amplifiers
- Filters • Combiners • Operation & Maintenance Centers • Repeaters
- Distributed Antennas • Cellular Transmission Systems • Radio Base Stations

ERICSSON

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portrait

From a quiet residential area in a Stockholm suburb to the gigantic metropolitan city of São Paulo. Mansour Akbari of Ericsson Radio Systems brought his family with him on an overseas assignment in Brazil. In some ways, it was like coming home to their native city of Tehran.

They left tranquillity for the city's hustle and bustle

Evening in Vila Mariana, São Paulo. Arjann, Ava, Anna and Mansour Akbari from Stockholm like living in the Brazilian megacity, where father Mansour is working on an overseas contract. The traffic is the biggest problem – aside from the language. Few speak English, but Mansour has received much help from his colleagues at Ericsson. Photo: NILS SUNDSTRÖM

Each year, a large number of Ericsson employees go abroad to work. There are at present a total of 3,100 employees working on so-called long-term contracts of one year or more. Many bring their families. However, if asked to move to São Paulo, Brazil's largest city, one must think twice before bringing along children.

Skyscrapers tower above the city of 15 million inhabitants. For a European, the culture shock is considerable when faced with the vast differences between rich and poor, the high crime rate and heavy traffic. The city's five million cars are not permitted to drive in the inner city more than four weekdays per week.

"Of course there are many things that are different here. The traffic is a nightmare, the air is dirty and then there are all the homeless children roaming the streets," says Mansour Akbari. "But there is also a wonderful openness here. Brazilians are very sociable and helpful."

Fled Iran

Like many of his countrymen, Mansour Akbari and his wife Ava fled Iran in the 1980s and came to Sweden. He had studied chemistry in Tehran and then attended the Royal Institute of Technology in Stockholm before obtaining a job at Ericsson in 1990. At Ericsson Radio Systems in Kista, in the Cellular Systems – American Standards business unit, his job consists of planning and optimizing operators' mobile telecom networks. It is an exciting job, entailing travel to Latin America, Southeast Asia and within Europe.

"When I first visited São Paulo in 1996, I recall saying that I would never drive here. Now it's no big deal. You have to accept challenges and learn new things in order to get anywhere in life," he feels.

The idea of working abroad came up last winter. Ericsson was expanding heavily in Brazil and needed competent personnel as the operators were making enormous investments in mobile telephony. In August, the Akbari family moved to São Paulo for an initial one-year period. For the adults in the family, it was almost like coming home.

"When we arrived in Stockholm in 1983, we thought the city was very small compared with our home city Tehran. São Paulo and Tehran are alike in many ways. This city is more multicultural and the climate is more humid, but the social aspects and even the slow bureaucracy and traffic jams are similar," Mansour says.

Exciting culture

The move was not without its problems, nevertheless. Their children Anna, 13, and Arjann, 8, didn't want to leave their friends at home. At the same time, the thought of experiencing a new culture and language was very exciting.

Ava has taken a leave of absence from her job at a day-care center, their house has been emptied and rented out, and their furniture is in storage.

She says, "For me, this was an opportunity to wind down from my stressful job. Everyone is so helpful and spontaneous here – not as cautious as in Sweden. Maybe it's because they think we're Brazilian – our hair is as dark as theirs."

"It's much better here than I expected," says daughter Anna, who is studying in English at an international school with students from such countries as Japan, Israel and Argentina.

She feels that Ericsson has been very supportive. The company even drives Arjann home from school every day.

"Yeah, that's good, but I still miss my friends at home a little," Arjann adds, looking up from the sports section of the Stockholm newspaper brought along by the reporter.

At a hotel

It was initially very difficult for the family when they moved to São Paulo. They lived in a hotel for seven weeks before finding suitable housing. They now live in an apartment high up in a 15-story building, which has a courtyard with a soccer field, tennis court and pool. Mansour has about two kilometers to work, which translates into a half hour or an hour, depending on the traffic.

"What's most important now is learning the language in order to be able to participate in daily life in and out of the office," says Mansour, who studies Portuguese four hours a week. "We will also try to get out of the city as much as possible on weekends. The coast is only a hundred kilometers away."

For many families working abroad, it's a classic phenomenon to begin celebrating their own country's traditions more ardently than before, while craving typical foods from home. For the Akbari family, this is nothing new.

"Of course we will celebrate the Iranian new year on March 21 and other holidays. We know from our time in Sweden how important such gatherings are," Mansour Akbari concludes.

NILS SUNDSTRÖM

debate

Jan Ahrenbring, Vice President of marketing at the Mobile Phones and Terminals business area, replies to Bengt Bergkvist's letter to the editor, in which Ericsson's association with the James Bond film is questioned.

Ericsson is in good company!

In Contact no. 20/1997, Bengt Bergkvist wrote a letter to the editor in which he feels that Ericsson's sponsorship of the new James Bond film is questionable, in light of Ericsson's desire to be viewed as a good corporate citizen. He then refers to a study of Ericsson's role in society by two students. However, the direct comparison that Bengt Bergkvist makes in his letter is not correct, since he is comparing two different issues.

On one hand, Ericsson has a long-term role to play in society. How well this is done and how structured it is depends on how we, the employees of Ericsson, act in various situations in society.

Ericsson is a good corporate citizen, but could be even better, of course. We initiated the study performed by the two students at Chalmers Institute of Technology. It showed that we can go even further with a structured corporate philosophy in this area.

Corporate management has also made the decision to develop an Ericsson-specific "good corporate citizen philosophy." We can expect the first concrete results of this study next autumn.

The flip side of the coin involves communicating messages about Ericsson's products to the market. Marketing communications is an ongoing process and takes place parallel with the long-term role Ericsson plays in society.

The purpose of marketing communications is to communicate messages about Ericsson's products to as many people as possible. In short, to sell more products.

James Bond is liked by audiences worldwide because he takes on "the bad guys" with style and humor, and always with the latest technology. The movies are perceived as general entertainment rather than belonging to the violent-film genre. We have deemed the risk of negative consequences from this project to be nonexistent.

A few months ago, the mobile telephone production facility in Linköping adopted a fresh approach. Instead of manufacturing telephones destined for warehouse shelves, customers can now receive what they order directly. The project, called TTC (time to customer), shortens the zigzagging path from plant to customer. The project is not solely applicable to the plant at Linköping. Within Ericsson, numerous similar projects aim to cut inventories while satisfying customers as far as possible.

Linköping facility reduces inventory

Flexibility and delivery assurance are key terms. The objective of the Linköping plant is to reach 97.5 percent accuracy in delivering the right products on time.

"In the first stage, we aim to deliver within six days of receiving an order. Later, we will successively shorten that time to fewer and fewer days," says Bengt Undén, plant manager in Linköping.

In the past, the level of service was below 50 percent. That is, in terms of receiving the right volume of a given telephone on time, only half of all deliveries fulfilled customer expectations.

"The customer is willing to wait an extra day if he knows he'll get the right product on the promised day of delivery," continues Bengt Undén.

The new work method implies that the order process for assembling a telephone has been shortened to just nine steps, down from 27. At the same time, production has been transformed into a flowing process that runs non-stop, 24 hours a day, seven days a week.

Order direct from the factory

Instead of going through a sales office in Lund and the warehouse in Pilängen, customers should be able to order different volumes and varieties directly from the plant.

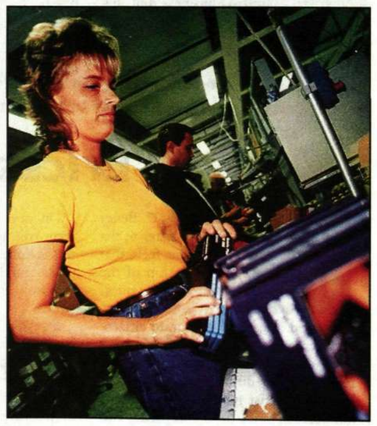
"Closer contact with the customer will enable us to react more quickly to market changes," says Lars Wretman, project manager of the order-based project in Linköping.

The inventory will slowly be reduced to one-third that of current levels, which will significantly reduce tied-up capital.

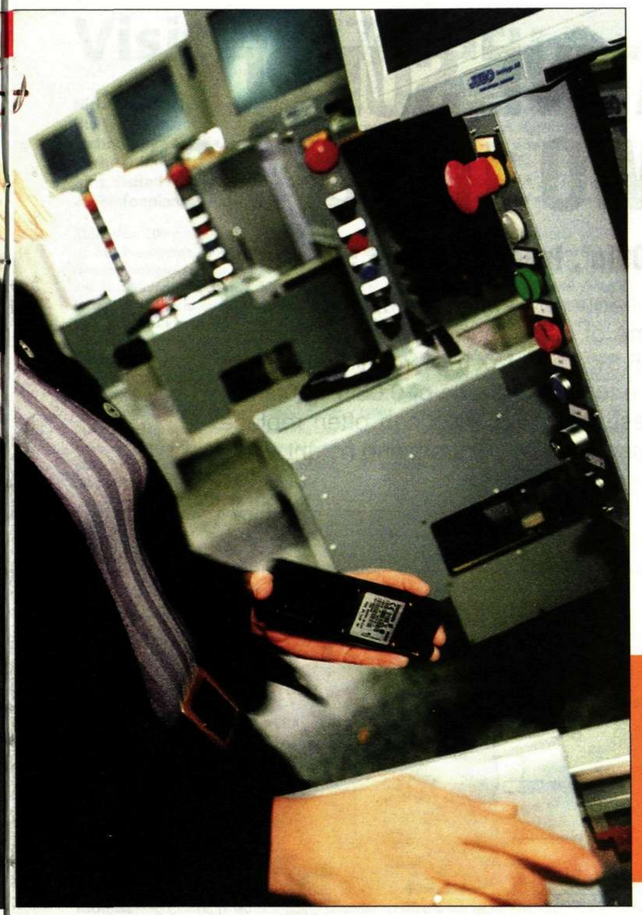
To date, Linköping has done the most with the TTC concept. Initially, the year-end goal was to have half of all orders representing customer orders. Today, the volume already exceeds 80 percent. Germany, France and the U.K. are a few of the countries that have begun practicing order-based management.

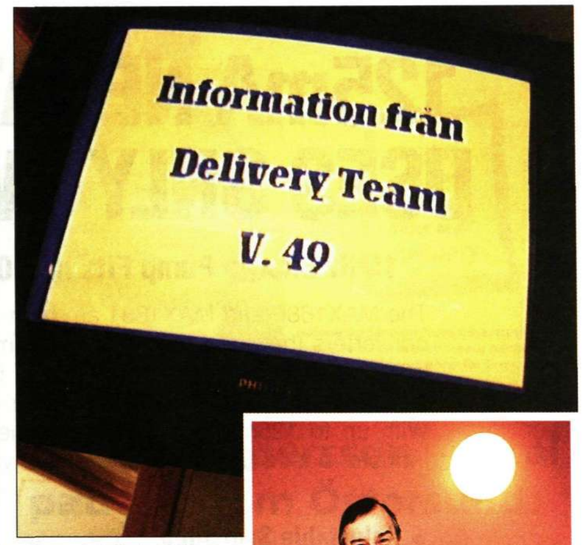
GISELA ZEIME

Christina Berström inspects the boards that have been rejected by the automated tester.



Christina Bladh finds it more rewarding to work to customer order.

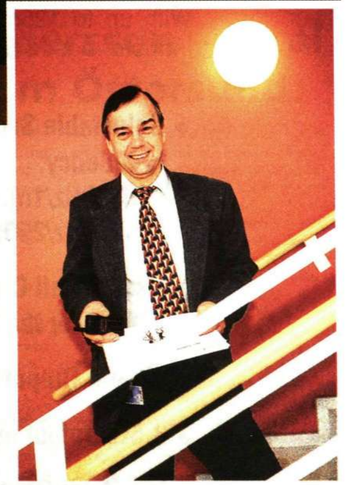




A TV monitor displays information on what is being delivered and which customer orders are in progress.

The production of circuit boards has not been affected by the changes brought on by TTC. The boards are still manufactured for an inventory, a buffer that is built up at the end of the five production lines. Here, Ingunn Einarsdottir is shown making the final test on the telephones.

Photo: ULF HUETT NILSSON



Bengt Undén, plant manager in Linköping.

From circuit boards to telephones

The Linköping production facility currently manufactures mobile telephones on a customer order basis, instead of filling inventory reserves. This approach is now seriously beginning to permeate the organization. Contact's reporter toured the plant in order to determine what impact the project for shortening lead times – called the TTC project – has had on production and workers.

Some 50 people per shift work on the five lines (given names of the Viking gods) in the surface mounting department, where they mount components on circuit boards. Every hour, a total of 200,000 components are mounted onto 500 circuit boards, which are then soldered and tested. The production of circuit boards has yet to taste of the changes introduced by the TTC project. In this section of the plant, circuit boards are still produced for an inventory, a buffer that is built up at the end of the five production lines.

The mobile telephone models GH 688 and GA 628 are manufactured here. Being service day, several continers are lined up on the floor for inspection.

After the components have been mounted, the circuit boards pass through the first test station. Christina Bergström inspects the boards that have been rejected, for one reason or other, by the automated tester. The boards are next sent to the oven, where the components are bonded to the boards. The boards are then turned over and the process is repeated.

Round-the-clock production

Production, which is divided into teams, runs seven days a week, 24 hours a day in five rolling shifts. Each team of eight to ten people rotates within the group every two or four hours.

"The more knowledge you have, the more assignments you get. The goal is that everyone will be able to rotate and perform all tasks," comments Lars Franzén, manager of the order-based project in Linköping.

Before the final test is carried out, each board is loaded with a test program. Any board that fails the test is inspected under a microscope. Usually, the failure can be traced to loose wires that need to be soldered together.

This is the end of the 120-meter long production line, where the circuit boards are added to the buffer until a customer order claims them.

On a customer-order basis

The next stop is to see how the mobile telephones are assembled. We make a sharp left turn, following the two semi-automatic lines where half of the assembly process is manual and the other half is performed by a robot. In just 15 seconds, a microphone, display, keypad, speaker and light guide are mounted to the front casing.

A bulletin board displays a seven-day plan, indicating to which country a specific order is to be sent and when.

Identification is next. Each telephone is given a label that indicates the software and language it should have.

The next station ensures that the keypads work properly. This station also runs the final test. Ingunn Einarsdottir presses each telephone into the box-shaped test apparatus that simulates a call. We ask her if she has noticed any differences since the TTC project was initiated.

"I feel that I am able to participate in a completely different way. I now know the destination of every single telephone," she responded.

Above us hangs a TV monitor that displays information on customer orders in process and the percentage of orders delivered last week that met customer expectations.

Reversed order

Christian Carlsson is a member of one of the delivery teams that plans orders in detail. These groups require a comprehensive view – from order reception to shipping. They work six at a time, taking orders, planning, checking up on the supply of materials, releasing the order for production, and monitoring and following up.

"I approach the entire process in reverse. When planning production, we proceed from what is to be packed in the boxes," says Christian Carlsson.

But before the phones are packaged, the software must be installed. Many different modules of software exist, depending on language, call signals, and other functions. The current order for model GA 628 telephones is to be sent to Germany.

Daniel Fäldt is one of the group working at this station who, via a computer, supplies each telephone with its special characteristics. He has only worked here since last summer, but still notices a big difference since the start of TTC.

"The work is varied. It feels good not to be sending everything to a large warehouse."

We next arrive at the packaging station where Christina Bladh is busily packing telephones, chargers, manuals and guarantee certificates into each box. Although it can be a bit tedious at times, she likes her work, and working on customer orders has made it more enjoyable.

When it comes to packaging, Lars Wretman says there is much that can still be done. For example, upon customer request, each package could be fitted with a special Christmas greeting, made to look like a present, or printed with a message from the service provider.

We follow the German order out onto the loading dock. Several plans exist for motivating the personnel to work in order-oriented projects. For example, a number of co-workers selected from various work groups will be allowed to accompany the order until it is delivered to the customer. Who knows, maybe they'll get the chance to shake hands with a Portuguese salesperson?

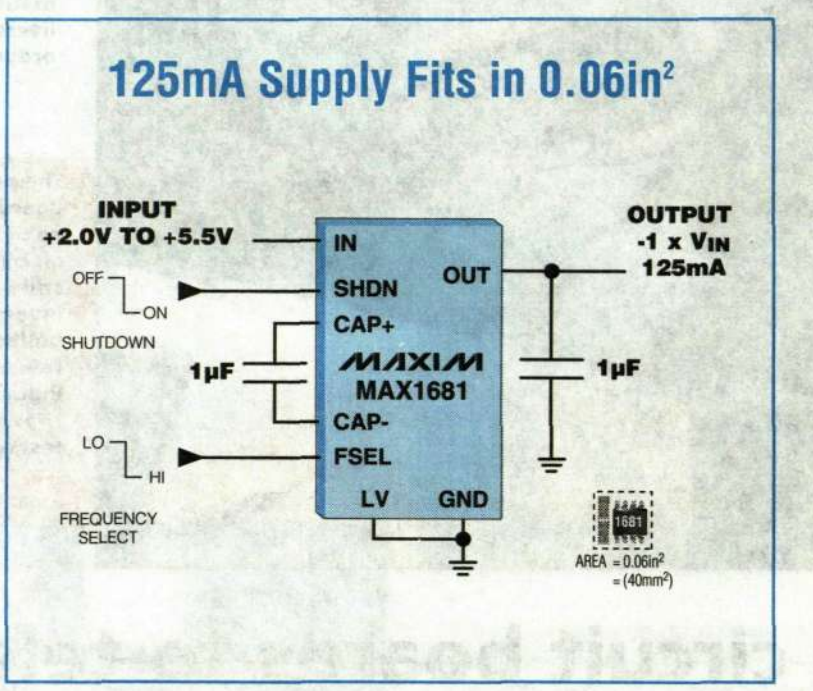
GISELA ZEIME

125mA NEGATIVE SUPPLY USES ONLY TWO 1µF CAPS

1MHz Charge Pump Fits in 0.06in², Inverts 2V to 5.5V Input

The MAX1680 and MAX1681 are high-frequency, switched-capacitor voltage converters that can supply up to 125mA of output current when doubling or inverting input voltages from 2.0V to 5.5V. The MAX1681 requires only two 1206-size, 1µF ceramic capacitors for a total board area of 0.06in² (40mm²). With up to 125mA output current, these charge-pumps can often replace inductor-based DC-DC converters, saving cost, board area, and height.

- **Selectable Switching Frequency:**
  500kHz/1MHz (MAX1681)
  125kHz/250kHz (MAX1680)
- **Uses Small Capacitors (1µF for the MAX1681)**
- **125mA Output Current**
- **3.5Ω Output Impedance**
- **Inverts or Doubles V_{IN}**
- **2.0V to 5.5V Input Range**
- **1µA Shutdown Current**



Boost or invert 2.0V to 5.5V with an ultra-compact circuit. The MAX1681, in an 8-SO package, delivers 125mA using only two tiny ceramic capacitors and no inductors.

Visit by IT-Guru

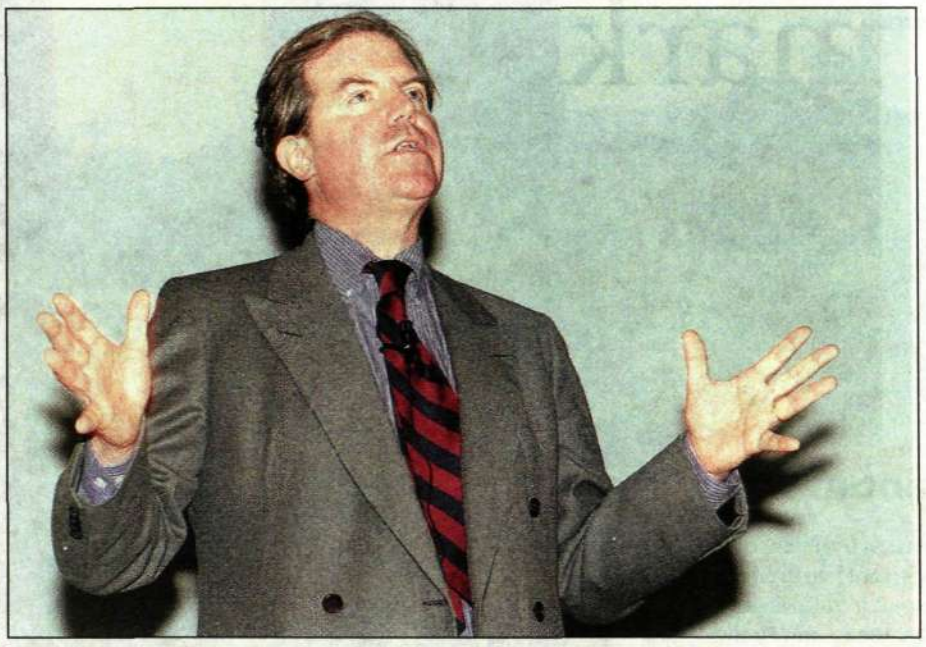
Nicholas Negoponte, founder of the Massachusetts Institute of Technology's Media Lab and one of the IT industry's leading authorities, visited Ericsson's head office at Telefonplan in mid-January.

More than 200 persons attended a lecture by Mr. Negoponte about future information technologies and their effects on society. In addition to lecturing, his visit was linked with plans to establish a Media Lab in Stockholm. The facility will be started in cooperation with the Foundation for Strategic Research. Ericsson plans to support the project, which is still in its embryonic stage.

Common interests in the establishment of a research center to study new media and communications in Sweden are behind plans to establish the Media Lab. Nicholas Negoponte sees Sweden as a strong base for Media Lab in Europe. Scandinavia is on the cutting edge of Internet applications and digitalization. The Foundation for Strategic Research took the initiative to a cooperation agreement with MIT through its mandate to establish new areas of investment in Sweden.

"The proposed research center will be operated primarily as a supplement to Media Lab, which places greater emphasis on technology for the individual. Media Lab is the world leader in various studies in this field," says Bernt Ericson, Chairman of the Foundation and Director of Research and Development in Ericsson. "It is important for Ericsson and Sweden to educate and train people who understand these types of applications, which will be extremely valuable in the future, and how they should be formulated to enhance user-friendliness.

LENA WIDEGREN



Nicholas Negoponte, IT Guru and the founder of Media lab at MIT in Boston, visited Ericsson in Stockholm last month. Photo: ANDERS ANJOU

Eco-Council revived

"We need committed members who work closely with business operations," said Mats-Olov Hedblom, Ericsson's Environmental Manager in explaining organizational changes introduced recently in his realm.

Environmental issues are important to Ericsson and, as in all other areas, the company needs the right skills in the right places.

Ericsson's Environmental Council has been revived in a new format. Its former staffing by top management personnel representing Ericsson on the global plane has been replaced by a core group whose focus is clearly concentrated on results, a group that works with environmental issues on a daily basis and comprises environmental managers of Ericsson's various business units.

"Later on, I plan to supplement the core group with additional expertise from different parts of the company," Mats-Olov Hedblom explains. Some members will be associated for short or long periods of time, characterized by flexibility and specific needs. Among other efforts, we shall try to close the gap between environmental concerns and marketing departments, based on our firm belief that environmental issues will become a major sales argument."

Ericsson's new Environmental Council held its first meeting at the end of January. Some of the main issues discussed were council staffing, establishment of clearly defined responsibilities and Ericsson's vision in major environmental questions.

LARS CEDERQUIST

The new Environmental Council comprises (l-r) Jens Malmodin, Mats-Olov Hedblom, Richard Trankell , Leif Lenman, Lena Melin, Hans Sundgaard, Lars-Erik Eriksson, Mats Pellbäck Scharp and Sven Broddne.

Photo: ANDERS ANJOU

diary

Helene Andersson from Östersund works with efforts to create perfect climate control conditions for Ericsson's telecom equipment.

Photo: ANDERS ANJOU

Helene Andersson – local patriot from Östersund

Helene Andersson, a 25 year-old quality assurance manager at the Climate Control Department of Energy Systems, a unit of Ericsson Components. Helene Andersson earned her engineering degree in Östersund in northern Sweden, where she majored in quality assurance and logistics, knowledge she has brought with her in professional pursuits to create perfect climate control conditions for Ericsson's telecom equipment.

Friday: I woke up, stretched carefully and discovered I had the first aches and pains from my workout. I was at Pump the night before, an organized form weight training. Hard work, but a lot of fun.

One of the cabinet projects at Climate Systems is approaching completion, and we just had the last large project group meeting. We are now waiting for the project manager to write his final report, after which the sponsors will treat us to coffee and cake.

Saturday: I just barely made it down the stairs this morning. My thigh muscles were not functioning. I was forced to walk down backwards with a firm grip on both railings. Trying to get into the car was a nightmare, but I had to go to buy a new TV. The Winter Olympic Games in Nagano start soon, and I'm looking forward to watching Uffe Dahlén from Östersund score the winning goal in the championship game against Canada. Or watching two other hometown natives, Ylva Nowén and Anna Ottosson, race down the slopes on their way to medal ceremonies on the winner's podium.

Sunday: Winter has finally arrived in Stockholm. Sunshine and glittering, fresh white snow. I feel energized and my aches and pains from the workout have begun to subside. I can't believe it's so much fun to shovel snow. I practiced shoveling a great deal when I lived in Östersund, and I finished our driveway and the neighbor's before the guys in the neighborhood finished theirs. My neighbor opened the door to thank me, but also with some concern that I might keel over from exhaustion.

Monday: Lots of things happening in the department, a stressful day and we all helped each other to get everything done.

The final report for 1997 on our accomplishments in achieving established goals had to be finished in parallel with formulations of new goals for 1998. Energy Systems had a very good year in 1997, and we embarked on 1998 with high hopes for another good year. Working in a department that faces comprehensive changes is educational and exciting. My own objectives for 1998 were approved in the afternoon by my boss, Robert Kjelldorff.

Tuesday: I gathered information almost all day about Balanced Score Card, a method to define and monitor progress in pursuit of goals. I'm scheduled to attend a two-day seminar next week to learn how other companies have adopted the method to meet their specific needs. During the spring, I plan to submit a proposal to implement a Balanced Score Card in Climate Systems and how we can use it for follow-up work.

Wednesday: I kicked my significant other out of bed this morning. He woke up 40 minutes before the alarm went off and woke me up. You don't want to get me upset in the morning. He has now declared war on me.

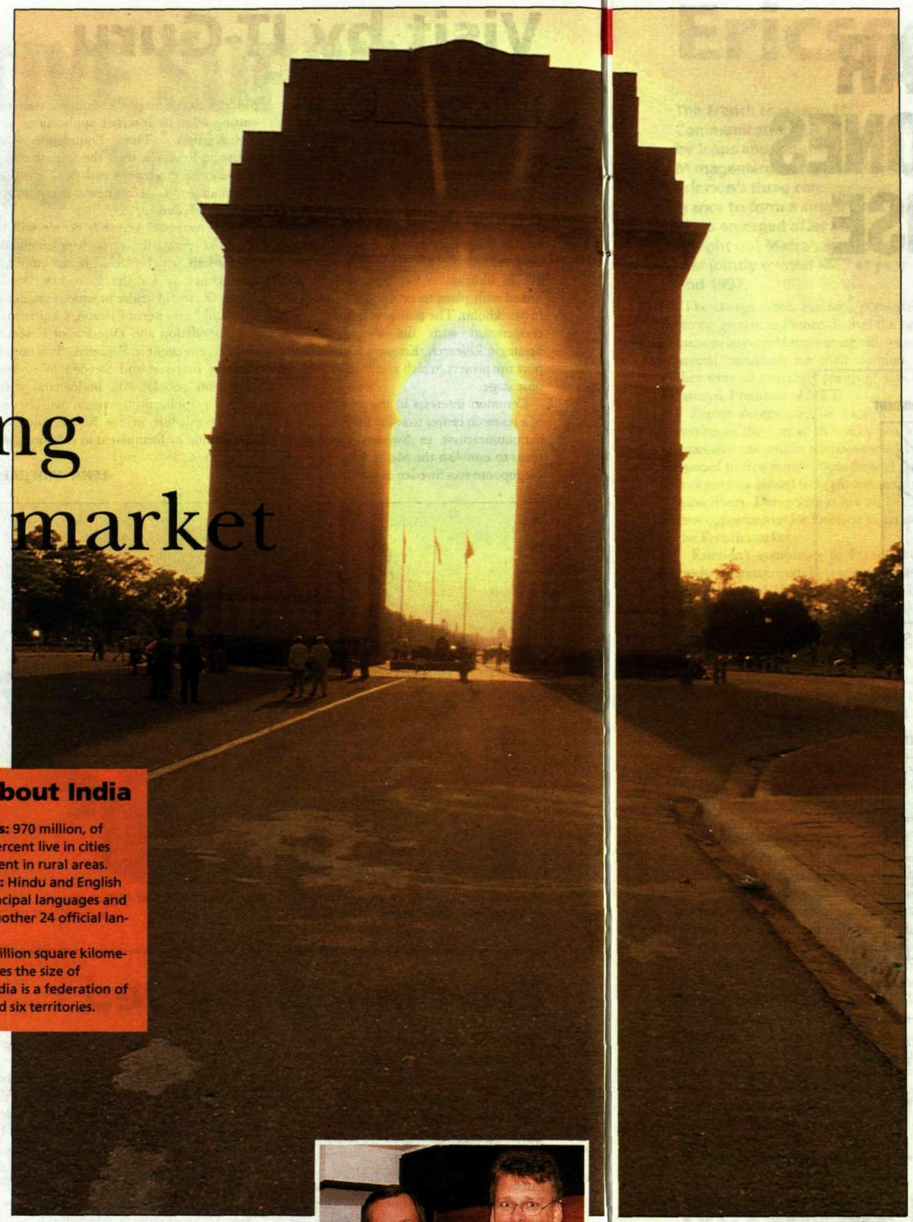
I spoke to some new employees about the operations of Strategic Planning and reviewed our quality work, explaining the organization and my job in Climate Systems. Sometimes I feel a little out of focus working for two departments, but it's actually a big advantage with access to two different units. My job at Climate Systems is more of an operational nature, with Strategic Planning focused strongly on strategy and quality considerations.

Thursday: I attended a seminar all day about planned improvements in Energy Systems computer capabilities in preparation for problems involved with 2000 Compliance. A comprehensive project has been started to replace several existing systems with a new modular system. The project will define the main processes of Energy Systems and divide them into four different levels. When all processes and activities have been defined, we plan to conduct test runs with existing systems and selected modules. I don't think the new system will solve all the problems we have today, but I'm sure it will simplify identification of cost items and provide an overall picture of the entire sale-order process.

I made dinner at home and we signed a truce. Peace again.

"We are well on our way to positioning ourselves in the big dormant Indian market for telecommunications," says Rolf Granström, president of Ericsson Communications. Ericsson's Indian company is visualizing how India in the year 2000 will be one of the first markets whose communications is totally dominated by wireless telephony, mobile telephony, radio access in fixed-wire networks and, hopefully, wireless Internet connections.

Dawn comes to the slumbering Indian telecom market



India has been called the world's largest democracy since it declared its independence from Great Britain on August 15, 1947. But it has experienced domestic disturbances from time to time and one third of its inhabitants are classified as poor.

India's telephone density, calculated in number of lines, amounts to only 1.3 percent. The comparable figure in Sweden is 78 percent, There are no telephones in 550,000 Indian villages.

Ericsson, with dominant positions in mobile systems and mobile phones, has a solid base in the price-sensitive Indian market and is well established with AXE systems in the government operating companies.

40 percent of the mobile networks

India has never had analog mobile telephony. Instead, it has gone directly to GSM systems. The first GSM 900 network was placed in service in 1995. At year-end the number of subscribers was estimated at 800,000, the majority of whom were located in the four largest cities: Bombay, Calcutta, Delhi and Madras. Ericsson Communications has installed or is in the process of installing 18 of the 43 networks for which licenses were offered. The company is working with a total of nine operators. Ericsson Mobile Systems has 40 percent of the market for mobile telephone networks.

Where the 20 licenses for fixed-wire networks are concerned, the first five to seven of the networks will be placed in service in 1998. The licenses for the fixed-wire networks were very expensive, and the authorities were severely criticized for this policy. As a result, they are now attempting to introduce a certain amount of competition by making the cost of the licenses tax-deductible, by reducing certain fees and by offering loans on beneficial terms in connection with the renewed auctioning of the greater part of the licenses.

Ericsson is dominant in the field of international telephone exchanges in India and is one of the major suppliers of local exchanges.

The Mobile Telephones and Terminals business area has approximately 25 percent of the market for its products and competes mainly with Nokia and Motorola.

First Indian order in 1903

Ericsson's history in India, as in so many other countries, is a long one. The company obtained its first order in India, which was for manual exchanges, as early as 1903. British Ericsson opened an office in Calcutta in 1930. The first company owned jointly with Indian interests, a production company that sold manual exchanges to the defense authorities, among other customers, was started in 1971.

The first GSM contracts were obtained in three of the four largest cities – Delhi, Bombay and Madras – in 1995. (Calcutta is the fourth of the largest cities.) And today's wholly owned Indian company, Ericsson Communications, was formed in 1996.

The largest orders for the coming year are distributed within sectors of Ericsson's operations.

During the first half of 1998 a total of 169,000 AXE lines will be delivered to the Department of Telecommunications. A number of the present GSM customers will expand their networks and the police authorities in Maharastra have purchased the EDACS communications system. In addition, the Bharti telcom operator, in its efforts to become active internationally, will use Ericsson's services to install international systems as well as cellular and local exchanges in the Seychelles islands.

Rolf Granström is convinced that the "wired" networks of the future will be dominated by Fixed Wireless Networks – wireless telephony – as an alternative to fixed lines.

"We plan to install a test system for D-AMPS (IS-136) for the Department of Telecommunications in Bangalore early this year, A number of our competitors, including Motorola and Qualcom, are also installing similar systems. But no Fixed Wireless systems are yet in regular commercial use," says Rolf Granström, who sees wireless telephony as a cost-effective, easy-to-handle alternative to fixed-wire telephony.

Approximately 40 permits per community are likely to be required in order to be allowed to lay cable throughout the country.

BRITT-MARIE WIHDÉN

Facts about India

- **Inhabitants:** 970 million, of whom 30 percent live in cities and 70 percent in rural areas.
- **Languages:** Hindu and English and the principal languages and there are another 24 official languages.
- **Area:** 3.3 million square kilometers (7.5 times the size of Sweden). India is a federation of 26 states and six territories.

Privatized telecommunications in India

• Licenses for telecommunications are divided into "circles" (Telecom Circles): 20 circles for fixed-wire networks and 20 circles, each with two licenses, for mobile telephony. The four largest cities – Delhi, Bombay, Calcutta and Madras – constitute special circles, so-called Metros, each of which has two licenses for mobile telephony. Ericsson has installed or is currently in the process of installing 18 of the 43 mobile networks that have so far attracted the interest of operators. Five of the 48 licenses are for areas in which no operator has expressed interest in becoming established.

Rolf Granström, president of Ericsson Communications (India), and Ulf Hellgesson, vice president-personnel, have no difficulty recruiting people now that the contract employees are to be replaced by local employees.

Mobile Systems starts design center in India's Silicon Valley

Software programs for operator-support systems for new generations of GSM are being written in Bangalore – India's Silicon Valley – where the Mobile Systems business area inaugurated a Software Design Center on November 12. Twenty-one programmers are producing software for new generations of GSM. In the year 2000 the center hopes to have 150 employees.

The first foreign company to set up shop in Bangalore was Texas Instruments. Today there are 170 information-technology and electronics companies in the city. Motorola has 700 employees, Texas Instruments 300.

Shashi Kavi, a Bangalorean computer engineer who returned to her native city in 1996 after slightly more than ten years in the United States, is the head of Ericsson's new design center. She fills a number of key requirements. She knows the Indian market and the Indian culture. And she has long experience with Ericsson, combined with international perspectives.

"This is a dream come true for me," Shashi Kavi says.

The Design Center reports to the PMR project within Ericsson Radio Systems' applications center for GSM Open Support Systems in Linköping. The first deliveries to Linköping will be made during the second quarter this year.

Development work is being located in Asia.

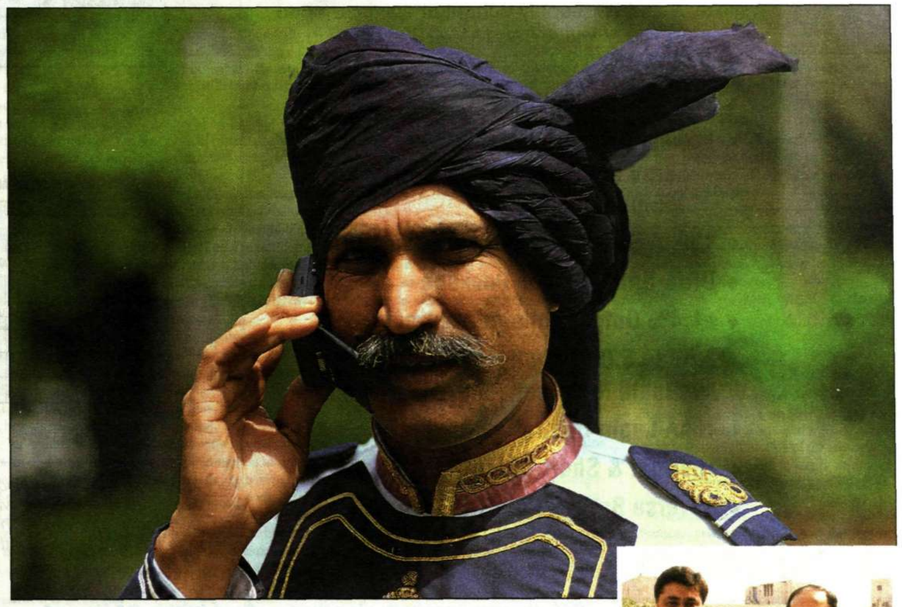
Jan Uddenfeldt, Mobile Systems' technical director, views the program in Bangalore in a global perspective.

"We will increase the amount of research and development work we do in Asia," he says. "A great deal of expertise is available there, in both companies and universities, that compares well with that in the western world. Asia is a world market where we have to have the closest possible presence. And since India has chosen the GSM standard it is highly natural to establish (programming) operations there."

Investments in the design center amount to five million dollars.

BRITT-MARIE WIHDÉN

The design center in Bangalore that was inaugurated in November is part of a global program. Computer engineer Shashi Kavi directs activities at the center.



When the slumbering Indian market wakens, Ericsson will be prepared. Today, only 1.3 percent of the Indian population has a telephone. Eight hundred thousand persons in India have mobile phones, 25 percent of which are from Ericsson.

Photo: LARS ÅSTRÖM

Photo: LARS ÅSTRÖM

Local employees hold key to the market

Ericsson companies in Asia have built their organization from the ground up in only a couple of years. In order to deal with competitors in a hastily deregulated market in the beginning of 1995, Ericsson was forced to quickly build up an organization with foreign employees. Today, working at the same fast pace, the company is in the process of turning as much responsibility as possible over to local employees.

Ericsson Communications currently has 700 employees. The peak number of foreign employees in 1997 was about 150 and by the end of 1998 only approximately 40 will be left.

Large segments of the Indian population are very well educated and interest in technical training is especially great since it can lead to relatively well-paying jobs. One million students graduate from Indian colleges each year. As a rule, the instruction in most Indian schools, starting at an early stage, is in English and most Indians in Ericsson's type of work are bilingual.

"During the spring of 1996 we advertised for civil engineers and employee relations personnel without specifying the number of jobs. Nearly 14,000 persons applied," says Rolf Granström.

"Our employees are young and well educated," he adds. "Eighty-six percent are younger than 36."

Three main indoctrination and development programs are conducted in parallel.

Succession planning is designed to prepare local employees to take over jobs held by foreigners. Each key foreign employee has designated one or two local employees as successors. Sixty persons – both managers and engineers – are involved in this program. Management Planning applies recognized Ericsson standards to identify the Indian company's future managers and Career Planning is applied to establish personal-development programs for each employee.

'Expertise profiles'

Ranjeet Bhatia is the head of development in the employee relations unit and the person responsible for developing the employees' "expertise profiles."

"Within the company, there is great pride in working for Ericsson," he notes. "As a rule, the young people who come here want to stay and make their careers within the company.

Girish Johar and Ranjeet Bhatia are responsible for employee relations.

"We have concentrated on creating a training program that is based on simplicity and specifics. It should make an impression both emotionally and intellectually, and result in an 'aha-reaction'," Ranjeet Bhatia declares.

A special strategy for the training of installers and other technicians is being applied in the Local Competence Development Program (LCDP), in which groups of ten junior engineers are trained to be installers and foremen (work leaders). Three groups, totaling 30 persons, have been through the program to date.

BRITT-MARIE WIHDÉN

LOWEST DROPOUT LINEAR REGULATOR FOR CELL PHONES HAS ONLY 30µVRMS NOISE

SOT23 Delivers 150mA Output Current

Use the MAX8867 and MAX8868 low-noise regulators to power baseband-analog and synthesizer/VCO sections in wireless communication systems. These linear regulators have the best combination of very low output noise (30µVRMS) and low dropout voltage (165mV at 150mA output current). A P-channel MOSFET output allows them to maintain low dropout voltage and low supply current at any load up to 150mA. The MAX8867 and MAX8868 come in an ultra-small 5-pin SOT23 package.

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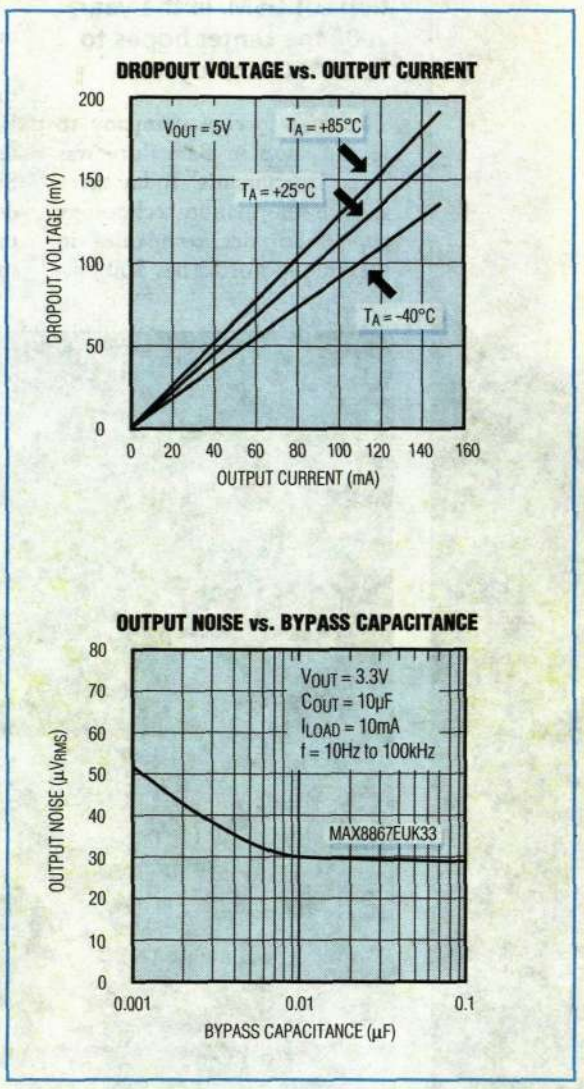

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Ericsson expands in France

The French company MET Communication S.A. is expanding by leaps and bounds. Management also plans to merge Ericsson's three companies in France to form a single unit. The plans emerged after Ericsson bought out Matra's shares in former jointly owned MET at year-end 1997.

On January 21, an agreement was signed by Lars Jarnryd, President of the French Ericsson company MET (left), and Gunnar M. Eriksson, President of Ericsson Utvecklings AB, to begin production of parts for the new AXE in Longuenesse, France.

Photo: PEDER MAIJET

"The change offers excellent potential for strong growth in France. Before the agreement to buy out Matra was signed, we asked several customers for their opinion, and they were all extremely positive," says Lars Jarnryd, President of MET.

France deregulated its fixed telephony market at the first of this year, just a few years after the mobile telephone market was opened to free competition. Several operators are now poised to begin competing for subscribers. Deregulation has also created new opportunities for Ericsson to expand in the French market.

Ericsson's companies in France are already characterized by success. Sales in 1997 increased 20 percent and profitability was highly favorable. Another 20 percent increase in sales is projected in 1998. Ericsson's share of the French market for fixed telephony is 30 percent, and it should be noted the French government did not allow MET to enter the market until 1987, when it became the country's second telecom supplier after Alcatel. Even then, the government stipulated that 50 percent of the new telecom company had to be owned by French interests, represented by Matra until Ericsson's recent buy-out.

Well-positioned

Ericsson in France is well-positioned in several areas. MET commands 100 percent of the international transit market, which is the network that links France with neighboring countries. France Telecom, the international operator, has ordered more than half of its mobile exchanges from MET, while Bouygues, a new mobile operator, has ordered all of its exchanges from MET.

Ericsson's new challenge in France is to penetrate the market for radio telephony systems. Ericsson has never sold radio base stations in France, but MET President Lars Jarnryd is determined to change the company's market approach now that MET is a wholly owned Ericsson company. "I'm extremely optimistic. We will penetrate the radio telephony market," he says with a smile.

And perhaps Ericsson has not lagged too far behind in mobile telephony. Radio coverage is still relatively poor in France, and only about nine percent of all Frenchmen have mobile telephones. The French company Ericsson Radio, which sells mobile phones in France, has a market share of more than 15 percent in the rapidly growing French mobile sector.

Now that it's become a company completely under Ericsson's ownership, it's important for MET to maintain its French profile. French authorities have previously taken care to ensure that state purchases benefit French companies. Even though the telecom market is now deregulated, Ericsson must show its willingness to invest not only in France, but in its companies, customers and jobs in France as well.

"French authorities and our customers have expressed a favorable attitude, but they also want us to continue and expand our business operations in France," says Jacques Payer, Chairman of MET's Board of Directors. Jacques Payer will be leaving his position as Chairman on February 28, to be succeeded by Lars Jarnryd.

Invest in France

Decisions have already been made to invest in France. Ericsson in France was recently named a so-called Supply Center, from which nine other Ericsson companies in western Europe can order products for their customers. Parts for the new AXE exchange will also be manufactured in France.

"This shows a strong commitment, but I believe we can go even further. It would be an extremely positive sign if MET were given global market responsibility for France Telecom, not just in France," explains Jacques Payer.

During the next few months, management personnel from Ericsson's three companies in France will discuss various options to merge all three units to form one company, or increase coordination of their business operations.

"It's important for customers that Ericsson have a united front, but the details of future coordination have not been decided," says Lars Jarnryd.

When asked if any plans are in the offing to make Ericsson in France a Major Local Company (MLC), he replied with a laugh, "I think the French market is large enough to warrant MLC status."

MIA WIDELL ÖRNUNG

Some MET facts

■ Matra Ericsson Telecom, MET, is Ericsson's largest company in France with 1,350 employees and annual sales of USD 350 million. The company mainly sells fixed telecom systems and services to French customers and belongs the Infocom System business area.

Ericsson has two other companies in France. Ericsson Radio S.A. mainly sells mobile telephones and S.A. Ericsson operates in the business networks area.

New warehouse facility in the US

Ericsson is expanding in Lynchburg, Virginia. Mobile Phones and Terminals announced a $30 million warehouse/distribution facility.

Ericsson Inc. Mobile Phones and Terminals announced the expansion of its Lynchburg manufacturing operations with a $30 million investment in a warehouse facility.

In a ceremonial event held in the plant, Virginia's outgoing Governor George Allen presented a check for $800,000 to Lynchburg's Mayor to be used in the construction of the 100,000-square-foot warehouse. Ericsson will lease the building from the city.

According to Rolf Stahre, VP of Manufacturing, Mobile Phones will begin operations at the warehouse in May of 1998. Approximately 150 people will be employed at the facility.

"We saw the opportunity to increase our capacity by separating warehousing, packaging, and distribution of finished goods from manufacturing," Rolf said. "We began last summer to look for a space in Lynchburg that would accommodate our needs and we've found a wonderful solution with the City."

Virginia's Governor George Allen (left) presented Rolf Stahre with a stock certificate to the Virginia Corporation.

Photo: JACK RADGOWSKI

"Ericsson is one of the Commonwealth's valued corporate citizens, and has been an important part of the foundation of our 'Silicon Dominion'," said Gov. Allen. "I was here in March of '95 to celebrate the $35 million dollar manufacturing expansion, and today we celebrate more good news. We appreciate Ericsson's strong vote of confidence in Virginia's people, policies and continued prosperity. Ericsson truly is a valued shareholder in our Commonwealth's future, and the administration looks forward to being partners in your success."

JACK RADGOWSKI

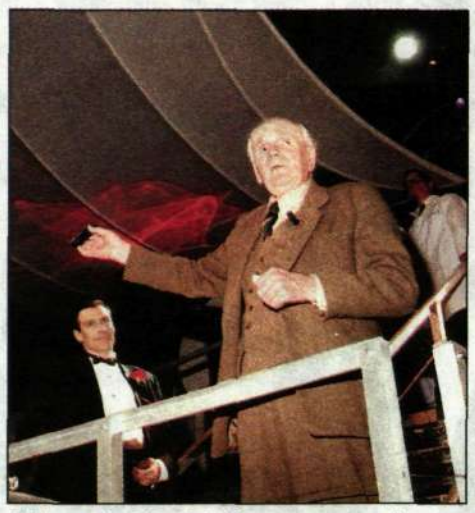
"Q" and Ericsson meet in Vegas

■ Ericsson's exhibition stand at a consumer electronics show in Las Vegas last month featured a blend of Hollywood and high-tech. Thousands of visitors to the stand were greeted by the sounds of title tracks from James Bond films, theatrical arrangements based on movie scenes and none other than Desmond Llewelyn, perhaps better known as "Q" in James Bond films.

las vegas

"We wanted our customers to look at Ericsson as an interesting, high-tech market leader with high-quality products," says Sam Kanipe, exhibition display manager for Mobile Telephones and Terminals, a unit of Ericsson's American company.

"In addition to strengthening our brand name in association with the James Bond theme, we provided visitors with valuable information about our products," explained Sam Kanipe.



Ericsson's stand at the consumer electronics exhibition in Las Vegas was a success. Desmond Llewelyn, perhaps better known as the technical wizard "Q" in James Bond films, was a major attraction at the stand.

Roger Ericsson of Mobile Telephones and Terminals officially inaugurated Ericsson's new mobile telephone production plant near Kuala Lumpur in Malaysia. Mr. Ericsson is seen here with employees of the new factory.

Photo: LARS SJÖGREN

New factory in Malaysia

Ericsson recently inaugurated a new mobile telephone production plant at Shah Alam, near Kuala Lumpur, in Malaysia. Prior to its renovation, the premises were used for cable production and assembly of AXE products.

malaysia

Production operations will be concentrated during the initial stages of operations on Ericsson's GH 688 telephone model. The official inauguration ceremony was held in mid-December. The factory is expected to reach full production capacity this summer. About 120 employees have already been recruited. At full production, the plant will employ about 300 persons. Production output from the Malaysian plant is intended primarily for markets in Asia and the Pacific Rim region.

Ericsson supports tailor in Thailand

■ With support from Ericsson, a tailoring business in the villages of Laem Makha and Yangend recently introduced its first two products – bathrobes and textile handbags – for Ericsson's internal market. Ericsson in southern Thailand supports the business as part of its contribution as a dedicated member of society in the region. The bathrobe was ordered as a new year's gift for Ericsson customers in Thailand. Project management plans to order several more products for sale throughout Ericsson's worldwide organization.

thailand

Gifts to customers are a spin-off benefit from Ericsson's commitment to serve as a dedicated member of society in Thailand.

Job Fair in Kista

■ About 600 persons visited the Job Fair sponsored by Wideband Cellular Systems, a product department of Ericsson Radio Systems, at Electrum in Kista shortly before Christmas.

"The show generated considerable interest, and we have received about 300 letters of inquiry about job opportunities. We're looking for experienced graduate engineers to work on the development of software, hardware and system designs. I was surprised that, despite comprehensive marketing efforts, we were not contacted by anyone from of Ericsson units in southern Stockholm," says Charlotte Brasch, who arranged the Job Fair.

kista

Wideband Cellular Systems is a new product unit established about a year ago to work on development of the next generation of mobile systems, which will provide broadband services for multimedia applications, video conferences, for example, and enable subscribers to surf the Net while they are talking on their cellular phones. Strong focus is placed on a test system for WCDMA, Wideband Code Division Multiple Access. NTT DoCoMo of Japan has already ordered a test system, and initial deliveries were started early in 1998.

JACK RADGOWSKI

Lotta Muth joins Contact staff

Lotta Muth has joined Contact as a member of the editorial staff. Prior to her new appointment, Ms. Muth worked with internal communications in the Public Networks business unit of Infocom Systems, primarily as a writer and editor for internal newsletters.

stockholm

In addition to other assignments, Lotta Muth will assume responsibility for Contact's "Ericsson worldwide" pages, which are intended to gather and report news and information from all parts of Ericsson's widespread organization. A global reflection of Ericsson's world in miniature format.

Lotta appreciates all information and news items for her around-the-world features. Readers can contact her by telephone at +46 (0)8-719 51 71, memo at LME.LMEMUTH or e-mail at: lotta.muth@lme.ericsson.se.

Photo: PATRIK LINDÉN

Ericsson has strong image in Norway

■ Ericsson has the strongest and most favorable image of all telecom suppliers in Norway, according to a recent survey by the Norwegian Market and Media Institute. The survey polled opinions of industrial leaders, representatives of the telecom sector and political officials.

norway

Approximately 65 percent of all persons surveyed said Ericsson has a very good or good corporate image.

The survey also showed a growing number of people in Norway know that Ericsson is not only a sales organization, but also a company that conducts important development work and exports a broad range of products and services.

65 percent of those surveyed have a very good or good impression of Ericsson, a six-percent improvement compared with the last survey two years ago.

Corresponding percentage ratings showed 60 percent for Nokia of Finland, 43 percent for Alcatel of France, 33 percent for Siemens of Germany, 29 percent for American Motorola and 13 percent for Nortel (formerly Northern Telecom) of Canada.

Exhibition shows Mobile Systems' visions

Communiceum is a visionary exhibition by the Mobile Systems business area in Kista. The interactive multimedia show is prominently displayed inside the main entrance at Ericsson Radio Systems

Liselotte Claydon, project manager of the new Communiceum exhibition at Mobile Systems, is pictured above with Christer Wiklander, the business area's marketing communications manager. Photo: KURT JOHANSSON

Voices from all parts of the world are interspersed with music, text and data. A short introductory film shown on a 22-meter domed, white background wall welcomes visitors and illustrates what it's all about: various forms of communication.

"Customers and guests get a good look at Ericsson and the Mobile Systems business area as soon as they enter the building, a statement explaining who we are and what we do," says Christer Wiklander, market communications manager of Mobile Systems.

Communiceum is arranged as a semicircular display tastefully appointed in gently colored wood on a white background. The interactive multimedia equipment is the focal point, and its virtual experiences need little assistance in speaking for themselves.

Short films from around the world

Five multimedia stations, each with a different theme, are designed to capture the interest of visitors with a very broad range of subjects that cover historical presentations and today's solutions and products from Mobile Systems. All stations are equipped touch screens.

At the foot of the large background wall, there is a passage with 12 small stands activated by sensors as visitors walk past. A random selection of short films from all parts of the world presents a broad variety of people and their views on communications.

Liselotte Claydon is the project manager of Communiceum.

"Our exhibition is intended to provide an individual experience regardless of target group, the purpose of a person's visit to Ericsson or the amount of time they spend here. We encourage visitors to come back after their meetings for another tour, which might afford them discoveries of new products and information. In this way, we hope to establish a relationship with our visitors," Ms. Claydon explains.

Living exhibition

Information presented in the exhibition will be updated several times a year and as required to enhance the "living exhibition" aura of Communiceum. Kunskapshamnen, a Swedish advertising agency, handles all film productions and contents of the multimedia station. Jacob Zeilon was commissioned as the architect.

NILS SUNDSTRÖM

60 years in Curaçao

Ericsson recently celebrated the 60th anniversary of curaçao business operations in Curaçao, in the Netherlands Antilles. The anniversary celebration was held in cooperation with Setel N.V., a local operator, and S.E.L Maduro & Sons, Ericsson's sales representative in Curaçao.

Ericsson commands a 100-percent market share in Curaçao, which has a population of 170,000. The island has 80,000 AXE lines, 16,000 D-AMPS mobile subscribers and 15,000 MD110 extensions, making Curaçao the region's most advanced nation in terms of telephony.

Juan Rangel is Ericsson's man in Curaçao.

"I take great pleasure in showing how Ericsson cares about small customers, assuming the same commitment it devotes to much larger customers. Here in Curaçao, we are a good example of the manner in which Ericsson attaches equal importance to all customers."

Curaçao, the largest island of the Netherlands Antilles, is situated just north of the Venezuelan coast. Although it's an autonomous island nation, Curaçao remains a protectorate of the Netherlands.

Ericsson has conducted business operations in Curaçao, an island nation in the Netherlands Antilles, for the past 60 years. Curaçao is a good example of Ericsson's commitment to small customers.

Gold ring for your telephone

■ Guldfynd, a Swedish jewelry store chain, has been selling a popular accessory for Ericsson mobile telephones since last October. A small gold ring can be purchased to replace the colored plastic ring at the base of the antenna on many different Ericsson models.

"Sales have been very good, I must admit, although our expectations were enormous," says Stefan Cederlöf, Guldfynd's product manager.

The concept is hardly unique, however. Similar products are sold in other parts of the world, most notably in Asia and the Middle East, but Guldfynd's campaign probably marks the first time such products have been included in a nationwide sales catalogue. The gold rings include a special model with a small diamond setting. According to Guldfynd, sales of both models have been strong. They are priced at SEK 400 and SEK 800, respectively.

"We plan to place the rings under gifts for men in the spring catalogue. Experience has shown that men account for a very large percentage of sales," Mr. Cederlöf continues.

Several journalists have written articles about the gold rings for telephones. Many women feel they are completely meaningless, while most male journalists think its a "fun" concept. The undersigned subscribes to the latter philosophy.

Stefan Cederlöf believes mobile telephones are more than a means of communication for most men.

PATRIK LINDÉN

Special feature – third generationen mobile telephony systems

During the last days of January, ETSI, the European Telecommunications Standards Institute, reached a decision regarding radio technology for the next generation of mobile telephone systems. ETSI's primary choice is WCDMA, a technology Ericsson was hoping would be chosen. In the autumn of 1998, the International Telecommunications Union will decide which technology will be used globally. All indications are that it will be WCDMA, particularly since Europe and Japan have already chosen the technology. Contact has compiled eight pages of background information on the ramifications of ETSI's choice and what remains to be done before we are afforded better capacity over mobile networks. The articles in the special feature present interesting information about technology and its significance, why it takes so long to agree on world standards, and applications for the new technology. Today's systems offer excellent functionality for voice calls, but they are barely adequate for data and video or other multimedia transmissions that require a little more bandwidth. The first generation of mobile telephony comprised analog systems, spearheaded by NMT, AMPS and TACS. Second-generation mobile telephony refers to the digital systems we use today, GSM, PDC and D-AMPS. Digital systems will also dominate mobile telephony's third generation, but they will offer much higher capacity, or bandwidth, based on transmissions projected in the range of two megabits per second. Today's speeds average about ten kilobits per second.

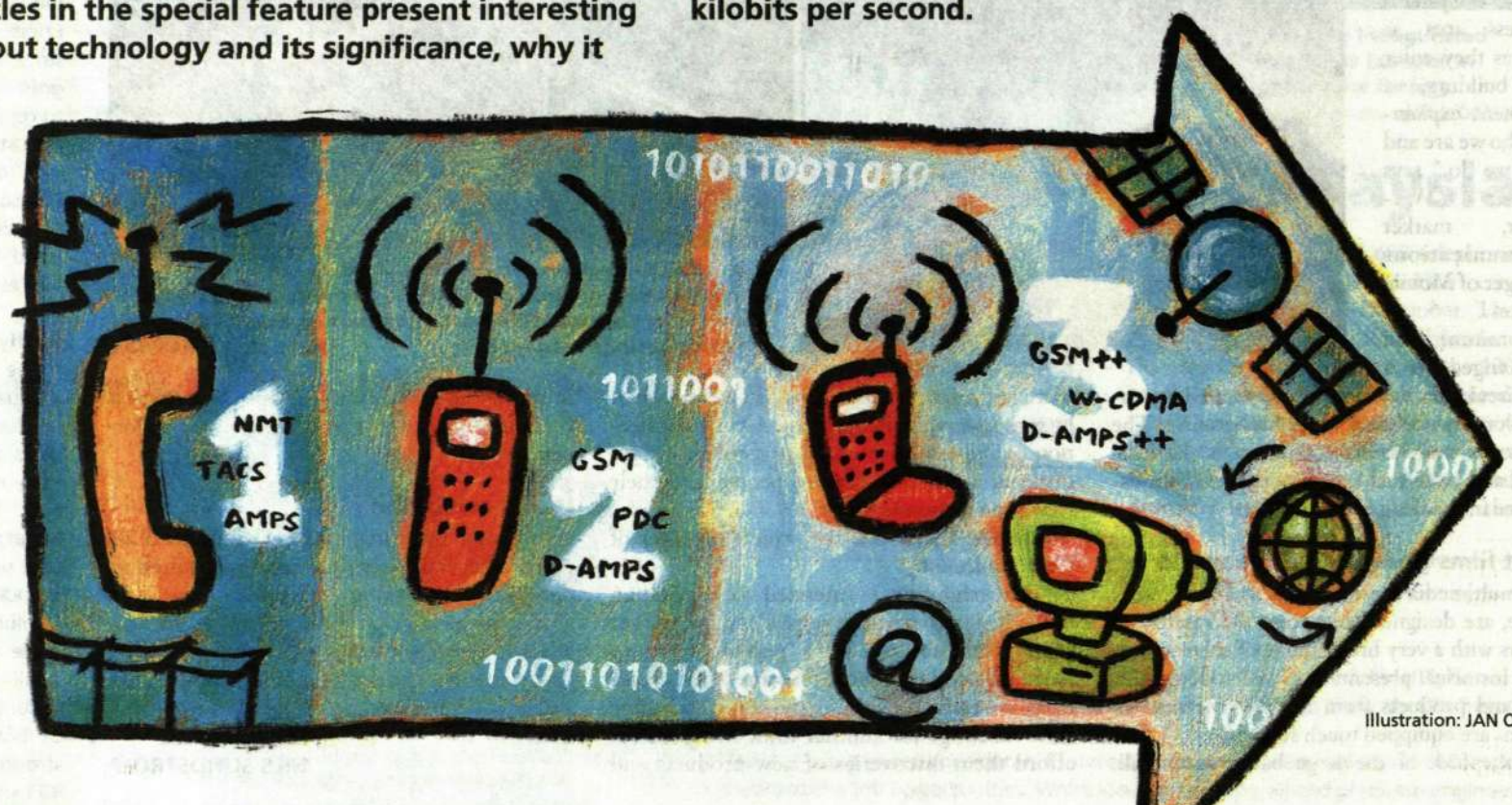


Illustration: JAN OLSSON

Åke Persson comments on ETSI's decision

Approaching next mobile decade

Mobile communication technologies are refined and upgraded about once every 10 years. In January 1998, we witnessed the emergence of mobile multimedia. On Thursday, January 29, 1998, the European Telecommunications Standards Institute (ETSI) announced the conclusion of its SMG 2 work group's meeting in Paris, which was attended by delegates of ETSI's 316 members. All delegates were unanimous in their agreement over a solution for the next generation of mobile telephony – Ericsson's solution.

Åke Persson, Vice President of Marketing and Sales at Mobile Systems, is pleased with ETSI's decision to adopt Ericsson's WCDMA radio technology as part of mobile telephony's next generation.
Photo GUNNAR ASK

"ETSI's decision was extremely important to the entire industry. Development can now be continued rapidly toward a global solution that will benefit operators and users," says Åke Persson, Vice President of Marketing and Sales at Mobile Systems.

Ericsson's WCDMA (Wideband Code Division Multiple Access) solution had strong support from today's GSM operators, who are attracted by the new technology's capacity to help them offer subscribers the next generation of mobile communications.

In time, the 1998 meeting in Paris may be regarded as equally important for the development of mobile multimedia as the historical milestone in 1982, when CEPT, ETSI's predecessor, established a work group called Groupe Speciale Mobile, which later gave its name to the GSM standard.

Technological development in mobile telephony seems to take a giant step forward at 10-year intervals. In September 1987, 33 countries endorsed a memorandum-of-understanding for GSM. The autumn of 1987, accordingly, marked the beginning of expansion for a technology that has contributed to establishing mobile telephony as a mass market. Today, there are nearly 65 million mobile subscribers in about 200 GSM networks in more than 100 countries in all parts of the world.

GSM, D-AMPS (IS-136) and the Japanese PDC standard represent mobile telephony's second generation digital technology. The first generation consisted of analog systems, such as the Nordic region's NMT as well as AMPS and TACS.

In the generation shift from analog to digital, all equipment had to be replaced – exchanges, radio base stations and mobile telephones.

The transition from second to third generation – called UMTS (Universal Mobile Telecommunications System) in Europe – will not be as dramatic. The technological base remains digital. Higher transmission speeds for data in radio links between base stations and users is the primary upgrade factor and highlights the transition from second to third generation technology.

Unanimous agreement

Before the recent meeting in Paris, two solutions had been proposed: WCDMA and TD/CDMA. Delegates at the meeting agreed unanimously on a joint proposal based on WCDMA for mobile telephony, with a supplement in the form of a special TD/CDMA solution for indoor coverage.

"One immediate consequence will be the establishment of a single technology, WCDMA, in Europe and Asia," Åke Persson explains.

The same proposal adopted by ETSI is now in the process of acceptance as the Japanese standard. Japan is the only large Asian market that does not have GSM and, therefore, is not included in decisions by ETSI.

"We shall now have an open world standard, with all the benefits and advantages which that implies in terms of mobile freedom for subscribers, a huge market for new services, higher volumes for equipment and a complete range of other amenities," Mr. Persson continues.

Pioneer

Ericsson is a true pioneer in WCDMA, and the company has already made initial deliveries for an experimental system contracted by NTT DoCoMo and Japan Telecom, two major Japanese operators.

Certain details remain in ETSI's standardization efforts before the new standard will be completely adopted. The work is expected to continue throughout the remainder of 1998.

Later in the spring, ETSI also plans to present WCDMA as Europe's proposal for the next generation of mobile telephony's global standard to the International Telecommunications Union (ITU) of the United Nations.

Based on proposals from Europe, Asia and North America, ITU will then present its proposal for what it calls IMT-2000 (International Mobile Telephony 2000).

"We can only wait now. It remains to be seen if the ITU selection process will result in a single technology or a family of different technologies. The starting shot fired in Paris recently was the key element, however, that will launch mobile telephony into the next decade, which now looms large on its technological horizon," Åke Persson concludes.

CARL SOMMERHOLT

Technology (r)evolution

"The next generation of mobile telephone systems will provide access to the Internet. The technical solution for this combines an enhancement of today's digital systems with new technologies to provide data transmission speeds that will be 20-30 times faster than present capabilities," says Jan Uddenfelt, Vice President of Technology at Mobile Systems.

Jan Uddenfelt, Vice President of Technology at Mobile Systems. Photo: ANDERS ANJOU

Illustrations: MAGNUS BARD

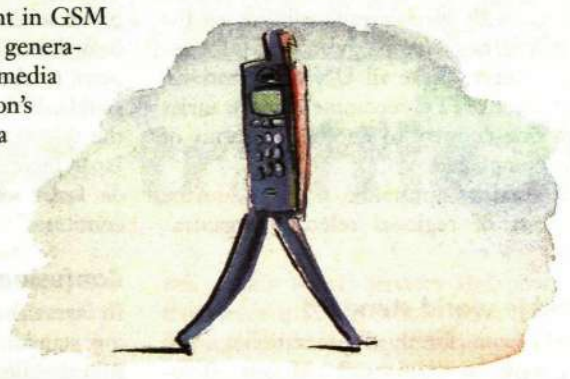
It's thus a question of technological evolution and revolution, with ongoing development efforts taking several different directions.

Today's leading digital mobile standards, GSM and D-AMPS, and their present frequency bands, are being upgraded for increasingly better performance. Within the few next years, new modulation and transmission techniques will offer speeds of several hundred kilobits per second, thus supporting acceptable video transmissions.

Generation shift

The more revolutionary track is based on a new generation, a global system that ITU (International Telecommunications Union) calls IMT 2000. For future world standards in the 2 GHz band, Ericsson uses its new WCDMA technology for radio transmissions and ATM technologies for the transport network. In its first version, the system will accommodate 2 Mbit per second, but will also offer a variety of other advantages.

Put simply, the history of mobile telephony has progressed in cycles of 10 years. First generation systems, NMT, TACS and AMPS, were designed for voice communications. They used analog signals and frequency distribution based on FDMA techniques, whereby every voice channel had its own narrow frequency band. The second generation, GSM, D-AMPS and Japan's PDC standard, were based on time distribution, TDMA, whereby all frequency channels (broader than FDMA) were divided into intermittent time slots (eight in GSM and three in D-AMPS). Future generations with Internet and multimedia capabilities will use Ericsson's WCDMA technology, a method that transmits a large number of calls, which are identified with codes, on a broad channel.



Test system

Development of Ericsson's new WCDMA system represents the greatest effort ever put forth by its research unit, fully comparable to GSM development 10 years ago. Based on experience from an EU project, the R&D unit built a complete demo system, Wide Band Test Bed (WBTB). A van was then loaded with prototype equipment and used to demonstrate mobile video and Internet applications.

Experience gained from the Test Bed laid the foundation for the broadband test system developed by Ericsson in record time. The same system is now being delivered to the Japanese operator NTT DoCoMo. The system operates on the 2000 MHz frequency band with 5 MHz channels on which WCDMA is used as the transmission technology.

WCDMA offers a broad range of technical and financial advantages. The technology, for example, is able to serve at least twice as many users per sector. In addition, WCDMA provides the best support for a wide range of services, since speed can be varied from 8 kbps to 2 Mbps over the same 5 MHz channel.

Another advantage, which is extremely important to operators, is that WCDMA requires very few sites for base stations. The system provides good coverage, and its greater bandwidth creates potential for improved frequency dispersion, thereby reducing the risk of fading. Ericsson's WCDMA solution is designed for high-speed multimedia transmissions at speeds of 144 kbps, using the same number of base station sites already installed for the GSM 1800 system. Higher transmission speeds will require greater density in terms of base stations, which may apply to major metropolitan areas, where base stations already offer adequate density. In addition, operators do not have to concern themselves with frequency planning, since the same frequency band can be re-used from one cell to another. Frequency planning in TDMA systems is based on groups, whereby a predetermined frequency is not used again within a certain distance from the call in order to prevent transmission disturbances.

For WCDMA operators that have been allocated 2 times 15 MHz (probably the maximum), 2 times 5 MHz at one level will probably meet basic operating requirements, thereby enabling operators to increase capacity by building a hierarchical system with cells of varying sizes layered on top of each other. Picocells at the most finely dispersed level can be used for dense traffic, in offices, for example. Microcells at the next level meet the requirements of pedestrians, while macrocells at a third level may be dedicated to subscribers moving rapidly in cars. WCDMA users are free to move between different network levels thanks to a new technique called Inter-Frequency Handoff.

Supplementing

"The TDMA portion of today's GSM networks is for all practical purposes confined to radio transmission, so it will be completely possible for existing GSM operators to introduce broadband WCDMA services as they see fit," Jan Uddenfelt explains.

Today's GSM operators have a broad range of possible combinations at their disposal. They might choose to develop present GSM systems, for example, or add WCDMA to GSM systems in existing frequency bands. A third alternative is to combine a more highly developed GSM technique (GSM+) and WCDMA in existing bands with WCDMA in the new 2 GHz band.

In the latter scenario, operators can retain and re-use the entire base network, including base station sites and other infrastructure, since the new system has the same coverage characteristics. New radio equipment would have to be installed, of course, but existing antennas, power units and battery back-up units can still be used.

LARS CEDERQUIST

Why a new standard?

■ Extremely rapid expansion of Internet and mobile telephony applications has created the need for a new generation of mobile telephone systems. According to present estimates, there will be 400 million Internet users and 600 million mobile telephone subscribers worldwide by the year 2001. Growing demand for mobile Internet access is the single most significant force behind the substantial amounts of time, energy and money invested in the new standard.

Different needs control technology

■ Future users will need varying amounts of capacity, depending on whether they want to make a voice call or send video. Providing variable bandwidth will require a new base station architecture.

The current trend is moving away from fixed channels and towards a functional architecture in which total resources are grouped. This approach requires that the transport network, which provides links between the base stations and switches, employs a new technology called ATM (Asynchronous Transfer Mode).

The transport network uses packet switching and data cells that can serve as a carrier for all types of services. ATM is regarded as the future standard for high-speed transmission. With a new mini-cell protocol called AAL2 (ATM Adaptation Layer 2), large volumes of data packets and circuit-switched calls can be transmitted simultaneously.

Special feature – third generationen mobile telephony systems

A good standard takes time

When more than 100 countries are asked to reach agreement, it takes time. Creating mobile telephony standards is a time-consuming process involving lots of politics, money and prestige, but the process is also essential for the industry's ability to develop commercially viable products and systems.

When you buy a household appliance and plug into your wall at home, you assume it will work as advertised. The same is true of mobile telephony systems. Good technical solutions are basic prequisites, but if they do not comply with industry standards, they have very little to offer.

Third generation

In 1992, the International Telecommunications Union (ITU) allocated a frequency spectrum in the range of 2 GHz for third generation mobile telephony. The first new systems are expected to be in commercial operation by the year 2002. Thus, it would appear that implementation will take almost exactly 10 years, the same amount of time required to establish first and second generation systems. In 1987, even before GSM was operable, ITU began discussing a third generation of mobile telephony.

The considerable amount of time required to establish new standards is due partly to technical issues, but political and economic considerations also play an important role. Many different opinions have to be argued and discussed before a system standard can be established. In addition, operators often want some consideration for older systems and their prospects of realizing a return on investment before they are prepared to take the next step.

ETSI, the European Telecommunication Standards Institute, acts as Europe's standardization authority. ETSI comprises telecom operators, suppliers and the postal and telecommunication authorities of member nations. Japan's corresponding standardization authorities are the Association of Radio Businesses (ARIB) and TTC. In the U.S., standardization issues are resolved by TIA and T1.

For international standards, the United Nations office of the International Telecommunications Union handles mediations and discussions to resolve various differences and establish common standards for mobile telephony.

ITU will begin accepting proposals for third generation mobile telephony in the spring of 1998 and announce its final decision toward year-end. The new standard is expected to be placed in commercial operation around 2001-2002.

"ITU is an international consensus organization that issues recommendations. The importance of ITU should not be overestimated, but neither should it be taken lightly or considered insignificant," explains Mats Nilsson, who works for Mobile Systems with special responsibility for the business area's technology strategies for future systems. "Like all UN organizations, acceptance of ITU recommendations varies from one country to another in terms of strict compliance.

Of greater importance, perhaps, are the decisions of regional telecom organizations.

Possible world standard

ETSI's name for third generation mobile telephony is Universal Mobile Telecommunications Systems (UMTS). The standard was adopted in January of this year.

Japan has already decided to adopt the WCDMA technique, while conditions in the U.S. are a little more complicated. The frequency spectrum around 2 GHz, which the rest of the world has allocated for third generation mobile telephone systems, has already been auctioned off in the U.S. for PCS services like GSM 1900 and D-AMPS 1900.

ETSI has a few months to apply the finishing touches to Europe's standard, before submitting the proposal this summer to ITU for consideration as the international standard.

"There is a possibility that ITU will approve several techniques as officially sanctioned international standards. If that happens, market forces will establish de facto standards for different markets. However, the selection of WCDMA in Europe and Japan increases its chances of becoming the de facto world standard," Mats Nilsson continues.

Confusion over name

In layman's terms, the techniques now being standardized are called third-generation mobile telephony. This is a collective name for mobile telephone systems that offer much higher capacity than today's systems, with primary focus on data communications.

ETSI's demands on UMTS specify 384 /kbit, with full surface coverage, and 2 Mbit/s in areas of favorable coverage. In comparison, corresponding capacity for today's GSM is 9.6 kbit/s – but a new GSM concept will be developed with potential to provide a maximum of 384 kbit/s with surface coverage of 144 kbit/s.

International Mobile Telephony-2000 (IMT-2000) is the name of ITU's third generation mobile telephony system, based on its use of the 2000 MHz (2 GHz) frequency band.

"Technological aspects of the system are still under discussion. Some work remains, however, before we establish a final standard," says Per Björndahl, who is responsible for coordination of telecom standardization and legislative analyses in the NMT, GSM and TACS business unit.

"If we had built a dining room table, which I'm using as an analogy, discussions up to this point would have focused on what species of wood we would use, for example oak, pine or mahogany, in the same phase of development at which we had to choose between WCDMA and TD/CDMA," explains Per Björndahl. "Now we have to decide on the table's final structure."

In marketing efforts directed at end-users, third generation mobile telephony systems may naturally be called something else altogether when operators start establishing names and separate profiles for offers to end-customers.

Japan 2001

The Japanese operator NTT DoCoMo will launch a WCDMA network as third generation mobile telephony in the year 2001. ETSI and ITU, in turn, have a target date of 2002.

In 1998-99, the new standard will be defined more clearly and in greater detail so that terminals, for example, from different suppliers will function in the same system in a manner similar to performance standards of today's GSM. Manufacturers will then be able to start developing equipment, and operators can start planning their networks.

PATRIK LINDÉN

Mats Nilsson is responsible for technology strategies for future systems developed by Ericsson's Mobile Systems business area. He says the significance of ITU in establishing global de facto standards should not be overestimated. The decisions of regional telecom organizations are equally important.

Per Björndahl works with coordination of telecom standardization and legislation analyses in the NMT, GSM and TACS business unit. He says a lot of work remains before a new standard will be finalized. Agreements on a broad of range of details are still required.

Photo: PATRIK LINDÉN

Developing GSM took ten years

The frequency range for what eventually became GSM was allocated in 1979. Networks were placed in commercial operation 12 years later. Although accurate comparisons between GSM and third generation mobile telephony systems cannot be drawn, history provides a good indication of time requirements.

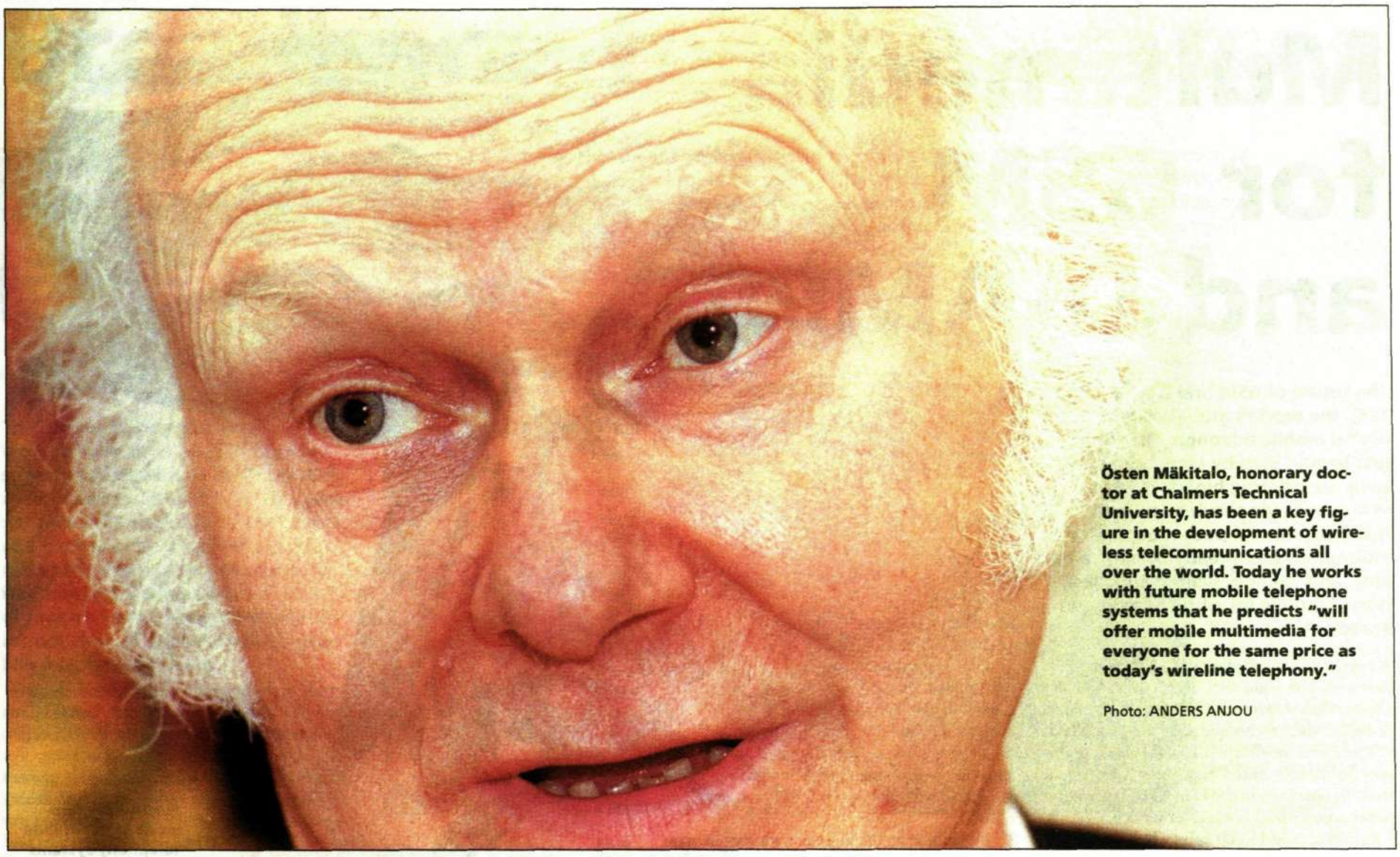
When GSM standardization efforts were started, the work was handled exclusively by European telephone administration authorities through CEPT, originally an organization restricted to telecom authorities and operators.

In 1979, The World Administrative Radio Conference (WARC) allocated the frequency range around 900 MHz for land mobile radio. CEPT, ETSI's predecessor, appointed a special group in 1982 to develop a European standard. The group's name in French was "Groupe Speciale Mobile," the original source of GSM. Today, GSM is known more readily as the "Global Standard for Mobile Communication."

The GSM group was headed by Thomas Haug, who represented Sweden's National Telecommunications Administration.

"CEPT had only vague concepts of what it wanted, but we all realized the urgency of doing something while frequencies were available. There was no mandate to develop a digital system, but we were all thinking digital," Thomas Haug recalls.

The group worked on the standardization project until 1987, when various techniques were tested in Paris. No single system or technology proved to superior to all others. Instead, a compromise agreement was reached and, in the autumn of 1989, standard specifications were finalized for GSM Phase 1. In 1992, several operators initiated commercial operations.



Östen Mäkitalo, honorary doctor at Chalmers Technical University, has been a key figure in the development of wireless telecommunications all over the world. Today he works with future mobile telephone systems that he predicts "will offer mobile multimedia for everyone for the same price as today's wireline telephony."

Photo: ANDERS ANJOU

More and more traffic in the air

Current development trends in mobile multimedia point toward hitherto unimaginable communication opportunities, regardless of time and space. Various radio solutions of the future might very well replace fixed networks and cable. Östen Mäkitalo has a vision of future development that stretches well into the 21st century.

"Radio technology has certain physical properties that are progressively advancing radio to a position of superiority among various modes of communication," says Östen Mäkitalo, Technical Director of Telia and a true pioneer in mobile telephony.

Radio communication is a technology with a highly promising future. Sweden has not only contributed to development of mobile telephony in the world; during certain periods, it has paved the way. It is by no means a coincidence, accordingly, that companies like Ericsson and countries like Sweden are on the cutting edge of development work committed to future generations of mobile telephony systems.

Östen Mäkitalo is a prominent figure in research and development. He was one of the pioneers in development of NMT and GSM mobile telephony systems. Among other accomplishments, he is also the father of small cell technologies in radio base stations and the RDS technique used in radio broadcasts.

"Walk station"

Today, he works with mobile telephony systems of the future that will offer voice, data, video and sound. The ultimate objective is to integrate radio systems for fixed and mobile communications in a single radio network for broadband transmissions of all types of information.

He envisions a mobile terminal of the future to serve as a universal unit, or "walk station," that will combine the mobile telephone with the computer and TV – functioning like an electronic wallet or remote-control unit for a broad range of technical equipment.

"If technological development continues unabated, microprocessors in the year 2010 will be thousands of times more powerful than today's," Östen Mäkitalo continues. "We cannot even begin to imagine what might become possible by 2010, particularly in view of the fact that processors already understand the human voice.

"The foundation we lay for future systems must be as flexible as possible, thereby facilitating adaptation to the needs of tomorrow. To freeze too many specifications this far in advance would be a monumental mistake."

Software control

The next stage of development on future systems for UMTS/IMT-2000 has already started in a new research project called Personal Computing and Communication (PCC). Östen Mäkitalo is chairman of the project, which is intended to develop a new technology that will enable mobile telephony systems to accommodate user data speeds up to 20 megabits/s.

"PCC studies will be totally devoid of all preconceived notions. I'm not so sure the future will demand universal standardization in all parts of the world. We have to consider the concept of mobile stations controlled completely by software. Like in today's world of personal computers, users will decide which services and programs they want in their mobile terminals, but there will be at least one common operating system that functions in all of them. The initial handshake will be a crucial factor in agreements that will govern mobile telephony systems of the future," Östen Mäkitalo continues.

Reducing technology

Telia's visionary emphasizes that research will not compete with the development of systems for UMTS/IMT-2000. On the contrary, it's perfectly feasible they could be based on parts of today's GSM system.

"GSM has an extremely efficient architecture that should be studied in greater detail before we replace it with something new," Mr. Mäkitalo explains.

A primary objective of PCC research is to develop a system that offers "mobile multimedia for everybody – at today's fixed telephony prices." It will involve a tightrope act between technical development, customer needs and pricing.

"The objective is a technique for major application areas. We could easily develop complicated and expensive solutions, but they would never achieve market penetration," he continues.

Östen Mäkitalo believes it will be expensive to develop a system to accommodate universal speeds of more than 2 megabits/second over long distances with true mobility.

"Under more stationary conditions with shorter distances, however, we can certainly reach speeds up to 20 megabits/second. It provides a starting point, however, a standard that will provide extremely high-quality video transmission, reasonable file dimensions and acceptable time factors."

Today's technological development is producing smaller and less expensive radio base stations and mobile telephones. Current trends have created a sense of optimism in Östen Mäkitalo as we approach the future of radio technology – even in terms of applications that now require cable or wire, interactive TV for example. First and foremost, however, radio solutions will compete with services offered today by fixed telephony.

"Reluctance to draw cable"

"Even in premises like office buildings, there is already a reluctance to draw cable, and I believe we'll see more different types of fixed and mobile radio solutions. The same holds true for expansion of telephony to serve the world's growing population, the very size and geographic diversity of which will probably render it far too expansive for conventional copper links.

"I do not wish to infer, however, there will be no scope for fixed telephony solutions. I'm sure new applications will be developed to take advantage of certain fixed services."

Less expensive equipment will also make it easier for new operators to penetrate telecom markets. According to Östen Mäkitalo, however, the success of new market players will depend on their ability to meet more stringent demands on knowledge, expertise and experience.

"It is essential for today's telecom market players to know exactly when existing technologies should be abandoned and replaced by new techniques that will make it difficult for competitors to stay abreast," concludes Östen Mäkitalo.

NILS SUNDSTRÖM

Special feature – third generationen mobile telephony systems

Multimedia for GSM and D-AMPS

Further development of the mobile telephony systems GSM och D-Amps enables quicker speeds in surfing.
Illustration: MAGNUS BARD

The future of GSM and D-AMPS (IS-136), the world's global systems for digital mobile telephony, has only just begun. Step by step, both systems are offering higher transmission speeds via circuit-switched transmission and packet data. Mobile multimedia has already become a reality, and we now wait in anticipation of mobile telephony's next generation.

Analog AMPS and digital D-AMPS systems have offered Internet access via Cellular Digital Packet Data (CDPD) for several years. A packet-data technique that accommodates transmission speeds up to 19.2 kbit/s, CDPD is now being introduced rigorously on a broad front by operators in the U.S. AT&T is leading the charge with its PocketNet service.

In 1997, only 15,000 subscribers used CDPD. According to Ericsson's estimates, the number of subscribers will increase sharply to nearly 70,000 in 1998.

Competitive edge

Higher transmission speeds will also be introduced soon for GSM, which now offers 9.6 kbit/s. A new technique called High-Speed Circuit-Switched Data (HSCSD) will be launched this autumn. In a short-term perspective, the new circuit-switched technique will increase transmission speeds to 64 kbit/s. HSCSD is comparable to IDSN used in wireline networks, which also offers cordless Internet connection and low-resolution video transmissions.

"About 3 percent of all GSM subscribers today use GSM data," says Richard Bremberg, head of Ericsson's business development in the field of packet data for GSM.

"A major stumbling block has been the lack of adequate bandwidth for mobile transmissions of the same material you now send via stationary computers in your office. The introduction of HSCSD, however, will increase transmission speeds to a level corresponding with today's modems for fixed telephony. It will also offer a significant competitive edge, accordingly, to operators who choose HSCSD," Mr. Bremberg continues.

The next stage of GSM development is General Packet Radio Service (GPRS). Expected to be launched in 1999, GPRS will double data transmission speeds again to 115 kbit/s. The new concept is based on packet data, the same technique used in CDPD for D-AMPS and for the Internet. Information is divided into packets, with each one assigned an address, and sent when capacity is available in the network.

Packet data efficiency

For circuit-switched communications, voice for example, a radio channel is allocated to a single user during his/her call. With packet data, exemplified by Internet connections, several users in the same mobile system cell share radio resources that are utilized only when a user has something to transmit. Packet data, as a result, offers greater efficiency in radio network utilization.

"The transmission mode allows operators to charge users based on the number of bits transmitted, not the amount of time spent on-line," explains Jan-Erik Stjernvall, head of strategic product development for GSM base stations.

"In addition to the mobile work station, new automated services offer considerable market potential for packet data and GPRS," Richard Bremberg continues. "It will facilitate the use of mobile networks in remote control applications for pumps, for example, building supervision or passenger car positional navigation applications,"

New technical solutions are also being introduced to increase DAMPS data transmission speeds. DAMPS+ (IS-136+) is expected to be launched by the year 2000, with maximum transmission speeds of 63 kbit/s for circuit-switched and packet data.

"The step beyond CDPD will increase speeds of all transmissions. Internet services are now available that users are already familiar with from fixed telephony, with added features like video transmissions," says Håkan Andersson. Mr. Andersson is responsible for technical development discussions with strategic customers of the AMPS/D-AMPS business unit.

Håkan Andersson is "on the road" more than 100 days every year, reassuring operators who invested in D-AMPS that their systems – just like GSM – are equipped to meet demands for future mobile telephony systems.

New modulation

Both GSM and D-AMPS will use a new modulation technique called Quartenary Offset Quadrature Amplitude Modulation (Q-O-QAM) to further enhance the efficiency of radio resource utilization. The systems will be able to reach transmission speeds up to 384 kbit/s. The new technique supports packet data as well as circuit-switched connections and is expected to be ready for market launch in the year 2000.

In the GSM world, the name of the new technique is EDGE (Enhanced Data rates for GSM Evolution).

"As in previous development stages, EDGE is based on existing infrastructures. Upgrades to higher data transmission speeds, accordingly, can be implemented gradually at selected network sites, starting at airports, for example, and conference facilities," Richard Bremberg explains.

NILS SUNDSTRÖM

Flexibel architecture smoothes path to the future

GSM and D-AMPS (IS-136) will develop rapidly over the next few years. With only minor infrastructure changes, both systems will be able to offer transmission speeds up to 384 kbit/s. Broadband services for WCDMA will also be available without any major changes in the fundamental architecture.

The future of GSM and D-AMPS is guaranteed by flexible architectures based on open interfaces. The power inherent in this solution is comparable to the TCP/IP protocol used for Internet communications, since it allows for additions of new services without fundamental system changes.

The next stage of development will enable GSM and D-AMPS systems to meet the demands of third generation mobile telephony in Universal Mobile Telecommunications System/ International Mobile Telephony-2000 (UMTS/IMT-2000).

New frequencies in the 2 gigahertz band have already been allocated in Europe and Asia for UMTS and IMT-2000, respectively. Operators that do not receive new licenses will also be able to offer mobile multimedia in the present frequency spectrum through WCDMA and new development upgrades of D-AMPS and GSM.

New modulation technology

New modulation technologies will enable GSM and D-AMPS to offer transmission speeds up to 384 kbit/s by the year 2000. Research is now in progress to accommodate speeds of 2 megabits/s indoors – for example, in cordless LAN connections.

The flexible architectures of GSM and D-AMPS will support new broadband services for UMTS/IMT-2000 in existing systems. In this respect, WCDMA may be likened to a new radio interface for the GSM and D-AMPS families.

There are more than 60 million GSM users in 110 countries in all parts of the world today. AMPS/D-AMPS networks are installed in nearly 40 countries, serving 80 million users, of whom 7 million have D-AMPS.

NS

Broadband for the masses

Michael Dunn is Web designer at Spray, a Swedish multimedia company.
Photo:
MIA WIDELL ÖRNUNG

Visions of change generated by third generation mobile telephony systems are being formed everywhere today, visions that could become reality as early as the year 2002. Imagine the prospects of doctors contacting patients en route to hospitals in ambulances and conducting initial examinations on the strength of real-time image transmissions. Police authorities will fight crime using images transmitted to police officers in the field. And people on vacation will send video postcards from the beach and listen to music via the Internet.

Greater bandwidth for job mobility

The future of computer-dependent workers who sit in front of display screens and keyboards in offices and their homes is under threat. This does not mean the end of fixed computers, or a decline in their importance, but rather the dawn of greater personal freedom and independence in terms of time and space in parallel with the introduction of third-generation mobile telephony systems.

When mobile broadband transmissions speeds are increased from 9.6 to 384 kilobits per second and, eventually, to 2 megabits per second, it will provide much greater advantages than reading e-mail and surfing the Net at higher speeds. It will also support transmissions of entire programs, sound transmissions characterized by more than acceptable quality and video transmissions.

Michael Dunn, who works for the Swedish multimedia company Spray, has thought long and hard about future consumer demands, and he believes video phone calls will attract the greatest interest among private consumers.

"There is nothing quite as exciting and complex as meeting another person," says Michael Dunn.

In the Internet community, four-year perspectives are tantamount to eternity in a sector that creates new visions overnight. And for this reason, Michael Dunn has developed very few visions of what might be created in the wake of wireless communications.

"If Ericsson tells us it might be possible, we will create the need. If you give me a technical gadget that operates at 2 megabits per second, I'll fill it with everything I have. It's a fascinating scenario, and we should do everything in our power to utilize the potential it offers," he continues.

When every terminal, earphone, pocket computer or whatever other device might be available gains access to mobile broadband communications, they will be able to communicate with each other very easily. Users will be able to order last-minute travel pricing services on their home computers. When the computer finds a cheap seat, the user's mobile telephone will ring, regardless of where he/she may be, and the display will read: "Book cheap ticket?"

"There is a fantastic amount of content on the Net that we want to project via more channels, not just personal computers," Michael Dunn says.

However, he also sheds light on certain problems and needs that take priority over larger mobile broadband.

"Price is a crucial factor. It has taken longer than expected to persuade private persons to pay the asking price for Internet services. Naturally, we want greater bandwidth, but, if it costs too much to utilize the mobile network, users will continue to surf from their fixed computers or TV sets."

For certain services and sectors, for example medical and health care, Michael Dunn believes users will be more willing to accept much higher costs.

MIA WIDELL-ÖRNUNG

Sten Byström and Britt-Marie Svedjemark of the National Police Board in Sweden believe mobile data communications will be a key element in more rational and efficient law enforcement pursuits of the future.

Photo: GUNNAR ASK

Police fight crime on-line

Mobile broadband communication is a focal point for law enforcement authorities today, particularly in view of financial austerity cutbacks during recent years.

"Mobile data communication is a basic requirement for rational police work in the future. Police authorities will become much more efficient when they are able to use the full range of investigative and protective services in the field," says Sten Byström, Chief Superintendent of Sweden's National Police Board.

Third generation mobile telephony systems will make it much easier for police authorities to look for wanted and missing persons. Chief Superintendent Byström also sees the potential to transmit video pictures from bank robberies in progress, for example, to mobile work stations of law enforcement authorities. Drug surveillance will also be simplified, since the need for cable installation considerations will be eliminated by camera surveillance equipment.

Police authorities use cordless data communications now. MoAr units, the designation for mobile police work stations supplied by Ericsson, have been installed in radio patrol cars used in most police districts throughout Sweden. Police officers are able to link directly to certain registers via MoAr and conduct on-site interrogations.

In Gävle, north of Stockholm, neighborhood bicycle police officers are testing the 300-model of Hewlett Packard's minicomputer and will eventually test Ericsson's new MC12 360 pocket computer.

Computerization also involves a certain risk, however.

"Police authorities, among other considerations, have stringent demands on encryption and security. It's important that we develop a solution that meets these requirements," says Britt-Marie Svedjemark of the National Police Board. Ms. Svedjemark is working on a report to identify specific demands of law enforcement authorities on IT solutions that should be made available for field police work in the future.

MIA WIDELL ÖRNUNG

Medical care – from a distance

The most visionary of all visionaries believe mobile multimedia communications will create a revolution in health and medical care, with particularly strong focus on the best interests of patients.

The quality of care will increase and save lives. Greater caution marks the vision of other multimedia industry analysts, who believe even greater austerity measures will be introduced in the shadow of IT investments to cut health and medical care costs.

Whatever the outcome, rest assured medical care will be shifted away from hospitals and narrow the gap to patients.

Third generation mobile telephony will play an extremely interesting role in the transformation of health and medical care, and perhaps especially in home nursing and outpatient services. It's well within reason, for example, to envision district nurses and personnel at homes for the elderly consulting a patient's doctor via video telephony, says Silas Olsson, who was named program director of Telia's health and medical care department on January 1, 1998.

Several applications are also envisioned or already in place. Chronically ill patients will be afforded opportunities to send test results and consult with their physicians on-line. Ambulance personnel will use cordless communications to speak with doctors and begin advanced on-site treatment to dissolve blood clots, for example, in cases of acute cardiac infarction.

Facilities are available for transmissions of EKG via GSM or Mobitex networks from as many as 100 ambulances in Sweden for appraisals by hospital physicians.

In order for wireless multimedia communications to make a definitive breakthrough in medical and health care, however, the ability to meet stringent demands on security are required to guarantee the integrity of patient confidentiality and prevent information from becoming available to unauthorized persons. Structural changes are also needed in the health and medical care sectors.

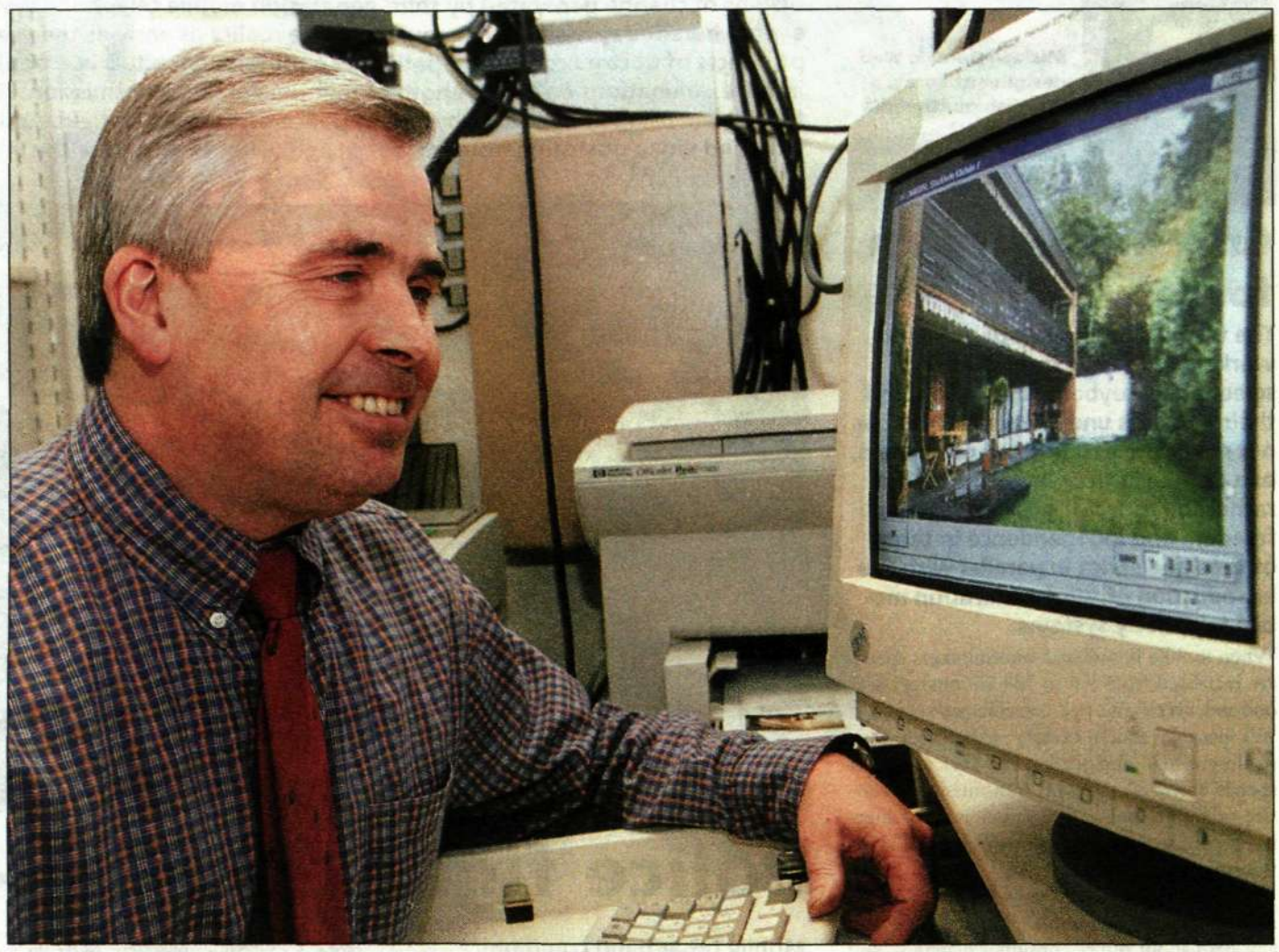
"The implementation of change in the medical profession is a time-consuming process. The availability of new technology per se does not justify change; it also requires the support of a strong medical organization. Video images from an accident site have little value if a medical doctor is not available at the other end to study the pictures and assume responsibility for his/her diagnoses and recommended forms of treatment," says Silas Olsson.

Special feature – third generationen mobile telephony systems

Continued from preceding page

Brokers sell property on the net

Third-generation mobile telephony systems will promote increased commerce and trade. Growing numbers of companies are marketing and selling their products and services over the Internet. Many real estate brokers, for example, are showing pictures and descriptions of properties on the Net.



Claes Mannerstråle is a real estate agent. He believes in the viability of showing properties on-line as part of added services to prospective purchasers in remote areas. Electronic showings, however, are not expected to replace personal visits.

Photo: MIA WIDELL ÖRNUNG

"In the past, it was difficult to provide adequate service to people outside Sweden who were planning to move back home. Since we started using the Internet, we have achieved strong improvements in our service standards and customer response. I even sold a summer cottage based exclusively on showings over the Net," says Claes Mannerstråle, an agent for Hans Göthe, a real estate company based in Stockholm.

Showings on TV

Hans Göthe Real Estate has made considerable investments in IT. In addition to making information on properties for sale available on the Internet, the company started showing objects on TV, which are transmitted via the Net. Various attempts have also been made with virtual showings of apartments, but costs for the service are prohibitive, at best.

More opportunities will be created by third generation mobile telephony. Brokers and prospective buyers will be able to meet on-line in sale properties, with purchasers seated a mile or thousands of miles away in front of their personal computers or TVs. A prospective buyer can ask questions about the boiler or roof while the broker walks through the house with a minicamera.

"I definitely think this option will fill a void. Sundays are extremely intense days in the real estate business, and people often call to ask if we plan to show properties again. On-line showings offer very promising potential to meet this particular market demand. Naturally, however, a great deal will depend on what the services will cost," says Claes Mannerstråle.

MIA WIDELL ÖRNUNG

"Customer demands are decisive"

It's still too early to envision a complete picture of third-generation mobile telephony. It is fairly certain, however, that customer demands will be decisive in designs of future telephones.

"Perhaps the most critical element will be deciding what we as consumers will really want," says Jan Ahrenbring, Vice President of Marketing at Mobile Phones and Terminals.

Third-generation mobile telephony systems will not be placed in commercial operation before the beginning of the next century. Naturally, Jan Ahrenbring says, we are already looking into products adapted to the time perspective in question, but no concrete designs have been approved.

"We know what type of services will be offered by third-generation mobile telephony. Right now, today, however, we do not know if there will be a demand for the services," Jan Ahrenbring continues.

Ericsson believes continued evaluation and research will shed greater light on the needs and demands of future users of mobile telephony services. It's not easy for customers either, however, to project their needs and preferences three of four years from today.

Larger displays

We do know for certain that third-generation mobile telephony will offer faster image and video transmission speeds. The higher transmission speeds of third-generation mobile equipment and services will also make it possible to connect workplaces to local networks and enjoy greater access to the Internet. Image and video transmissions will naturally require that mobile telephones be equipped with larger display areas. Although new functions will have new space requirements, Jan Ahrenbring does not believe third-generation telephones will be much larger than present models. It is more a question of reallocations and new design philosophies.

Who will be first?

But what customer groups will be the prospective buyers of new products?

"Since we shall be dealing with a new and, in many cases, more expensive technology, it may be assumed that professional users will be a primary target group," Mr. Ahrenbring continues.

He also emphasizes the importance of not incorporating more functions in new telephones than customers want. "We are not developing technology for the sake of technology. Even now, the market has a problem with mobile telephones that are far too complicated, offering features only a small percentage of customers know how to use," regardless of manufacturer brand name.

It is important for Ericsson, he continues, to apply technologies in a manner that helps create simpler products, in parallel with efforts to increase their level of sophistication.

Jan Ahrenbring also believes that Ericsson should stress a soft transition to the next generation of mobile telephony. Although new systems will require new telephones, GSM has not even approached the end of its tenure as a highly functional mobile system. On the contrary, Ericsson plans to upgrade GSM networks and increase their transmissions speeds.

Some customer groups will have greater needs than others for new functions. The size of more demanding customer groups is difficult to forecast, however. According to Jan Ahrenbring, growing and more widespread use of the Internet, and opportunities to access the Net via local networks, will be an extremely important factor in designs of future mobile telephones.

Jan Ahrenbring, Vice President of Marketing at Mobile Phones and Terminals, believes it's still too early to envision designs for third generation products and systems.

New product types and categories are emerging on the market constantly, but, in the foreseeable future, Jan Ahrenbring believes the most important motivation behind purchases of mobile telephones by private consumer is their need, their desire to communicate, and exchange feelings, knowledge and information with each other.

GISELA ZEIME

Japan trying to stay one year ahead

There is no doubt about which technology will dominate the next generation of mobile telephony systems in Japan. In the year 2001, one year before the rest of the world, Japan's high-capacity WCDMA system will be placed in commercial operation. Ericsson is working vigorously today on deliveries of equipment for two Japanese test systems based on WCDMA.

Most development work on the WCDMA test system is concentrated in Sweden, with important standardization efforts conducted by Ericsson in Japan. Meetings are held daily by different standardization groups, while other groups meet informally to resolve some of the more important issues.

"Our mission here is to serve as a bridge between Ericsson in Sweden and NTT DoCoMo and the Telecommunications Ministry of Japan," says Jörgen Lantto of Nippon Ericsson. He is responsible for product management and standardization of IMT-2000 products and standards for the Japanese market.

The group comprises about 25 members, some of whom moved last autumn to a new research and development center at Yokosuka Research Park, about 50 kilometers south of Tokyo.

Test systems for operators

Delivery of the WCDMA test systems to Japanese operators NTT DoCoMo and Japan Telecom is the most important task at hand.

Two Japanese organizations are involved in the standardization work, with ARIB working on the air interface and TTC concentrating on network standards. NTT DoCoMo and Ericsson are represented in both organizations. As the world's largest mobile telephone system operator, NTT DoCoMo has dominant positions in ARIB and TTC, with other Japanese operators not as intimately involved in standardization questions.

Hundreds of specifications

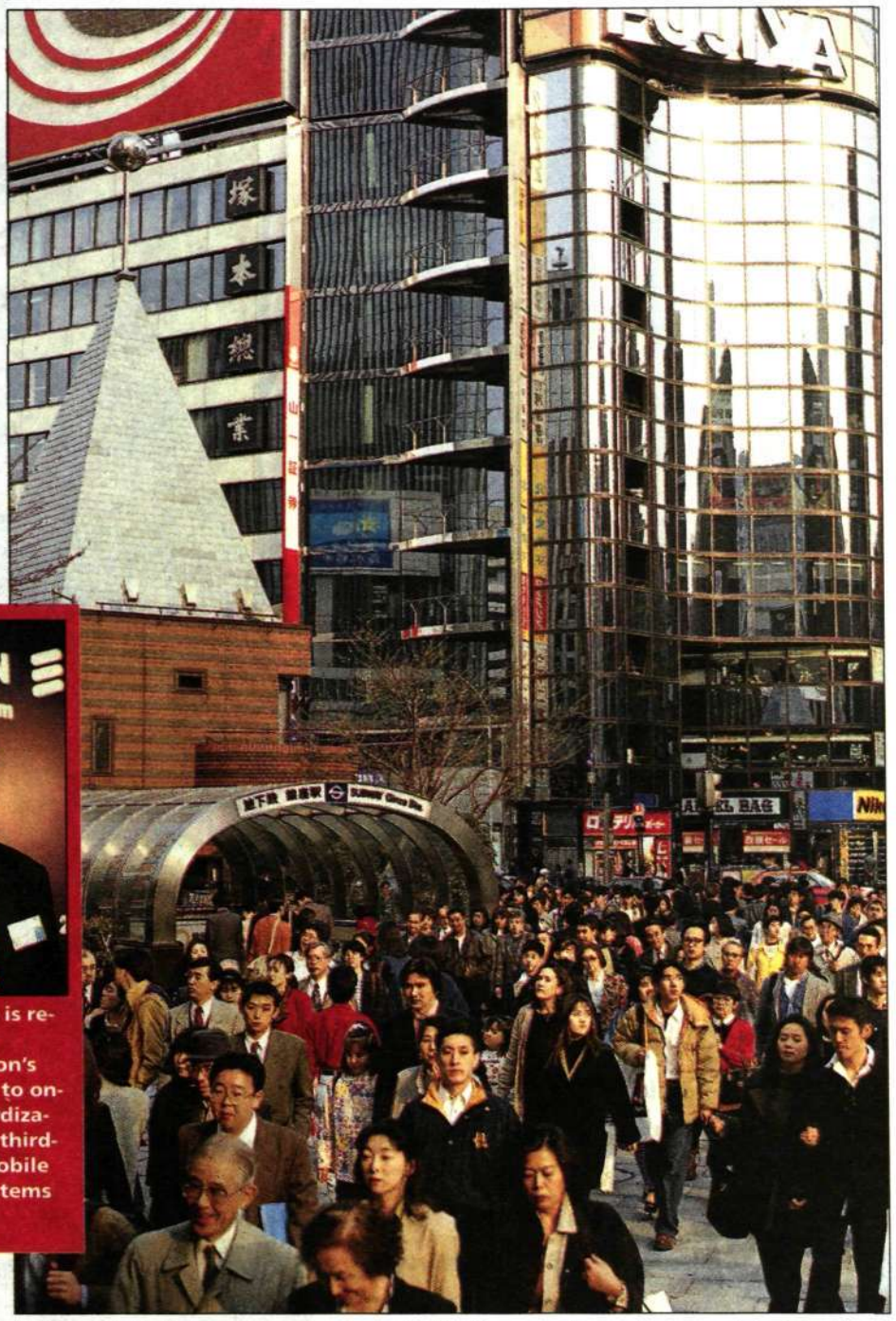
Japanese traditions place special importance on informal meetings, a forum for many decisions. Jörgen Lantto and his staff, accordingly, spend a great deal of their working days in meetings. They participate everyday in some form of standardization meeting.

"As we approach the spring, our work will enter an extremely intensive phase of the project, highlighted by even more meetings. We need skilled personnel reinforcements, people who want to be part of this exciting project," Jörgen Lantto continues.

"Our Japanese principals want all standardization work to be completed by the spring of 1999 in cooperation with ETSI and other organizations, which means thousands of pages of standard specifications will have to be written this year. Japan has virtually no experience in establishing international standards, which makes Ericsson's role as a source of influence and support even more important," he explains.

Japan has fallen behind the world of mobile telephony due to its inability to stay abreast of GSM in the early stages of development, and PDC has not gained any appreciable international success. This time, accordingly, it's essential for Japanese operators to be involved and committed from the beginning.

Jörgen Lantto is responsible for Ericsson Nippon's contributions to ongoing standardization work for third-generation mobile telephony systems in Japan.



It is particularly important for Japan to begin operations of new mobile telephony systems as quickly as possible. Subscriber growth is extremely rapid and conditions in existing systems are already overloaded. Photo: GREAT SHOTS

Mobile subscriptions in Japan show extremely rapid growth. Both in terms of capacity and quality, it is important for the country's operators to place their new broadband mobile telephony systems in commercial operation by the early part of 2001.

GUNILLA TAMM

Rapid results with WCDMA

Work on the WCDMA system for Japan has proceeded very rapidly. A complete system was developed in little more than one year. The project involves very large amounts of hardware and software. At the end of January 1998, Ericsson completed initial deliveries of equipment to NTT DoCoMo, Japan's most dominant mobile telephone operator.

In October 1996, Ericsson tendered an offer for delivery of the test system to NTT DoCoMo, and determined development efforts were started in February 1997. At the same time, Ericsson established a new development unit, Wideband Cellular Systems, for broadband mobile systems. Employees from the Mobile Systems business area's core research unit have been brought together in the new development unit to work with personnel from the Cellular Systems – Japanese PDC Standards business unit and Ericsson's development unit in Nacka Strand, which is concentrating on development of an ATM switching system.

"The first task was to develop a test system for WCDMA and, without the organizational changes, we would never have been able to develop the system in such a limited period of time," explains Håkan Djuphammar, product manager of the broadband unit.

400 employees outside Stockholm

In addition to 300 persons in Kista and 100 in Nacka Strand, nearly 400 other Ericsson employees are working on the WCDMA project at various locations outside Stockholm.

Speech encoders are under development in Nuremberg, Germany, and work on the switches is concentrated at Jorvas, Ericsson's development center in Finland. Erisoft in Umeå and Luleå, in northern Sweden, is working on control software for base stations.

Ericsson Microwave Systems in Mölndal is developing antennas for the test system as well as radio engineering, and the Application Center at Ericsson Radio Systems in Linköping is concentrating on software for the radio network section. Installation of the test system has now reached full stride at NTT DoCoMo in Japan. The work is being handled by a team of Ericsson employees from Sweden and Japan.

During the spring, NTT DoCoMo will conduct test operations of the system in its own laboratory, followed by field tests under real conditions in the summer.

"We are now building a similar test system to cover Kista, parts of central Stockholm and Telefonplan," Håkan Djuphammar continues. "Scheduled for completion later this spring, the system will be used for demonstrations to prospective customers."

Last summer, Ericsson booked an order for a second WCDMA Japanese test system from Japan Telecom. Ericsson Radio Systems will also deliver the software for the second system. NTT DoCoMo is handling software development for its test system.

Four test systems

At the same NTT DoCoMo ordered its test system from Ericsson, Lucent Technologies, NEC and a consortium comprising three Japanese companies were contracted for a similar project. There is no cooperation between the various system suppliers, and each company is working alone to develop its own test system.

GUNILLA TAMM

... and more

■ This is only the beginning...

It will be several years before third-generation mobile telephony systems are fully developed and placed in commercial operation. Ericsson has a home page on the Internet that is updated continuously with current news and the latest developments in the standardization process. The site also provides links to other sources of information, including the International Telecommunications Union's own Web site and information about global standardization efforts.

You can access Ericsson's home page at the following address:

http://www.imt-2000.com

The home page of the International Telecommunications Union has the following address:

http://www.itu.int/imt

ARE MACHINES BECOMING MORE HUMAN?

OR IS IT JUST US?

Finally Deep Blue beat Kasparow. Hey, anybody can have a day off. But maybe you've noticed some other tell-tale signs. Like car radios that turn themselves off when you are on the phone (awfully polite, don't you think?), and those little digital pets. The fact is, machines really are beginning to behave more like people. The reason is that more and more analogue technology is being integrated with digital systems. But mixed-signal is the toughest part of system-on-a-chip designs – it is not for the faint of the heart. Fortunately, it happens to be something we at National are quite good at. We have the system architecture expertise, the process technology, and the manufacturing muscle. And enough intellectual property for you to make your next design a real talking point. Before you know it, we'll be building machines with social skills. Go figure.

www.national.com

WHAT CAN WE BUILD FOR YOU?™

National Semiconductor®

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 1998 **Updated February 9**

Ericsson Eurolab Deutschland GmbH, Aachen

The EED/X/D is the department within Circuit Switching Systems(CCS) system house for system level activities. CSS is responsiblefor the Switching Systems node in CME20 and CMS40 mobile networks.Here at EED we have the overall Circuit Switching Systemsresponsibility for CME20 & CMS40. Due to further expansion we arelooking for people to work in the system management as

SYSTEM MANAGEMENT ENGINEERS, "CIRCUIT SWITCHING SYSTEMS"

● We are working with the following mobile applications: GSM 900,1800 & 1900 systems. Global and regional satellite networkapplications. Studies about GSM MSC evolution. UMTS.

System Management focuses on a range of system level tasks whichare necessary to ensure progressive development of Ericsson'sCME20 & CMS40 switching nodes. This work involves a broad range ofactivities including RS writing, system investigations,standardization and system level tasks related to systemdimensioning and platform management.

Please refer to the department homepage in the www for furtherinformation about the department's activities"http://www.eed.ericsson.se/services/eed-x-d/Welcome.html

"Suitable candidates possess a relevant engineering degree (e.g.telecommunications, electrical, or software engineering) with aminimum of 3-5 years of AXE development or testing experience, andpreferably at least 2-3 years of experience in system-leveltechnical development or testing. Experience with GSM or othermobile telephony development is advantageous, but not absolutelynecessary. Good analytical skills are essential.

Good cooperation, verbal and written communication skills areimportant human skills. Experience in working in close customerrelations would be advantageous. If you have questions and/or areinterested, please refer to your colleagues:

Contact: Pieter van Rijnsoever, tel: +49-2407-575-172, Memo:EED.EEDPVR, Andreas Thuelig, tel: +49-2407-575-246, Memo:EED.EEDANT, Doerte Kaulard, tel: +49-2407-575-163, Memo:EED.EEDDKA (Human Resources).

The Research and Development centre Nuremberg/Germany, RadioCommunication is looking for a

CONFIGURATION MANAGER

● Your task will be to provide configuration management support tovarious projects at Ericsson Eurolab Deutschland GmbH inNuremberg, Germany.

You will need to work according to defined CM rules, which arebased on the general Ericsson CM standards.

Following a comprehensive training period, you will be responsiblefor creating and maintaining project document databases, as wellas defining and checking the project documentation required on theprojects. You will also be responsible for ensuring correctversion controlling of configuration items, their releasing andtheir delivery to other sites.

You should be a qualified computer scientist or an engineer withgood knowledge in Unix and software engineering. Experience usingconfiguration management systems (e.g. ClearCase), would be anadvantage.

Contact: R&D Centre Nuremberg Radio Communication Norbert LechnerManager Human Resources Dial: 0911/5217-111 Memo: EED.EEDNLE orR&D Centre Nuremberg Radio Communication Juergen Matthis GroupManager Dial: 0911/5217-334 Memo: EED.EEDJMA

Ericsson Telecommunications Sdn Bhd, Kuala Lumpur, Malaysia

MANAGER FOR NETWORK DESIGN, CUSTOMER DIV. MUTIARA

Mutiara is one of Ericssons' largest GSM 1800 customers. Since thelaunch of their network in 1995, Mutiara has been expandingrapidly on a network supplied solely by Ericsson. The network nowhas 200,000 subscribers and is facing the next stage of networkdevelopment.

Mutiara also has operations in International, transport, fixed anddata networks, so the job is certainly not limited to CME 20.

● Requirements for the job; Good knowledge of GSM products, anability to work well with people of varied cultures and awillingness to work with all areas that a young, dynamic networkoperator needs to deal with (from customer services totransmission planning) are all prerequisites.

Strong customer focus is a necessity. Your role will be to head adepartment which has been built up over 3 years, and to develop itfurther to handle the challenges that will exist in a competitivemarket.

Contact: Jan Signell, General Manager, Customer division (MutiaraTelecom), Ericsson Telecommunications Sdn Bhd. Memo ECM.ECMJWS (ccto ECM.ECMSIVS), TEL + 60-16-2200485

Ericsson AS, Arendal, Norway, Customer Support Office

SUPPORT ENGINEER FOR AXE LOCAL/TRANSIT SYSTEM'S

Telecommunication is an expanding area in Norway and the number ofcustomer/operators are expected to increase in the near future. Wewant to increase our staff (today: 9 people) at the CSO workingwith SW deliveries and customer support for AXE local/transit. Oursection, O/F/D, is one of 3 sections in the department fortechnical support, located in the most southern part of Norway(excellent possibility for sailing, diving, skiing and otherrecreational activities). We also foresee an integration andcloser co-operation between the networks through e.g. FMC and IN.

● The work area will include: SW-package test/demo on STP. Remoteupgrade/update. Participation in projects. Trouble shooting.Customer support.

We are looking for a colleague who: Have experience from AXE. Isservice minded. Experience from design and knowledge in Norwegianis an advantage.

Contact: Bjarne Trovaag, phone +47 370 51 724, memo/mail: etobtApplication: Ericsson AS, Inga Rosland, P.O. Box 44, N-4817 His,Norway

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Ericsson South Africa (Pty) Ltd

SS AND BSS SYSTEM SUPPORT EXPERT

The Southern African markets are developing rapidly. Ericsson hasbeen very succesfull in the region. The new networks will be liveshortly and will be supported from South Africa.

● To strengthen our support organisation we are looking for one SSand one BSS System Support Expert for a long term contract inSouth Africa.

OBJECTIVES: To provide technical expert support to Ericsson'scustomers and Field Support Centre within the coverage of thefield support area. To be accountable and responsible for theefficient running of the System Expert function within FSC inorder to reach a higher level of customer satisfaction.

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

MAIN TASKS: To review, develop and improve the procedures in FieldSupport. To ensure that all activities within the department meetthe Ericsson Quality standards. To identify, investigate andreport or solve problems of a complex nature in the both hardwareand software. To be able to explain highly technical issues todifferent levels within the organisation. To be part of the 24 hemergency service if appointed.

REQUIREMENTS: Degree in Electronic Engineering/Telecommunicationsor equivalent. A minimum of five (5) years relevant experienceworking in the telecommunications/computing industry where atleast three (3) years has been working for Ericsson within testingor customer support of CME20.

System skills (respectively SS and BSS) as good knowledge of e. g.switching, traffic concepts, telecommunications networks,inter-exchange signalling, GSM900/1800 Radio environment (CellPlanning and Fault finding), AXE 10 Operations and emergencyrecovery procedures and product functional demands.

Have a sound knowledge of the CME20 Switching System, troubleshooting and trouble report handling, CN-A and CN-I handling andcorrection implementation.

System Expert needs to be familiar with the product structure at alevel equivalent to the components of a function block (hardwareand software functions).

Knowledge of MIN (Mobile IN) applications and complimentaryproducts as VMS and SMS-C applications is an advantage.

Personal skills as a thorough and methodical approach to work, beable to work as a team member, perseverance in tracing and provingthe existence of faults, be flexible and responsive to changingwork patterns and demands. There will be a need to travel inSouthern Africa at short notice.

Very good knowledge of English is a must.

Contact/Application: Riku Vastela, Memoid ESA.ESARIKU, phone ESA+27 11 283 2000.

Ericsson Ltd, UK

MANAGER, STRATEGIC PRODUCT MANAGEMENT

● Division: Airline Business Unit, Sector/Department: ProductManagement

Main Duties & Responsibilities / Key Job Tasks: Reporting to Headof Product management this candidate would be responsible forguiding the strategic direction of the Airline product. Airline isa point-to-multi-point radio access product that providesmicrowave links to businesses to supply telecom services. Thesuccessful candidate will have a blend of highly developedtechnical skills with an appreciation of marketing and marketdynamics.

The position involves: product planning and evolution, liaisonwith design groups both internally and externally to resolvetechnical issues. Marketing support (UK and Overseas). Preparationof Specifications for New functionality. The position is within anewly formed Business Unit addressing the point-to-multipointmarket place, with full product line responsibility.

Competencies: Technical, e.g. What product knowledge? Etc.

The successful candidate will have a technical background with anunderstanding of either: Radio engineering. Experience in one ormore of the following (or similar): microwave engineering,cellular/PMR/cordless environment, cell planning, WLL, AND/OR.Multiplexing/transmission/transport. Experience in some or all ofthe following (or similar): multiplexing ,switching, ATM, FrameRelay, ISDN , interfacing, V5.x signalling, POTS interfacing

Business/Human, e.g. Communication skills, etc. This positiondemands well developed interpersonal and presentation skillsdealing with external contacts at high level. The position willinvolve overseas travel for short periods of time. The demandingnature of the role requires flexibility on the part of theindividual to changing requirements

Ideal Background/Experience, e.g. HND, x years experience in fieldetc: Degree qualified, the candidate would have had at least 5years in relevant positions, in Product Management orSystems/Design Engineering

Contact: Recruiting Manager: Paul Challoner or Sector/Group Head:Nadeem Siddiqui

2 PROCESS ENGINEER

● Division: Airline Business Unit, Sector/Department: ProductManagement

Main Duties & Responsibilities / Key Job Tasks: Reporting to theHead of Product Management this position is responsible forprocess implementation and coordination throughout the AirlineBusiness Unit. The role is to champion process issues and drivethem through to realisation. The successful candidate will have awide ranging remit from Order process, Forecasting and Logistichandling to Product structure and Documentation. A thoroughunderstanding of engineering and business methodology is requiredtogether with an understanding and empathy for other discipline'srequirements.

The process requirements do not end at the shipping department ,but extend to the Ericsson local companies and to the processes ofthe PTO's that deploy our product. Successful process flow allowsfor delivery of more equipment and results in business success forthe unit.

This responsible position holds the key to the successfuloperation of this newly formed business unit. A commitment toprocess flow and its importance is reflected by the managementteam and channelled through this position. The role has aprogression to *more senior appointments based on effectiveperformance.* As a new business unit the role has considerablescope for development.

Competencies: Technical, e.g. What product knowledge? etc. Theideal candidate will have a good technical understanding oftelecoms and a thorough understanding of engineering principles.The technology will be new and a desire to learn and develop newskills will be important

Experience of Ericsson systems such as PRIM and CHESS would be anadvantage as well as an understanding of database structure and ITsystems.

Business/Human, e.g. Communication skills, etc. This position andits demanding nature requires a well motivated individual to besuccessful. The need to interface to a large number of internaland external contacts makes polished interpersonal skills anecessity. The successful candidate will be comfortable withpresentations to customers. A combination of attention to detailand a drive to shape the way the business unit works are requiredfor success. Some overseas travel may be required.

Ideal Background/Experience, e.g. HND, x years experience in fieldetc. Preferably Degree qualified the applicant will be experiencedin the Telecoms environment with a background in processengineering. Ideally with over 5 years in a related position.

Contact: Paul Challoner or Sector/Group Head: Nadeem SiddiquiPersonnel Representative: Emma Knapp

2 PRODUCT ENGINEERS

● Division: Airline Business Unit, Sector/Department: *ProductManagement*

Job Specification/Main Duties & Responsibilities / Key Job Tasks:Reporting to Manager, Strategic Product Management this candidatewould be responsible for guiding the strategic direction of theAirline product. Airline is a point-to-multi-point radio accessproduct that provides microwave links to businesses to supplytelecom services. The successful candidate will have a blend ofhighly developed technical skills with an appreciation ofmarketing and market dynamics.

The position involves: product planning and evolution, liaisonwith design groups both internally and externally to resolvetechnical issues. Marketing support (UK and Overseas). Preparationof Specifications for New functionality. The position is within anewly formed Business Unit addressing the point-to-mulitpointmarket place, with full product line responsibility.

Competencies: Technical, e.g. What product knowledge? Etc. Thesuccessful candidate will have a technical background with anunderstanding of either Radio engineering Experience in one ormore of the following (or similar): microwave engineering,cellular/PMR/cordless environment, cell planning, WLL,

AND/OR: Multiplexing/transmission/transport. Experience in some orall of the following (or similar): multiplexing ,switching, ATM,Frame Relay, ISDN , interfacing, V5.x signalling, POTS interfacing

Business/Human, e.g. Communication skills, etc. This positiondemands well developed interpersonal and presentation skillsdealing with external contacts at high level. The position willinvolve overseas travel for short periods of time. The demandingnature of the role requires flexibility on the part of theindividual to changing requirements

Ideal Background/Experience, e.g. HND, x years experience in fieldetc. Degree qualified, the candidate would have had at least 3years in relevant positions, in Product Management orSystems/Design Engineering

Contact: Recruiting Manager: Paul Challoner or Sector/Group Head:Nadeem Siddiqui

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Ericsson Toshiba Telecommunication Systems K.K, Japan

PRODUCT MARKETING MANAGER

The business for Ericsson in Japan is growing. At present we are700 employees, approximately one third is expatriates. Presentlythere is three companies established in Japan, Nippon Ericsson NRJ(MLC) 230 employees, Ericsson Toshiba Telecommunication SystemsERJ (JV) 460 employees and Ericsson Mobile Communication EMJ (JV)15 employees.

Today our main business is PDC (Japanese standard for mobile phonesystem) but we are entering the market for mobile phones and aredeveloping solutions for 3rd generation of mobile phone systems.

Our mission is to identify new business opportunities and todevelop total communications solutions for our existing CMS 30customers. This involves a business oriented mentality and anattitude to create and seize opportunities in a very fast anddynamic environment.

● Your role is to develop new business opportunities and carry outproduct marketing activities to our customers. This includesproduct offering, customer negotiation and creation of commercialcontracts. These ac-

tivities shall be conducted in harmony with thecultural bounds and be consistent with our business processes.

This position will report to the Senior Product Marketing Manager.

Your personal record includes a good theoretical background attechnical university level plus at least 3-5 years of experiencewithin the marketing environment.

You have experience from the areas of business development,commercial matters and have had direct customer responsibility ina highly competitive environment. As a person, you demonstratedco-operative ability, result orientation, initiative, creativenessand professionalism.

A prerequisite for the position is presentation and negotiationskills as well as highly developed skills in English, both spokenand written. In short, we are looking for: Willingness to transferknowledge to local employees. Prior customer experience (closelyhave worked in and environment with direct customer interface) 3-5years or more. Good knowledge of Ericsson mobile communicationproducts. Excellent negotiation skills. Independent person/feelscomfortable to act on his/her own. Ericsson oranization knowledge.Good communication skills (English is a must, others advantage).Business oriented/Solution thinker. Good knowledge of commercialmatters (contract knowledge). At titude to work in amulti-cultural envionment.

Contact: ERJ/M/BC Vafa Shams, memoid NRJ.ERJVSS Application:ERJ/P/PC Michael Regnér, memoid NRJ.ERJMR

L.M. Ericsson A/S, Copenhagen, Denmark

ENGINEER TO SYSTEM SUPPORT

● To the department for System Support we are looking for a newcolleague to reposition a job within Operational ProductManagement for the Danish market including the MAS-design (MarketApplication System). We mainly work with the Danish market andespecially with systems to Tele Danmark, but we also do jobs forthe regional center for Transgate here at LMD. Regarding theMAS-design, it is mainly for local and transit exchanges, but alsoparametersetting for mobile exchanges are included. Furthermore,there is a possibility to participate in a co-operation with theother Nordic markets regarding harmonisation of our local MAS.

Job content: technical analysis for the market departments.Parametersetting of new systems, which includes customer contactmainly in Denmark, but also internationally, Participation inmarket projects with the technical responsibility for the new MAS

Personal profile: engineer or similar experience with AXE a plus.Be able to create results, partly independently and partly byco-operation with others. Have initiative - also regardingimprovement of processes in the department. Take responsibilityfor your own tasks. Be thorough and quality minded in your work

Contact: group leader Steen Mikkelsen at ext. +45 33 88 35 46 orEmail lmdsmn@lms.ericsson.se. Application: L.M. Ericsson A/S,Sluseholmen 8, 1790 København V, Denmark.

Nippon Ericsson, Japan - NRJ

LOCAL PRODUCT MANAGER

Do you want to work on one of the most expansive and demandingmarkets in the world? In that case you should immediately applyfor the position as Local Product Manager (LPM) at Ericsson inJapan. We are looking for two LPMs with extensive radio experienceand are prepared to offer successful candidates a long termcontract with excellent conditions in Tokyo, Japan.

● One position will work primarily with radio network functionalityin CMS 30 toward our customers and regional offices. You shouldhave experience from mobile systems and general knowledge aboutradio. Previous customer experience is not a requirement butdesirable.

The other position will work primarily with radio base stationissues within CMS 30, also toward customers and regional offices.You should have experience from mobile systems and knowledge aboutradio preferably within the base station area. Previous customerexperience is not a requirement but desirable.

For both positions fluency in English (oral and written) isrequired. You should have drive and a desire to understand thecustomers real needs and want to work in a market with highrequirements on quality.

Contact: Christofer Geijer, +46 8 757 18 54, ERA.ERACGE or KaiHeikkinen, +81 45 475 0426, NRJ.ERJKAI Application: Ericsson RadioSystems AB J/HPS Ann Beer, 164 80 STOCKHOLM

LOCAL PRODUCT MANAGER

● We are now looking for two Local Product Managers (LPM) for longterm contract (at least two years) at Ericsson's MLC in Tokyo,Japan, with extensive AXE experience.

One position will work with switching and system services (MSC/HLRin CMS 30) toward our customers and regional offices. You shouldhave experience from design (APT) and product or systemmanagement, or sales. Previous customer experience is a definiteplus, preferably with mobile operators.

The other position is aimed at AXE HW management, also towardcustomers and regional officies. You should have extensiveexperience from AXE operations within Ericsson (fixed or mobile).Deep knowledge of AXE HW components, and the supply flow isrequired. For both positions fluency in English (oral and written) isrequired. A desire to please customers and to work in a marketwith high requirements on quality is a must.

Contact: Björn Hallare, +46 8 404 78 92, ERA.ERAHABJ or KaiHeikkinen, +81 45 475 0426, NRJ.ERJKAI Application: Ericsson RadioSystems AB J/HPS Ann Beer, 164 80 STOCKHOLM

Ericsson, Radio S.A,Madrid,Spain

IN PROFESSIONALS

At Value Added Services within the Regional Technical Centre atREE,we work with mobile IN systems in the Supply & Support areas.We are looking for new IN professionals to join in our innovativeand highly motivated team.Our premises is located in Madrid.

● JOB DESCRIPTION:The activities are related to system solutions andinvestigations, verification and acceptance, FOA, problem solving,consultation service, and other support activities;all of theabove aiming at leading and ensuring the quality andcompetitiveness of the Ericsson Mobile IN solutions. You will beworking with other highly competent people with differentbackgrounds and long experience.

REQUIREMENTS:Applicants should have an engineering degree, and 4-5years experience in telecommunications, in particular IN or MIN. Asolid UNIX and/or AXE background is a must. Experience intechnical development or testing is preferred. The general skillsrequired include working independently and taking initiative,constructive attitude, communicative, travel disposition, workingin team (cooperative), and willing to transfer knowledge. Highlevel of English, both spoken and written, essential.

Contact: Juan R. Regaldie,(+34-1-339 2931, mob. +34-09-111 863,reejrsa@niepce.ericsson.se, REE.REEJRSA) Application: (+34-1-3392931, mob. +34-09-111 863, reejrsa@niepce.ericsson.se,REE.REEJRSA) or Luis Diaz (+34-1-339 2472, REE.REELDM)

Ericsson Paraguay

RESOURCES FOR CMS88 FSC

ERICSSON is expanding to new markets: TELECOM PERSONAL, one of theArgentinean customers, will operate an Ericsson AMPS/DAMPS DUALBAND network in PARAGUAY (South America).

In the begining it will be an MSC APZ 212 20 with 40 RBS, coveringAsuncion City. Before the end of the year, it will expand to thewhole country. If you are looking for a new challenge, in abeautiful country, this is your oportunity. We are expecting avery dynamic market, always demanding the introduction of newfeatures and services. The base site is Asuncion.

SPECIFICATION OF RESOURCES

FIELD SUPPORT CENTER

● Length of Assignment: 1 (or 2) year(s) contract
Start time: from April 1st,1998 to May 1st,1998

Main assignments: Trouble-shooting activities on/off sites. HW/SWupgrades such as APZ upgrades and AS-changes. Participate in theOn-call roll to handle emergency situations (APZ, IOG, billing,traffic restrictions) Introduction of new features and services.

Competence requirements: We are looking for a person with a solidtechnical education (BS Eng., engineering technology or equivalentwork experience) As a suitable candidate you are an Ericssonemployee with AXE competence in the area of AXE testing orsupport. You are experienced in mobile telephony (preferablyAMPS/DAMPS). You are very familiar with trouble-shootingactivities (Test system) etc. APZ knowledge is highly desirable.The job requires a calm and a methodical approach to solvingcustomer's problems. You will have to be flexible and have theability to work under pressure. The candidate should be able totransfer knowledge to newer members of the team. Good knowledge ofspoken and written English and Spanish is highly desirable.

Contact: Esteban Piaggio, phone +54 (1) 3195612 memoid :CEA.CEAESPI FAX : +54 (1) 3195697

Ericsson Eurolab Deutschland GmbH, Aachen

The System Test & Support Department EED/X/S within our PAX SystemHouse is responsible for CME20 SS Maintenance and CustomerSupport, Industrialization of CME20 SS releases, TestConfiguration Management and Methods & Tools development, plus thenew responsibility for the Integration and verification of theGPRS functionality on node as well on GSM network level.

GPRS is aiming for the combination of data communication andmobility. And is currently standardized as an extension of GSM. AsEED/X/ST section takes the responsibility for the GPRS IndusProject, FRIGG1 being the first main release, we are looking for 5new team members as

GPRS SYSTEM TESTER

● The GPRS System Tester is mainly responsible for Test Design andTest execution needed to industrialize the new functionality onnode level as well as on GSM network level.

The main activities of this person are: Test Design. TestExecution mainly in target environment. Issue and follow uprequirements for test configuration and simulation tools. build upcore competence for GPRS Industrialization.

As a suitable candidate you are an Ericsson employee with profoundtesting/ design experience and an interest in a challengingproject where almost everything is new - new technology, newinterfaces, new tools etc. Data communication background and/orBSC experience are beneficial.

In this position you will need strong analytical and communicationskills as well as a good knowledge of general telecommunications,GSM system and interfaces (MAP, C7, BSSGP). Experience withtest/debugging of software in a Unix environment (C, Erlang) is aclear advantage. You will have to be flexible, team oriented andthe ability to work under time pressure.

The start would be in Q2/1998.

Contact latest 980228: EED/H/R Doerte Kaulard, Phone: +49 2407575-163, Memo: EED.EEDDKA EED/X/STC Klaus Boeckers, Phone: +492407 575-181, EED.EEDKLB

LM Ericsson International AB - (UKR)

UKRAINE - YOUR NEXT CHALLENGE
RMOA's activities in Ukraine are rapidly expanding. Our maincustomer is now starting their operations in 6 major cities andwill expand throughout Ukraine during the coming next years.Therefore we need to build up and strengthen our RMOA organizationin our local company UKR based in Kiev, Ukraine. The followingpositions are now open on long-term assignments based in Kiev,Ukraine:

KAM - KEY ACCOUNT MANAGER

● As Key Account Manager you will work with sales and commercialsupport to our largest customers in Ukraine and be responsible forfulfilling the customers high expectations. You will be a part ofthe marketing and sales team towards RMOA's accounts.

You will be responsible for : Marketing and sales activitiestowards our customers. Create and maintain market plans. Togetherwith RMOA's home organization prepare and negotiate offers andcontracts. Be responsible for budget and forecast and formeeting/exceeding sales objectives. Establish long-termpartnerships towards our customers to ensure excellent customersatisfaction.

You will be involved throughout the whole sales process startingwith the initial sales activities and tender preparations tocontract negotiations and our extensive service offering. You willbe working in a stimulating small core-3 environment and haveclose contact with the RMOA home organization.

You have completed a university degree (B.Sc., M.Sc. or similar)and should have at least 5 years of working experience, preferablefrom international system sales. You have a good knowledge ofcellular communications and at least 2 years of working experienceat Ericsson, ideally within D-AMPS or GSM. You should be businessoriented , have the ability to build excellent relations withcustomers and drive for results. Fluency in English is required.Working knowledge of the Russian language is a strong advantage.

Contact: Jan-Owe Palm, tel +46 8 4042073, memoid ERA.ERAJAOP orEddie Åhman, tel +46 8 4042280, memoid ERA.ERAEDDI Application:Ericsson Radio Systems AB AH/H Birgitta Stavenow 164 80 STOCKHOLM

LOCAL PRODUCT MANAGER

● Are you a person motivated in using your technical supportknowledge to assist the Local Company in Ukraine? - If so, you area potential candidate for this position. We are looking for LocalProduct Manager (LPM) who will work closely with the Customer, theCustomer Account managers and the Sales and Marketing people.

As a LPM, you will be expected to perform tasks like: Analyze thetechnical sales support needs of the Local Company, according tothe market situation and customers technical requirements.Technically assist the sales people in making offers to thecustomer. Support the Customer in resolving product relatedissues. Support the introduction of all suitable ERA processes andmethods to the Local Company and the Customer. Support theintroduction of all suitable ERA products to the Customer. Workclosely with CUSTOMER ACCOUNTS and SALES & MARKETING for effectivetechnical support to them. Do product planning and Product Lifemanagement for the market.

You have an engineering degree and three or more year's experiencein technical support/product management in the cellular industryor equivalent experience. You are fluent in English. Knowledge ofRussian will be an additional benefit.

You are self-motivated, ambitious, outgoing and interested intaking the challenge of being a real support to the Local Companyand a valuable adviser for the RMOA commercial areas. Can you meetthe challenge? If yes, then contact us.

Contact: Nikos Katinakis, +46 8 404 3560, ERA.ERANKAT Application:Ericsson Radio Systems AB AH Annelie Gustafsson, 164 80 STOCKHOLM

Ericsson Corporatia AO, Moscow

Ericsson Corporatia is a local company growing fast. Tosuccessfully serve new customer projects we are expanding ourImplementation Department.Now we are looking for a

SENIOR SWITCHING INSTALLATION ENGINEER

short- or long-termcontract.

● You will lead and supervise a team of currently hired localemployees.

Your responsibility will be: Day-to-day control over installationteam. Report progress and problems to manager of ImplementationDepartment. short-term resource planning. competence developmentof local staff. cordination and co-operation with subcontractingcompanies and other Ericsson units. development and implementationof quality control procedures regarding installation.

You have: professional technical education. administrative andteam leading skills. excellent knowledge about appliedinstallation technique. good knowledge of engineering anddocumentation. good English. at least 5 years experiance inEricsson.

Contact: Rufat Kriman, +7 095 2476211, memo: ECR.ECRRUKRApplication: Ericsson Corpporatia AO Russian Federation, 125167Moscow, 37, Leningradsky prospekt, bl.9 Thomas Holmberg

Ericsson Communications Canada, Montreal

APZ SUPPORT ENGINEER (TECHNICAL ASSISTANCE CENTRE)

● A vacancy exists in the APZ Support group in Montreal. The Jobinvolves Technical Support for North America and Canada, withinthe APZ field.

We require a self motivated person, with in depth knowledge ofTrouble shooting methods aswell as the ability to performtechnical investigations into all aspects of APZ Software/Hardwareproblems in the CP/RP/EMRP. The candidate must have proven abilityin Test System, CPT and System Stoppage Handling. It will benecessary to Handle ongoing Trouble Reports, therefore Knowledgeof MHS would be an advantage.

The position will take the form of a Two Year Long Term contractand will be based in Montreal, although some travel will berequired aswell as pager rotation and interwork with other Supportgroups within LMC.

It is essential that the candidate be fluent in English. If youpossess the above characteristics and have the ability toCommunicate with tact and diplomacy, then please contact thefollowimg people.

Contact: Adrian Gilli LMCADGI

Ericsson Radio Systems AB

MANAGER REGIONAL SERVICE OFFICE (RSO)

In order to meet the increasing demand on Customer Services weestablish Regional Services Office around the world. We are nowlooking for managers for the new RSO organization.

● As RSO Manager you are accontable and responsible for theadministration and efficient running of the RSO. You areresponsible for consolidating the RSO line budget as well as theregional revenues and costs for all service sold and delivered toRMOG customers. xed You will support the regional service managerswith central functions in marketing and sales, administration,controlling and resource management in order to optimise the useand minimise the costs.

Your main tasks as RSO Manager will be: Ensure that the RSO is runaccording to the Frame Agreement between the hosting MLC andProduct Unit Customer Services and within approved budget. Preparethe combined RSO line budget and monitor expenditures. Consolidatenet sales, cost and revenue for RMOG Customer Services within theregion as a whole. Establish and operate networks with appropriatepeople both in the region, in other regions and in centralfunctions in order to support the regional service manager in thebest possible way. Assist in co-ordinating Customer Servicesrequests crossing boarders between Service Areas.

The RSO Manager reports in the line function to the ManagingDirector or the BR/RMOG Manager at the (M)LC who is hosting theRSO. The consolidated RSO operations is to be reported to theDirector and General Manager of RMOG Customer Services.

We want you to have minimun a Bachelor of Science degree, orequal, at least 3-5 years of relevant Ericsson experience. Soundbusiness competence and a good knowledge of the market situation,i.e Ericsson's customers and competitors.

As an RSO Manager you should possess good leadership andcommunication skills. Further more you should be fluent inEnglish, have a proven ability to handle budget related work andto perform financial follow-up.

Contact: LYC Kaj Snellman, phone + 46 8 404 2024, or LY/RC GunnarSjöqvist, phone + 46 8 585 30134. Application: Ericsson Radio Systems AB LY/H Charlotta Rydgren 164 80 STOCKHOLM

Ericsson Telecommunications Romania S.R.L - ETR

1 OSS SUPPORT ENGINEER

● We are looking for Support Engineers to our Field Support Centerfor a long/short term contract(1 year)in Romania. The FieldSupport Center was established in May 1997.

You have a good knowledge of support activities, providingemergency and day to day support to the customers, by answeringtheir queries, providing solutions and visiting sites. You willplay an active role in providing support and advice to the localengineers and build up the local competence.

You have 3-5 years of AXE experience, good knowledge of GSMsystem and trouble shooting skills.

Contact: Walid Alsheikh, phone +40 1 336 5705, memoid ETR.ETRWAALor Ulrika Martinius, RMOG Resource Agency, phone +46-8-404 2565,memoid: ERAC.ERAMSSS Application: Walid Alsheikh, memoid or fax+40 1 336 5708

MET S.A., France

SENIOR SUPPORT ENGINEER

● To strengthen our support activities towards our customers we arelooking for three experienced support engineers to work for ourGSM FSC at MET-Massy FRANCE (nearby Paris) ASAP. You will workwith technical support and troubleshooting.The work also includestasks like disturbance investigation, introduction ofupgrade/update packages and perform AS changes.

If you have a good technical experience in GSM AXE MSC support,this is a good opportunity for you to develop yourself in a newenvironment.You are interested in working in a team and intransferring your skill to our employees. You have good englishknowledge ; some french knowledge would be appreciated.Duration:one year, possibly renewed.

Contact: Cecile DRUBAY, MET.ESOMET, Phone +33 1 64 47 50 55 Fax+33 1 64 47 54 87

Ericsson Germany

AS SPECIFIER/PARAMETER ADMINISTRATION

The X/SO section within our PAX system house is responsible forProduct Line Configuration Management for CME20 Switching Systems.

● We provide test configuration management for CME20 design projectsfrom feasibility through GA. The AS Handling group is responsiblefor AS Specification, Program Production, Parameter Administrationand Library Specification for Product Area Switching (PAX) and AXEMobile Core (AMC) development projects. In addition, AS handlingactivities support Product Line Maintenance Projects for the CME20Switching Systems (CNP packages) as well as Market TSS productionfor CME20 ASOs and Stand-alone FSCs.

As AS Specifier you will have to define, create, maintain andrelease GAS's and FT Test Beds, support main releases with updatesto product structures, monitor for applicable CNIs and participatein CNI board meetings from the Source System. Furthermore youshould administrate and document the PL/GAS permanent parametersper release. You should actively contribute to continousimprovement of the used processes and methods. You should befamiliar with Ericsson product handling principles and have somePRIM experience. Experience in AS Specification and ParameterAdminstration is advantegeous but not a must. Good Cooperation andcommunication skills are as important as good networking abilitiestowards Source System Design, Design, Product Line Maintenance,ASOs and Stand alone FSCs. You should be a very initiative personwith the ability to work under pressure.

The position is to be filled as soon as possible with a localcontract.

Contact: EED/H/R Stefanie Setz, Memo:EED.EEDSSE,Dial:+49-2407-575-112 or EED/X/SOL Elke Busch, Memo: EED.EEDELB,Dial:+49-2407-575-357

The Systemhouse General Packet Radio Service (GPRS) is responsiblefor the development and maintenance of Products in the field ofGPRS and Telecommunications Management and Operational Support(TMOS). GPRS is aiming for the combination of data communicationand mobility. GPRS is currently standardized as an extension ofGSM. The department EED/D is responsible for the development andmaintenance of the GPRS core systems OMS and PXM and for the GPRSapplications VLR, SMS and PTM. System house GPRS is looking for anexperienced

TECHNICAL WRITER

● The main tasks for the position are: production of customerdocumentation in SGML/HTML (User Guide, Reference Manual, On-linehelp), close follow-up of product design, review of GUI partsregarding usability, inspection of the major design documents.

Customer documentation is an essential part of our complexproducts, as they shall guide the user in his operations. Thus,our products will not be used, if the documentation is notinstructive and easy to handle. We are looking for a person withexcellent English language skills and a solid background in GSM.Good general communication skills are required as well as theability to understand and illustrate complex technical facts in aninstructive way. Former experience as technical writer isdefinitely of advantage.

As the GPRS organization is still rather young, there is thefreedom to be pioneer for processes, system architecture and usageof documentation tools. On the other hand, we have well definedprojects and clear delivery deadlines for our assignments. To befirst on the market with our datacom products is crucial for ourfuture operations. Do you want to join this challenging race? Ifyou have any questions and/or are interested, please get in touchwith us by 16.02.1998.

Contact: Human Resources Doerte Kaulard, Memo:EED.EEDDKA,Dial:+49-2407-575-163 or Manager GPRS Development Andreas Daun,Memo:EED.EEDAND, Dial:+49-2407-575-418

The System House AXE Mobile Core (AMC) is responsible for thedevelopment of AXE 10 products commonly used by all Ericsson'sdigital mobile systems i.e. CME20 (GSM), CMS30 (PDC), CMS40 (PCS)and CMS88 (D-AMPS). We are active in the product areas IntelligentNetworks, Data Comunication, ISDN Access, Traffic Control, NetworkSignalling, Charging and Network Operator Products. Due toincreasing activities within AMC Product Management we are lookingfor a

STRATEGIC PRODUCT MANAGER AXE MOBILE CORE

● As Strategic Product Manager you are responsible for the productplanning for your product area(s), which means that you define thedirection of the development of the AMC products based on yourassessment of the competitiveness and economical performance ofthe product over the entire life-cycle. Therefor you haveextensive contacts with the product marketing managers from themobile applications to consolidate the customer requirements andto evaluate the business opportunities You write and inspectRequirement Specifications and you approve FunctionalSpecifications.

For AMC projects you are the overall requirement responsible,which includes e.g. packaging the assignment specificationsreceived from the mobile applications into the project content,participation in the AMC Project Steering Group and the AMC ChangeControl Board.

For your product area you prepare the financial agreements withthe Local Design Centers on the development and maintenance of AMCproducts. You also review the financial agreements proposed byother business units. For projects co-financed by AMC yourepresent AMC in the Tollgate meetings.

As a suitable candidate you should be business-driven, takeinitiative, have good communication and cooperation skills andshould be able to work under pressure. You should have a technicalbackground with an appreciation of marketing and at least 3 yearsexperience in relevant positions in product management or systemsdesign / management. Experience from any of the technical areasabove is a merit. Both local and expat contracts will be offered.

Contact: EED/H/R Doerte Kaulard, Phone: +49 2407 575-163EED.EEDDKA or EED/U/OXC Ola Melander, Phone: +49 2407 575-255EED.EEDOME

Ericsson GmbH, Düsseldorf

Unsere neu gegründete Customer Unit Arcor expandiert. Daher suchenwir Sie als

PROJEKT MANAGER/-IN

● für mittlere sowie größere Projekte im Bereich derTelekommunikation.

Sie sind im Team mitverantwortlich für die Ausarbeitung undVerhandlung von Angeboten. Fokus ihrer Aufgabe(n) sindProjektlösungen für kundenspezifische Anforderungen. Sieerstellen, präsentieren und verhandeln diese Projektlösungendirekt mit dem Kunden. Bei der späteren Projektdurchführungstellen Sie sicher, daß die Kundenanforderungen intern sowie beiexternen Kooperationspartnern durchgesetzt werden. Der Standortlhrer Arbeit ist zunächst in Düsseldorf. Eine Verlegung nachFrankfurt ist aber geplant.

Dieser anspruchsvollen Herausforderung können Sie sich am bestenauf der Basis eines nachrichtentechnischen Studiums sowiemindestens 3-5 jähriger Erfahrung in einer vergleichbaren Positionstellen. Hierbei haben Sie sich bereits fundierte Kenntnisse imProjektmanagement und im Aushandeln von Rahmenverträgen innerhalbder Telekommunikationsbranche angeeignet. Dies setzt auch eingutes finanzielles Verständnis voraus. Persönlich zeichnen Siesich durch Organisationstalent, eine klare Teamorientierung sowiedie Bereitschaft, Verantwortung zu übernehmen, aus. Sehr guteEnglischkenntnisse in Wort und Schrift sind aufgrund unsererinternationalen Orientierung unverzichtbar.

Haben wir Ihr Interesse geweckt? Dann freuen wir uns über IhreBewerbung mit Angabe des frühestmöglichen Einstellungsterminessowie Ihrer Gehaltsvorstellung. Bitte beschreiben Sie unsbesonders die Bedeutung von Kundenorientierung bei Ihrerbisherigen Arbeit.

Ericsson GmbH z.H. Herrn Hans-Jürgen Vratz Fritz-Vomfelde-Str.14-18 40547 Düsseldorf

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Nippon Ericsson K.K, Japan - NRJ/B

MARKETING MANAGERS WCS – JAPAN

● To a newly established marketing unit for Wideband CellularSystems (WCS) in Japan we are now looking for two Marketingmanagers. The objectives for these jobs are to secure the firstEricsson contracts for commercial WCS in Japan and later tomaintain the created business.

About the job: As a Marketing manager you will be responsible fordiscussions and negotiations about WCS products and services withcustomers. You will create business plans, business cases,quotations, contracts and other customer agreements. You will alsoorganize and perform customer presentations.

Qualifications: You have a relevant university degree inEngineering and/or Business. You have experience from Marketingjobs at Ericsson and product knowledge about Ericsson products

We are looking for people who are self motivated and resultoriented with a high level of inter cultural skills. Someknowledge about Japanese language and culture is considered aplus.

Contact: Anders Birkedal, NRJ/BC, phone +81 52 586 1671,memoidNRJ.ERJBIRK Kerstin Halén,Human Resources NRJ/P, phone +81 33221-8205, memoid NRJ.NRJKERH. Application: Kerstin Halén.

Ericsson Eurolab Deutschland GmbH, Aachen

AXE MOBILE CORE, THE PLATFORM FOR ALL DIGITAL MOBILE SYSTEMS

AXE Mobile Core System Management is responsible for the systemdevelopment of the core products used commonly by all Ericsson'sdigital mobile systems i.e. CME20 (GSM), CMS30 (PDC), CMS40 (PCS)and CMS88 (D-AMPS). Within AMC we need to strengthen ourcompetence related to Intelligent Network and especially in thearea of Service Control Functions (SCF) on a system level.Therefore, we are looking for a

AXE10 SYSTEM ENGINEER (IN, INTELLIGENT NETWORK)

● Your task would be to perform investigations and issue technicalreports related to IN. You would also give IN system expertsupport towards the four digital mobile systems and towardsvarious committees such as PCAPT, PC-AXE and TC-AMC. Anotherimportant role would be to control and monitor ongoing INactivities within BR and BN.

We are looking for a system designer with at least 3 years ofEricsson experience, preferable with SCF or SSF background.

Contact: EED/H: Doerte Kaulard, Phone: +49 2407 575-163 EED.EEDDKAor EED/U/OR: Mikael Boman, Phone: +49 2407 575-241 EED.EEDMRB

AXE Mobile Core System Management is responsible for the systemdevelopment of the core products used commonly by all Ericsson'sdigital mobile systems i.e. CME20 (GSM), CMS30 (PDC), CMS40 (PCS)and CMS88 (D-AMPS). AMC System activities are steadily growing,mainly due to fixed mobile convergence. To meet this challenge weneed to expand. Therefore, we are looking for a

AXE10 SYSTEM DESIGNER

● We are participating in early project phases and are performingpre- and feasibility studies. We are also evaluating newtechnologies and perform tasks which require high competence andprofessionalism.

To strengthen our capabilities for this type of system work, weare looking for an experienced system designer with more than 3years of Ericsson experience in AXE10 design.

We are particularly interested in people who can providesignificant competence in one or more of the following areas: AMSystem development, Signalling, Data Communication, O&M, ResourceModule Platform, IN Development, Hardware Modernization, PDCsystem, D-AMPS system. Due to the art of work performed, sometravelling may be necessary.

Contact: EED/H/R Doerte Kaulard, Phone: +49 2407 575-163EED.EEDDKA or EED/U/OR Mikael Boman, Phone: +49 2407 575-241EEED.EEDMRB

AXE Mobile Core System Management is responsible for the systemdevelopment of the core products used commonly by all Ericsson'sdigital mobile systems i.e. CME20 (GSM), CMS30 (PDC), CMS40 (PCS)and CMS88 (D-AMPS). Within AMC we need to strengthen our effortsrelated to System Characteristics. The focus ison In ServicePerformance and Load Reduction. Therefore, we are looking for:

AXE10 SYSTEM ENGINEER (Characteristics)

● Your job would be to participate in Chracteristics projects and toperform investigations/estimations within chracteristics area. Youwill cooperate with colleagues within the Mobile Applications, BNand UAB. We are looking for a system or suftware engineer with atleast 2 years of Ericsson experience, preferable within AXE10..

Contact: EED/H/R Doerte Kaulard, Phone +49 2407 575-163 EED.EEDDKAor EED/U/OR Mikael Boman, Phone +49 2407 575-241 EED.EEDMRB

AXE Mobile Core System Management is responsible for the systemdevelopment of the core products used commonly by all Ericsson'sdigital mobile systems ie. CME20 (GSM), CMS30(PDC), CMS40 (PCS)and CMS88 (D-AMPS). We are looking for a:

AXE10 DATACOM ENGINEER

● The border between Telecommunication and Datacommunication isbecoming more and more diffuse. AMC needs to strengthen thecompetence in the datacom area focusing especially on Mobileinterworking and TCP/IP. We need a person who can represent AMC ona system level and who can contribute to the evolution of datacomwithin AXE10.

Your job would be to perform datacom system studies,investigations and to develop datacom strategies. You willcooperate with colleagues within Mobile Applications, PN and UAB.We are looking for a software or system designer with at least 4years of Ericsson experience, preferable TCP/IP and/or mobileDatacom experience.

Contact: EED/H/R Doerte Kaulard, Phone: +49 2407 575-163EED.EEDDKA or EED/U/OR Mikael Boman, Phone: +49 2407 575-241EED.EEDMRB

Ericsson Radio Systems AB, Kista

TURNKEY PROJECT MANAGERS

"Do You know how to run a turnkey project? The indoor coveragebusiness? Go to Japan and be first to lead business challenge!

"Ericsson Radio Systems and Ericsson Toshiba Telecommunications K.Kare looking for experienced Project Managers and Cell PlanningExperts.

Ericsson intends to aggressively enter and develop the indoorcoverage business in Japan by selling and providing total indoorcoverage solutions to our PDC customers. The market potential ishuge within the coming 2 years, due to thousands of indoor publicareas, first in Tokyo, Nagoya and Osaka. This also means a greatchallenge for us. We must manage to build a new and profitableconcept within a short time and take total responsibility forresult, indoor coverage.

We need both commercial and technical experience from similarprojects to execute this business successfully. We are lookingfor:

TOTAL TURNKEY SOLUTION PROJECT MANAGER

● The candidate should have: Practical experience from leadingturnkey projects, preferably interest in transfer of Know How.Commercial experience from contracting turnkey business. Strongleaderships and project management skills. Decision maker.Co-ordinator. Starting from 1st of Feb 1998. Minimum required-period 12 months.

TURNKEY SOLUTION EXECUTION PROJECT MANAGER

● The candidate should have: Practical experience from executingturnkey projects, preferably interest in transfer of Know How.Strong leaderships and project management skills. Co-ordinator.Starting from 1st of Feb 1998. Minimum required period 12 months.

INDOOR CELL PLANNING EXPERTS

● The candidate should have: Practical experience from executingindoor coverage planning projects, preferably interest in transferof Know How. RF engineer. Starting from 1st of Feb 1998. Minimumrequired period 12 months.

TURNKEY SOLUTION DEVELOPMENT PROJECT MANAGER

● The candidate should have: Experience from development of turnkeysolutions. Strong leaderships and project management skills.Coordinator. Starting asap. Minimum required period 6 months.Prepared to travel a lot during the period.

Contact: Charlotte Fjelkner, phone +46 8 404 53 45 or MattiasEriksson, Human Resources, phone +46 8 404 73 23 Application:Ericsson Radio Systems AB J/HPS Ann Beer 164 80 STOCKHOLM

Ericsson GmbH, Dusseldorf, Germany (EDD)

GSM SENIOR SUPPORT ENGINEER / SUPPORT SPECIALIST

● We are looking for three support engineers with a minimum of 3years AXE/GSM experience, specialised in either the BSS or the SSarea. The successful candidates will be working with a young teamin the unit 'Customer Service Center - MMO'.

The unit is responsible for the support activities to ourcustomer, Mannesmann. This involves TR analysis, help deskhandling, first and second line emergency support, advancedtrouble shooting and emergency correction development. The unit isalso responsible for the acceptance test with the customer, FOAimplementations and the roll-out of new releases.

Our customers are running one of the biggest GSM network in theworld as well as rapid growing fix networks. Being FOA for newreleases and for this reason, we have a very close contact to thedevelopment projects within Ericsson. This will give thesuccessful candidate a great opportunity for personal andtechnical development and work with the latest GSM technique.

You should have a good knowledge of support/supply activities. Youwillplay an active role in providing support/supply and advice tothe local engineers and build up the local competence.

The position can be either expatriate or local employment.

Contact: Mikael Strandberg for the job in the support area, phone+49 211 5342359, memo id EDD.EDDMIST and Stefan Wannhoff for theSupply jobs, phone +49 211 5342289, memo id EDD.EDDWANN

Ericsson Radio Systems AB, Kista

OSS IMPLEMENTATION & MAINTENANCE SUPPORT EXPERT

Our local company in Chile (CEC) is looking for a candidate towork with OSS implementation and maintenance support.

● To qualify you must have worked with installation/support/test ofOSS systems and have a broad knowledge of Unix HW & SW, Sybase,X.25 and preferably Radio and Telecommunications. You will beprimarily responsible for OSS customer support and transfer yourknowledge to local engineers. You should be self-motivated andwork easily on your own and within a team to achieve goals andcustomer requirements.

We are offering a one year contract position starting as soon aspossible.

Contact: John Glimtoft, memoid ERA.ERAGLIM, tel, 08-4046916Application: Ericsson Radio Systems AB AH/H Tom Larsson, 164 80Stockholm

LM Ericsson International AB, Riga, Lativa

AXE-SYSTEM ENGINEER TO LATVIA

● We have got a Frame Contract with a Customer in Latvia. The firstphase, 1998-99, within this contract covers one InternationalSwitch, 100k lines Local Switching, XMate and a Service Agreement.

We are now looking for a System Engineer for 12 months to be ourmain interface to the Customer during a very interestingground-braking period. This System Engineer shall be at theCustomer's disposition as an Operation & Maintenance Expert and toassist them with AXE knowledge and handling experience duringtheir competence build-up period. Another task is to participateand take an active role in the establishment of a local supportcenter in Riga.

We believe that you have well documented technical knowledge andat least 3 years practical experience of installation, testing andOperation & Maintenance of AXE systems. It is also important toknow how the Customer Support Organization operates. You haveexperience from and are interested in close customer relations.You are a good initiator and have good communication and socialskills. English is a requirement.

Contact: Anders Jonsson, +46 8 7198617, +46 70 5424383 or HelenaSandberg, +46 8 7193469, + 46 70 594 8278 Application: AndersJonsson, etx.etxanjs or Helena Sandberg, etxt.etxhesa.

Nippon Ericsson

Ericsson is taking a very active role in the development of 3rdgeneration mobile systems, in ITU called IMT-2000. Since Japan istaking the lead in the development and standardization ofIMT-2000, it is very important for Ericsson to be present in Japanand to actively take part in the Japanese activities. Ericsson hasbeen selected as vendor to two operators in Japan who are settingup W-CDMA experimental systems, NTT DoCoMo and Japan Telecom.These will be the first IMT-2000 experimental systems for wirelesswideband multimedia in the world.

The unit for Wideband Cellular Systems at Nippon Ericsson isresponsible for Ericsson's product management and standardizationactivities in Japan related to IMT-2000, both with respect to theW-CDMA experimental systems and future commercial IMT-2000systems, as well as the IMT-2000 standardization work.

The work in Japan is now expanding and therefore we are lookingfor the following highly qualified personnel to join our unit:

PRODUCT MANAGER – RADIO INTERFACE, LAYER 1

● You will be responsible for radio interface standardization andrelated issues for the WCDMA experimental systems as well asfuture commercial IMT-2000 systems. This means that you will haveextensive contacts with NTT DoCoMo and other Japanese operatorsrelated to layer 1 issues, and you will be driving thestandardization of WCDMA in the Japanese standards body ARIB. Thisposition requires minimum 5 years of research and/or developmentof radio interface technologies and at least two years experienceof W-CDMA.

PRODUCT MANAGER – RADIO NETWORK CONTROL

● You will be responsible for radio resource management relatedstandardization in ARIB and product management for W-CDMAexperimental systems and future commercial IMT-2000 systems. Thismeans that you will have extensive contacts with NTT DoCoMo andother Japanese operators related to radio resource managementissues, and you will be driving the standardization of radioresource management for WCDMA in the Japanese standards body ARIB.This position requires several years of experience from workingwith radio resource management for cellular systems e. g. PDC,D-AMPS, GSM or W-CDMA.

Contact: Håkan Ohlsén, Senior Manager Phone:+81 3 3222 4361. Memo:NRJ.NRJHOHL E-mail: hakan.ohlsen@ericsson.co.jp

Ericsson Eurolab Deutschland GmbH, Aachen

The Systemhouse General Packet Radio Service (GPRS) is responsiblefor the development and maintenance of Products in the field ofGPRS and Telecommunications Management and Operational Support(TMOS). GPRS is aiming for the combination of data communicationand mobility. GPRS is currently standardized as an extension ofGSM. The department EED/D is responsible for the development andmaintenance of the GPRS core systems OMS and PXM and for the GPRSapplications VLR, SMS and PTM. For further support of our team weare looking for

5 GPRS SOFTWARE DESIGNER

● The main tasks for the position are: either design of the GPRSbearer service (SMS, VLR, class A/B mobile support,PointToMultipoint) or O&M product development (OMS,PXM)

The job is performed in teams with a large degree ofresponsibility and authority, comprising all parts of the productlife cycle from early requirement analysis up to maintenance afterGA. There will be a close cooperation with the I&V subproject atEED. Thus, we have the chance to see our products being integratedand verified in the real GSM datacom network.

As the GPRS organization is still rather young, there is thefreedom to be pioneer for processes, system architecture, usage ofprogramming languages and platforms. On the other hand, we havewell defined projects and clear delivery deadlines for ourassignments.

For the GPRS bearer service, the languages ERLANG and C is used.O&M applies C++, JAVA, ERLANG and CORBA.

We are looking for persons with the ambition to get acquaintedwith a new technology, new applications and a strong teamorientation. Knowledge of C and a solid SW engineering backgroundis a requirement. A local contract is offered for this position.If you have any questions and/or are interested, please get intouch with us by 28.02.1998.

Contact: EED/H/R Doerte Kaulard, Memo:EED.EEDDKA,Tel:+49-2407-575-163 EED/D Andreas Daun, Memo:EED.EEDAND,Tel:+49-2407-575-418

The EED/X/P department is a typical design centre within the GSMdevelopment area of the Ericsson family. The GSM development istargeted towards the European and American systems with closecoordination to a number of design offices worldwide. TheDevelopment support group in EED/X/P is looking for an experienceddesigner/tester to reinforce the

LOCAL SUPPORT ORGANIZATION (LSO) FOR AXE-10 DESIGN AS A METHODS &TOOLS ENGINEER

● A Methods & Tools Engineer works independently within onecompetence area of user support, application system maintenanceand administration. Your main tasks and responsibilities include:Provides user support about methods, tools and related trainingactivities. Maintains, investigates, installs and introduces newmethods and tools. Conducts seminars to ensure that correctworking methods are used. Training on tools or introduction of newdesign support releases. Creates Requirement Specifications forfuture improvement of methods and tools. Participation inprojects. Cooperates with, supports and advises other groups inthe field of methods & tools

As a suitable candidate you should have experience and workedwithin the AXE-10 environment as a designer, tester or APS toolsdeveloper. Experience in the LSO area and knowledge of UNIX isadvantageous but not essential. It is more important that you areservice minded, team-oriented and have good communication andcooperation skills.

The department and Human Resources will givesupport for your implementation and start in the new position.

Contact: EED/H/R Doerte Kaulard, Memo-Id:EED.EEDDKA, Tel:+49-2407-575-163 EED/X/P Dave Hendersson,Memo-Id:EED.EEDDHE,Tel:+49-2407-575-630

The system group within X/P PAX design department has the productresponsibility for the mobile application 1/APT 210 25 and thesubsystem MSS within the CME20 / CME40 switching system. We alsorun the product committees for theses products, PC-1/APT and MSS,and and perform system studies. For further support of our systemgroup we are looking for a

SYSTEM DESIGNER

● As a System Designer your main tasks include: Participation inprestudy, feasibility- and quickstudies. PRIM & CNI handling.Writing of technical reports.

As a suitable candidate you are an Ericsson employee with at leastthree years of design experience in the area of switching systems.Furthermore you should be familiar with 1/APT mobile applications.Good knowledge of mobile telephone systems and in Datacommunications is a clear advantage.

Being initiative, self-driven and showing good analytic abilitiesas well as good communication and cooperation skills are importantpersonal qualities. In addition you should also be able to copewith a high work pressure.

Contact: EED/H/R Doerte Kaulard, Memo:EED.EEDDKA,Tel:+49-2407-575-163 EED/X/P Frank Plettenberg, Memo:EED.EEDFRP,Tel:+49-2407-575-253

Ericsson Telecommnicatie B.V., Operations & Customer ServicesRijen, The Netherlands

TMOS TECHNICAL SUPPORT SPECIALIST

● Number of positions: 5

Key responsibilities: Customisation, testing and implementation ofnew products and/or market adaptions. introduction of correctionswithout problems in 99% of the cases. introductions of functionalchanges without problems in 99% of the cases. Solving a troublereport within the agreed contractual time. follow companyprocesses. consultancy tasks towards customers and Ericssonpersonnel on a specific technical area. escalate to colleagues andmanagement in time when contractual agreements with customers maynot be met. coaching of trainees.

Qualifications/Experience: Thourough knowledge of UNIX (SunSolaris and/or HP-UX) and SQL, (Sybase and/or Oracle), PreferablyTMOS experience (OSS/SMAS/NMAS)

Skills/Competences: Excellent communication and presentationskills, high level of adaptability and discipline.

Contact: Recruiting Manager: Marcel Wils, Competence Manager TMOSTechnicalPhone: +31 161 242 291 email:etm.etmwils@mesmtpse.ericsson.se

Ericsson Canada

LINE MANAGER FOR SERVICE PLATFORM DESIGN GROUP

The RMOA Product Unit for WIN Applications and Platforms isextending its current product portfolio of products with a nextgeneration platform for WIN applications and services. Thisplatform, whch is based on state of the art technologies, is beingdeveloped to an agressive timescale.

● The unit wants to recruit a line manager for LMC in Montreal, forthe design group for this next generation system. The idealcandidate should have a proven track record in delivering softwareand hardware to very agressive timescales. Of course the candidatemust have strong communication and interpersoal skills, withstrong team building skills.

In addition the candidate must have a well established networkwithin Ericsson. Knowledge of the state of the art in softwareengineering would be an advantage. An academic degree is anadvantage but not a prerequisite.

Contact: LMC/KC Laurence Mc Donald (LMC.LMCLAMD) Phone: +1 514 7388300 Ext. 5818 or +1 514 823 1332

Business Unit Public networks

BUSINESS MANAGER FOR INTERCOMPANY BUSINESS CO-ORDINATION CHINA /ASIA

● We are looking for a market and commercially oriented individualthat want to be a part of our team to successfully develop andimplement Intercompany business relations for China and possiblyadditional markets in Asia.

Your main responsibilities will be: Commercial relations with ourlocal companies. This require a knowledge of the various localbusiness situations, as well as knowledge in the businessframework that applies within Ericsson. To in co-operation withthe companies improve the efficiency of operations. To support thecompanies within the Business Unit's organization.

We believe that you have: A personal enthusiastic attitude, teamworking skills and a desire and drive to exceed expectations.Experience or interest in acquiring additional experience in theareas of sales, marketing, finance and/or logistics. Goodcommunication skills in English, preferably also knowledge inother foreign languages. University degree or equivalent intechnical and/or economical areas.

When you are ready to for this challenging opportunity please sendyour application together with your CV to:

Contact: Intercompany Business Co-ordination Christina Westerlind,+46 8 719 3230 ETX.ETXCHER Claes Elmén, +46 8 719 8489 ETX.ETXCEXor Marketing Far East Jan Hellgren +46 8 719 1870 ETX.ETXHEGEJohan Sandberg, +46 8 719 3244 ETX.ETXJHSA Application:PublicNetworks; Global Marketing, Human Resources Ylva Löfstrand memo:ETX.ETXLYL

Ericsson Eurolab Deutschland GmbH, Aachen

The AXE Mobile Network department, within our AMC System House,will reinforce our System Integration unit for the AXE Mobile Core(AMC). The AMC consists of the core subsystems that are common tothe mobile applications CME20, CMS30, CMS40 and CMS88. For moreinformation see:http://www.eed.ericsson.se/internationalamc/

The system Integration unit will have as main responsibilities toperform integration verification of the AMC product components andhave an active role in AMC customer support activities.

The unitwill furthermore also be responsible for integration verificationproject both on main (AMC) as well as subproject level.

Theseprojects perform in an international and intraculture environmentand is covering a vast range of development areas at the leadingedge of technology, such as ISDN and Internet accesses. Tostrengthen our activities we are looking for

SYSTEM INTEGRATION & CUSTOMER SUPPORT ENGINEERS

● Your main authorities and tasks are: Definition of theprerequisites to perform a verification of the test object on AMClevel in both target and simulated environment. Performance of theSystem Integration execution and reporting of the resultverification. Trouble shooting.

As a suitable candidate you have good knowledge of mobile telephone systems, you are flexible, show initiative and have goodcommunication & cooperation skills. The ability to work underpressure is also an important personal quality.

Furthermore, fluency in written and spoken English is required.Experiences from System Verification/Test and/or Customer Supportis a clear advantage.

SYSTEM INTEGRATION TEST LEADERS

● Your main authorities and tasks are: Plan, control and reportSystem Integration activities for AMC projects. Initiation andcoordination of subproject planning and reporting. Initiation ofreviews of the System Integration document. Technical approval ofthe subprojects System Integration plans and reports. Selection oftest environment (simulated or target). Performance entry and exitcriteria checks. Coach the team.

As a suitable candidate you have good knowledge of mobile telephone systems, you are flexible, show initiative and have goodcommunication & cooperation skills. The ability to work underpressure is also an important personal quality.

Furthermore, fluency in written and spoken English is required.You should be familiar with System Verificatio/Test and/orCustomer Support. Previous managerial experience, e.g. as Projectleader/Testleader is a clear advantage.

Contact: EED/H/R Doerte Kaulard, Memo-Id:EED.EEDDKA, Tel +49 2407575 163 EED/U/TV Mats Erlandsson, Memo-Id EED.EEDMERL, Tel +492407 575 635

MET Commutation, Paris, France

PROCESS MANAGEMENT RESPONSIBLE, FIXED NETWORKS DIVISION

● The Division is responsible for providing products andapplications for the fixed network in France. Our main customer isFrance Telecom (french PTT), and we are currently working withother operators entering the french market.

We are currently looking for a PROCESS MANAGEMENT RESPONSIBLE toimprove and strengthen our Process Management structure andnetwork. The structure aims at efficiently controlling, improving,adapting and communicating the full set of development and supportprocesses used in the projects at the Fixed Networks Division.

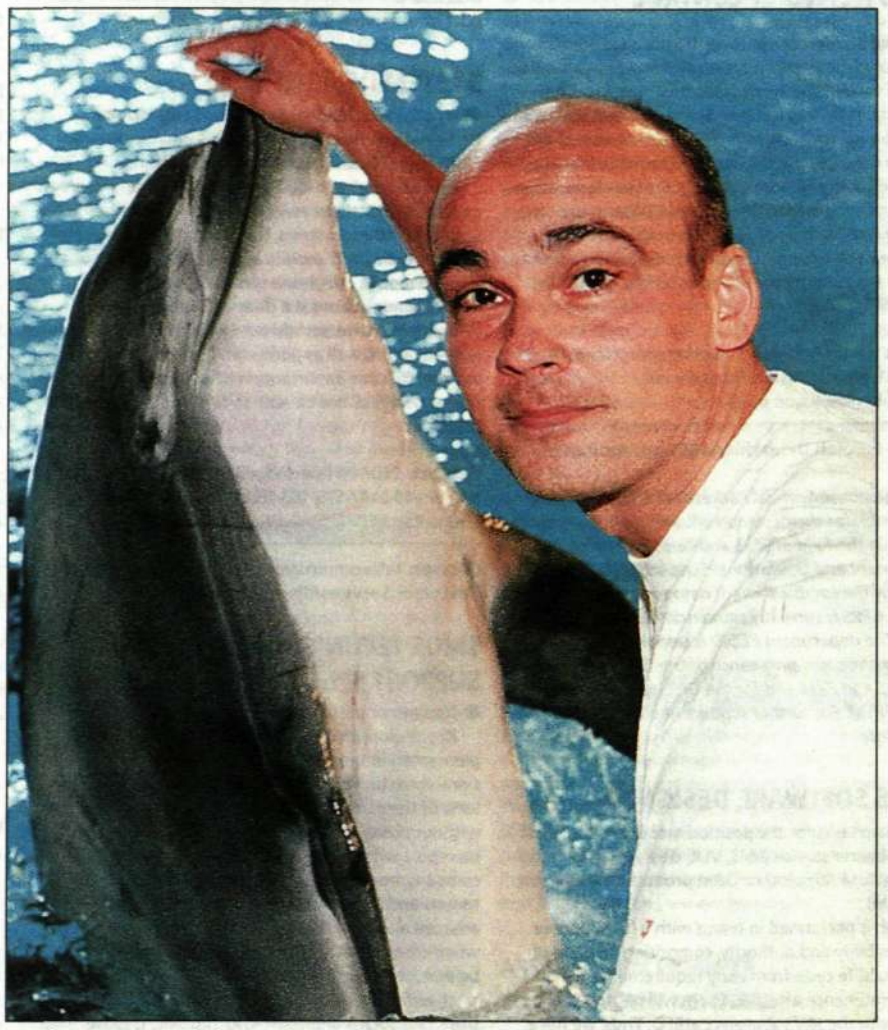
Candidates should have 3-5 years experience in AXE development,preferably with activities related to Project Management orQuality Assurance. Good relational skills, leadership andmotivation are a must. Knowledge of the CMM is a plus]

Contact: Dany Nassif MET.METDNF Tel. +33-1-64 47 55 93.Application: Martine de Bouville, Human Resource Dept MET 19 AveCarnot, 91348 MAssy Cedex, France. Fax :+33-1-64 47 49 67

contact

Ericsson, HF/LME/I, Room 811023, S-126 25 Stockholm

Christer Blomqvist researches communication between dolphins at the Kolmården zoo in central Sweden. Researchers at Kolmården have developed a technique that can give a better picture of dolphins' communication. Perhaps this research project, which is being sponsored by Ericsson Mobile Communications, can solve the great mystery.



In three years, Christer Blomqvist may better understand how dolphins communicate – thanks to his research, which is being supported by Ericsson Mobile Communications. Photo: KNUT KOIVISTO

What are they saying, really?

Throughout time people have always been fascinated by dolphins. As a result of their built-in smiles and their playful displays before boats around the world, dolphins have always been associated with happiness and prosperity.

Dolphins have been the subject of research for 40 years. But to date, very little is known for certain about these wonderful animals. By means of this research project we will learn more about how they communicate.

The dolphins are within reach and go about their ordinary, daily activities, which include bringing up their young, quarreling, playing and romantic courtship. Researchers can eavesdrop on the dolphins by recording their everyday noises.

The sounds that interest researchers most are high-frequency, directional clicks that dolphins use together with their sonar systems.

Previous studies indicate that these directional sounds are most probably used by dolphins for speaking to or addressing another dolphin. For example, a dolphin can correct its offspring or scold an annoying companion. The sounds contain frequencies up to 150,000 Hz, which people cannot hear. The upper threshold of human hearing is around 20,000 Hz, which is why the sounds must be recorded and adapted with the help of special computer technology.

The recordings have provided information on the kinds of sound that actually occur, how long they last, their frequencies, and the kind of behavior they are associated with.

My efforts have mainly consisted of "eavesdropping," since the dolphins were not aware that I was recording their everyday communication. The research project was started in 1997 and is expected to end in 2001.

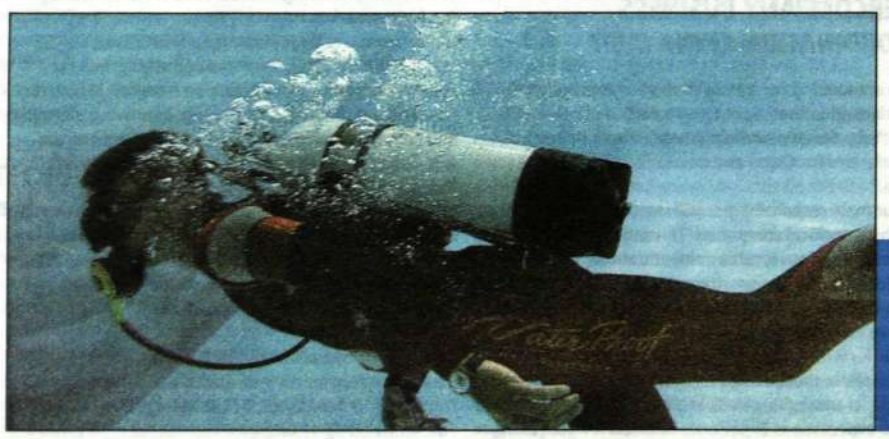
This is how we record

Dolphin clicks are recorded using hydrophones and video cameras. The clicks emanate from the bulbous structure of fatty tissue on the dolphin's forehead. The clicks are focused within a very restricted beam. In order to capture the sounds with a fixed hydrophone, we have recorded them in a narrow channel between two pools, where the dolphins look at and communicate with each other through a mesh fence that blocks the channel. The mesh fence has served as a practical fixed point for the recording equipment while at the same time being perfectly located dead center in the line of communication.

At a later stage, the dolphins will also be equipped with a small portable recorder called MOSART (Mobile Submarine Acoustic Recorder of Transients), developed at the Kolmården zoo. The recorders, which are applied using suction cups to the dolphin's dorsal fin, record several hours' worth of the directional clicks that dolphins receive from other dolphins close by. In this way, relevant behavior can be linked to the sounds, thereby shedding light on what they mean.

In a later phase of the project, the MOSART unit will be used for studying wild dolphins in Sarasota Bay, Florida, in the U.S.

CHRISTER BLOMQVIST, RESEARCHER



The dolphins are within reach and go about their ordinary, daily activities. Researchers can "eavesdrop" by recording the sounds they make when communicating with one another.

end line

A year of excitement

Once again, it's time for the Contact presses to roll on a regular basis. Just like last year, an extra issue was published before the first issue, which you are now holding in your hand. The incredible number of job vacancies within the company requires an extra issue in January, along with a couple of hot news items, such as the fire at the main plant last year.

We got off to a roaring start this year in terms of news. Thursday, January 29, 1998, will probably be written up in the annals of Ericsson's history. Not only did the company report its highest earnings ever, but a new – and for most of us unexpected – CEO was announced. And then, as icing on the cake, it was announced that Ericsson and Nokia had won the battle for the choice of the third-generation mobile standard!

I am convinced that 1998 will be a very exciting year at Ericsson. Our WCDMA system will be made operational in Japan. And Sven-Christer Nilsson leadership will affect the company's organization and work methods. A number of exciting products for the large Internet/intranet market are under way from Infocom Systems – including a highly advanced ATM switch. In addition, women have now begun to claim a larger portion of the upper echelons of management. Sigrun Hjelmquist will succeed Bert Jepsson as the President of Ericsson Components – a fantastic development, in my opinion. To all those who are responsible for appointing managers, I sincerely hope the trend continues.

So stick with Contact this year! I promise we'll be bringing you the most interesting news, keeping you well-informed on where Ericsson is headed and how we are to reach our objectives.

Finally, I'd like to address the massive amounts of job vacancies in the company. Of course, they reflect the enormous flexibility that increasingly characterizes Ericsson's work methods. Not to mention the fatastic opportunities for personal development this creates for those of us who work here.

One person who has taken such an opportunity is Lotta Muth. Lotta is our new editorial assistant and will succeed Pia Rehnberg. Read more about Lotta and her role on the editorial staff on page 16. In the next issue we will be presenting ourselves in more detail.

I would also like to take the opportunity to wish Pia the best of luck. You know, Pia, that I was very happy when you told me that you were "expecting." I hope that everything will be fine when the time comes in a couple of weeks and that you and your new family will be very happy in your new house. There is always a position open for you here when it's time to go back to work. After having worked with you for six years, I know that you are a real asset to the editorial staff. People like you don't come along every day.

LARS-GÖRAN HEDIN