


contact

ERICSSON  PUBLICATION FOR EMPLOYEES WORLDWIDE

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First network in South Pacific

The mobile telephone could be the solution for an island such as Fiji, where it is difficult to lay standard cable. Fiji is a true South Pacific island – which in most respects fulfills all our dreams about such a site. Now it is also a place that offers the most modern telecommunications service available. The first GSM net in "paradise" is being installed on Fiji.

Pages 6-7

Spanish world record

Never before has such a large GSM network been established so quickly. Spain's second GSM operator, Airtel, received its network in record time. For Ericsson Spain, which installed 250 base stations with associated switches and other ancillary equipment in a few months, the project represented a major success.

Page 16

Distinguish the leader from the manager

Pia Nygard at Ericsson Data is the next in line in Contact's series on women in management. She considers it important to distinguish between a manager and a leader. One becomes a manager by virtue of holding a position while being a leader stems from personal characteristics, in Pia's opinion.

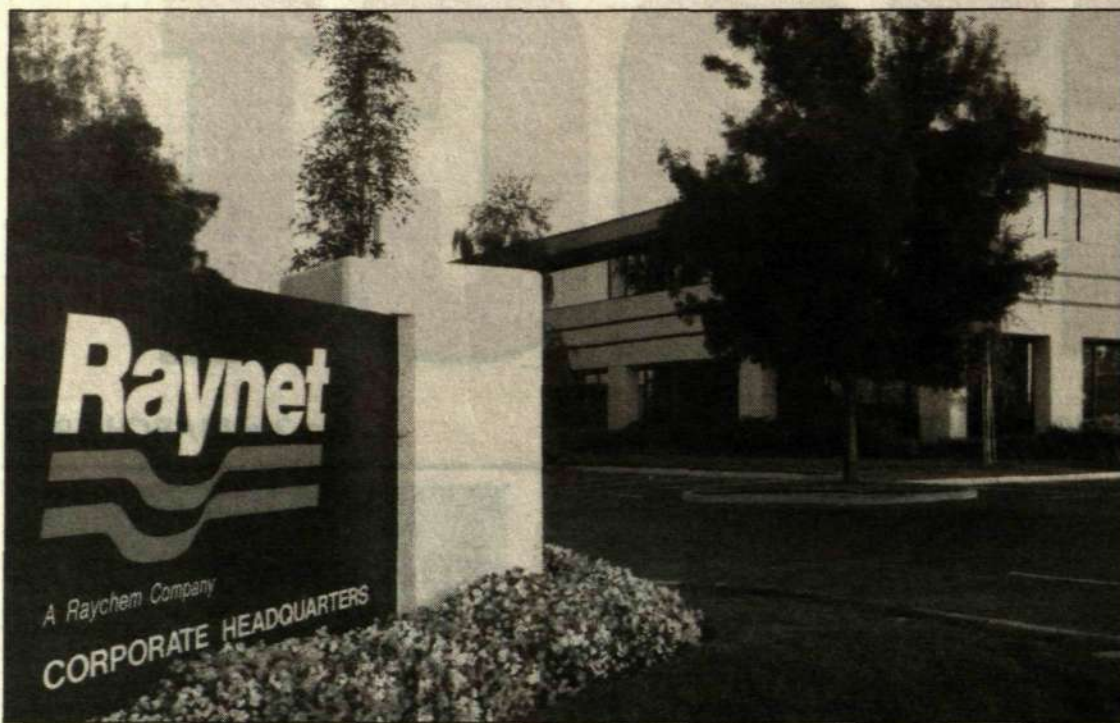
Page 13

AXE a part of the future

Ericsson's AXE system is now being modernized. This will secure its place in the telecom networks of the future.

Page 20

New thinking within information technology



Ericsson Raynet is located in California, in high-technology Silicon Valley. The company works with the development and marketing of optical-fiber communications systems.

Raynet becomes wholly owned Ericsson company

In mid-February, Ericsson acquired the remaining interest in Ericsson Raynet, an Ericsson and American Raychem Corporation joint venture.

"The company will now be tied even closer to Ericsson's other worldwide operations, enabling a further development of its product line," says Rolf Nordström, Chairman of Ericsson Raynet.

Ericsson Raynet is located in California, in the high-tech Sili-

con Valley. The company works with the development and marketing of optical-fiber communications systems for access networks, and offers a complete product program for access-network solutions. Since year-end, the company's production facilities have been located in Norrköping.

To an increasing extent, optical-fiber communications are now being included in access network systems, and Ericsson Raynet intends becoming the leading supplier in this area.

New, successful product

Since 1995, Ericsson Raynet has, under the technical direction of Örjan Mattson, worked to produce a new product assortment for cable-TV.

"This is very exciting. Our broadband portfolio now includes competitive access products. We have obtained orders from Spain, Italy, New Zealand, Brazil and elsewhere," Rolf Nordström relates. "Cable-TV is a new growth area for Ericsson."

"Customers have shown great interest in the new product. It is important that they be well provided with customer solutions for voice, TV and data, and be prepared for the deregulation set for 1998. This gives us new market possibilities!"

Ups and downs

Since Ericsson Raynet was formed, it has experienced both ups and downs. Last year, cutbacks in production were necessary. The fundamental problem was that the market had changed radically compared with expecta-

tions. Ericsson Raynet had too large a workforce for the order backlog to carry, particularly in production and support.

Accordingly, this area has been integrated into Ericsson's operations in Norrköping and, during the spring, production in California will be completely phased out in stages.

Laborious move

"It is never pleasant to have to lay off personnel, but the situation has deteriorated beyond all expectations. Ericsson Raynet is located in the midst of Silicon Valley, where the demand for competent employees is strong," says Rolf Nordström.

"Although the relocation of production to Norrköping has been laborious, we have now completed the vital industrialization phase, allowing us to look confidently to the future."

"We are now working hard to rapidly increase our shipments parallel with increasing the business volume within the existing product line, and to develop new broadband products."

New president

In mid-January, Göran Eriksson assumed the post of president of Ericsson Raynet.

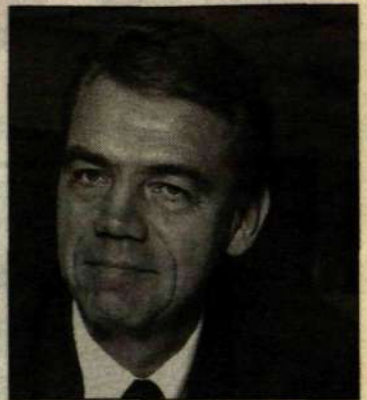
"Our highest priority is to meet our customer commitments. The important thing is to accelerate the production pace following our move to Norrköping.

"In addition, we must insure that Ericsson Raynet is integrated into Ericsson's other operations," says Göran Eriksson.

JOSÉPHINE
EDWALL-BJÖRKLUND

Adding value to mobile telephony

At the beginning of February, an agreement was signed between the business unit for European cellular systems at Ericsson Radio and Ericsson Messaging Systems Inc. in the U.S. Under the terms of the agreement, these services will form part of Ericsson's total system offering for GSM, PCS 1900, DCS 1800, NMT and TACS.



Leif Holm, head of Ericsson Messaging Systems Inc.

"This agreement means that we shall be including Ericsson's own messaging service solutions in our system offering to customers, and that support and similar aspects relating to this product area will be handled in the same way as for our other products," explains Per Nordlöf, manager of the Digital Switching Systems and Applications product unit at Business Unit Cellular Systems European Standard.

The agreement also covers the area of certification, in order to ensure that the various products function together and that full control is maintained over the various interfaces.

Add-on services

Messaging services are typical add-on services, giving mobile telephone system operators added value to meet the increasingly fierce competition for subscribers. The focus at present is on Short Message Services (SMS), enabling subscribers to send short text messages via the mobile telephone network, as well as Voice Mail, a voice mailbox system that allows the user to store or listen to recorded messages.

A number of other advanced services are in the pipeline, such as Fax Mail, e-mail and conversion between different media - from text to voice, for example. This means you could choose to have a fax read aloud if you were at the wheel of your

car, or you could dictate a message that will be printed out for the recipient.

The core of the message-handling system is the central node, the Messaging Center, which is connected to the switch of the mobile telephone system. A Messaging Center is not restricted to mobile telephone applications, however, but can also work with the fixed network, paging services and other systems.

Already sold

Ericsson has already sold a number of MXE nodes for use with mobile telephone systems. The present phase involves consolidating relations, marketing the services as part of a total package and establishing close cooperation.

"For us, the agreement means we now have a firmer platform to work on," says Leif Holm, head of Ericsson Messaging Systems Inc. "We are very pleased that Ericsson Radio Systems decided to support our product."

Messaging is regarded as an area with excellent future prospects. The rationale behind the service is that the person who is communicating wants to be in charge of how and when he or she can be accessed, and that voice communication is not always necessary - it is often enough just to leave a message.

LARS CEDERQUIST



MXE is a platform for transmitting text messages, fax, e-mail, paging calls and voice over fixed networks, mobile telephone, paging and PCS networks.

IT-strategy for continued growth

New philosophy needed to cope with explosive development

"The Turn of the Century will take place, in part, during the spring of 1996. We have to formulate a new IT strategy, therefore, that can handle continued strong growth and very rapid change."

That is how Stellan Nennerfelt, Senior Vice President, Information Technology (IT), describes Ericsson's present position and its IT requirements during the years immediately ahead.

"The Turn of the Century" in this context is the forecast of mobile communications made just a few years ago. At that time, analysts predicted that the total number of mobile telephone subscribers would pass the 100-million mark in the year 2000. We know now this volume level will be reached in the spring of 1996.!

Ericsson's need for effective and Group-wide IT support has never been greater than it is today. The company's strong growth, especially in mobile telephony, will continue throughout the foreseeable future. At the same time, market and business conditions are changing with ever-increasing rapidity.

Neat and tidy

Growth also makes its mark on personnel growth, especially in the Radio Communications Business Area. During 1995, Radio's total employees increased from about 20,000 to 30,000 and, at year-end 1996, it will probably be approaching 40,000 employees.

"This type of growth also affects our IT needs. If we don't have our house in order, in terms of information processing, we won't be able to cope with the complexities of the future," continues Mr. Nennerfelt.

We also know that we must effect sharp reductions in lead times, improve both process and product quality, and increase productivity in order to remain competitive. IT comprises the cornerstone of efforts to achieve these objectives. There are also a number of other trends that strongly affect Ericsson's IT requirements. Working in cooperation with a group of representatives from the business areas, the core unit for IT and Ericsson Data, Stellan Nennerfelt has made an initial sketch of a new IT strategy for Ericsson, based mainly on the rapidly changing market.

"The entire telecommunications market, and its shifting trend toward an inte-

grated value chain with infrastructure, access products, service nodes and operations support, puts completely new demands on Ericsson as a supplier and, accordingly, on our IT support," says Stellan Nennerfelt. This requires an overall view of IT that will support not only growth, but also global operations, a changing business model, the growing flows of information and information security.

The global work includes IT requirements, such as logging on to IT networks and having access to IT support, regardless of time and place, anywhere in the world. There are also demands that require us to move operations quickly and, accordingly, move with IT support to completely new venues of business.

The changing business model includes demands such as market communications, order processing, deliveries, invoicing and payments via the network.

Management of the growing flows of information will involve support in seeking, structuring, sorting, labeling, specifying, compiling, publishing and distributing information.

Demands on information security encompass the ability to convey authentic information, and to protect the integrity of information from loss when it is stored or transported.

IT vision key to success

"Based on this picture of IT requirements, we have conjured up an IT vision of where we should be no later than 1998. It is a picture that contains IT support to manage continued growth, provide Ericsson with opportunities to become even more flexible and mobile, increase information contacts with the world around us, increase access to information, increase the personal productivity of our employees, increase the productivity of our process and further strengthen Ericsson's infrastructure for information processing," Mr. Nennerfelt explains.

In some of these vision perspectives, the needs are clear and obvious even now. The reality of others, and their needs, are changing constantly.

"We know, for example, that present demands on flexibility and mobility call for access to all information, regardless of where we are or what time of day it is. And

For more information..

Additional information about Ericsson's IT strategy can be ordered via memoid: ERA.ERANEN



"The entire telecommunications industry and its shifting trend toward an integrated value chain places completely new demands on Ericsson's role as a supplier and, accordingly, on our IT support," says Stellan Nennerfelt, the man in charge of Information Technology (IT) in Ericsson.

Photo: PETER NORDAHL

“We must have access to all information, regardless of where we are.”

our project team should be able to move between different cities, countries and continents without losing its documentation or IT tools," Mr. Nennerfelt said.

In the area of personal productivity, effective telephony functions combined with data represent a key support factor.

Personal telephone numbers, voice and fax mailboxes, computer-supported telephony and video conferences are already in use. The same may be said of effective training and education programs using self-instruction systems offered on the networks.

Six concrete plans of actions

Corresponding reviews have been made in all vision areas and will be clarified further through a number of Group-wide project teams that will present six concrete plans of action during the spring of 1996.

- Skills development in IT
- "The model company" (mobile plug-in solutions such as "the model factory")
- Telephony service
- Desktop, local and area networks
- Information handling
- Global services (Ericsson Corporate Network, etc.)

Formulating demands

There is no shortage of IT tools. That is not the problem, but rather our ability to work together to increase and utilize solid IT support," Mr. Nennerfelt summarizes. For this reason, clearly defined demands are now being formulated for business areas and local companies in Ericsson to determine how we should work as a single unit with IT and information processing.

Small guide to IT

■ **Data.** "Representation of facts, definitions or instructions in forms suitable for transmission, interpretation or processing compiled by people or automatic compilation tools." (Standardization Commission).

Groups of symbols, normal figures and letters, but also special signs and symbols that correspond to certain values or conditions. Data that has been assigned some form of meaning comprises the cornerstones for information. In other words, it represents potential information. Data means "given" in Latin. The word is plural. The singular form datum is not used in computer technologies.

■ **Information.** More than 30 scientific subjects use the word with varying definitions. In general, it denotes something that reduces the recipient's uncertainty, and/or something that increases the recipient's knowledge. To dedicate oneself to information in the second example is more difficult than the first.

■ **Information Technology (IT).** Integration of computer and telecommunications technologies. Transmission, processing and presentation of sound, data, graphics and moving pictures. In addition to the computer, telecommunications and electronics industries, IT also includes radio, TV and parts of training/education as well as the entertainment industry.

The pager that responds

Ericsson enters U.S. two-way paging market

Ericsson has joined forces with AT&T Wireless Services to develop a standard, called pACT, for advanced paging systems that is able to transfer messages in both directions. Paging messages may contain digits, text or even voice. Installation of a nationwide U.S. network based on the new standard will begin at the end of 1996.

In the future, pagers will be smaller and less expensive. Battery life will equal that of today's products, but there will be many new functions. Pagers will have keypads and a larger display and be controlled via menus.

Subscribers will be able to send simple predefined messages and eventually complete messages. It will also be possible to use the pager to retrieve messages from a voice mailbox.

This is already becoming a reality in the U.S., where the paging market is expected to grow to several billion dollars over the next few years.

Eleven licenses

Several advanced nationwide paging networks are being built in North America. These networks will be able to handle simple forms of wireless data for such applications as e-mail and telemetry.

The new networks are the result of auctions held slightly more than a year ago by the Federal Communications Authority for eleven licenses for more powerful paging networks with increased capacity.

These new networks are needed partly because operators are approaching the limits of capacity, but there is also a desire to expand service offerings for customers. The new system is called Narrowband or N-PCS and is part of the new Personal Communication System concept being introduced in the U.S.

Pagenet, which is the world's largest paging operator, has taken the lead, with three licenses for nationwide networks, closely followed by AT&T Wireless Services, which has purchased two licenses in adjacent frequency bands, enabling them to function as a single network. The auctions also included a number of regional and local licenses.

Battle for subscribers

The battle for subscribers has begun. Paging operator Skytel already has its Skytel-2way ser-



Per Jakobsson, manager for mobile data systems, and Ingemar Blomqvist, president of Ericsson Radio Messaging, have ambitious plans for a new type of two-way paging system to be introduced in the U.S. during 1996. Left: This is what pagers may look like in the future. The new devices will be able to both send and receive text messages and will eventually handle voice as well.

Photo: Kurt Johansson

vice up and running in several U.S. cities. (This service is based on Motorola's ReFlex system, which in turn is a refinement of the Motorola Flex system.)

Motorola campaign

"Motorola is mounting a strong campaign," says Per Jakobsson, general manager at Ericsson Mobile Data Systems, "but their solution is an asymmetrical network that really consists of separate transmit and receive networks which have been pieced together."

"Our pACT (Personal Air Communications Technology) system is based on technology similar to that used for cellular telephony and mobile data, with a completely symmetrical network providing the same performance for both incoming and outgoing messages."

More robust

The advantages of a symmetric network from the operator's perspective are that the network is more robust and less expensive to build, because it requires fewer base stations. Performance in the transmit network from the mobile device to the base station is poorer, meaning that an infrastructure with many small receiving stations is needed. From the user's perspective, the difference is that transmission in a symmetric network is faster.

The pACT system also provides a roaming service, which means that a message to a given

subscriber is only transmitted in the area in which the subscriber is currently located. Normally paging systems with nationwide coverage broadcast messages from all base stations across the country simultaneously. With pACT, the system tracks the subscriber's location.

Open standard

AT&T Wireless Services (formerly McCaw Cellular Communications) developed the pACT protocol in cooperation with Ericsson. pACT is an open standard that works on the same principles as mobile telephony, which are radio cells, frequency reuse, the ability to increase network capacity by adding base stations, tracking subscriber locations, encryption of signals, etc. The pACT system, which uses IP (Internet Protocol) addressing, also provides a gateway to the Internet from the messaging center.

AT&T will purchase its backbone network from Retix, but has chosen Ericsson and PCSI as base station suppliers.

At the heart of the system is the message system, which receives and processing incoming messages and is connected to the backbone network. AT&T is currently reviewing tenders for its message center.

New base station

Ericsson's new base station for N-PCS is the RBS 540. The dimensions of this unit will be ap-

proximately 44 x 48 x 30 cm. For a standard configuration the weight will be about 50 kg.

The first base station is designed for indoor installation, but a unit for outdoor use is also planned.

Design of the RBS 540 represents a cooperative effort involving several Ericsson units. The transmitter and receiver sub-systems were developed by Ericsson Microwave in Mölndal, Sweden, while Eritel, based in Gothenburg, was responsible for the logic board and the control software. The basic design, however, was borrowed from the Cellular Systems - American Standards business unit. The new base station will transmit at 40 W on the 900 MHz band.

Several markets

The paging market is currently experiencing strong growth, particularly in the U.S. and Asia. The number of subscribers around the globe is growing by 10 to 15 million each year. For two-way paging or N-PCS, Canada and Mexico will be the next markets.

"Other countries in South America and Asia are also showing interest," reports Per Jakobsson. "And within ETSI a two-way systems for the European ERMES standard is being discussed. But developments in the U.S. will probably be decisive for the future of N-PCS."

LARS CEDERQUIST

news briefs

Expansion in Hungary

Ericsson has received an order for the expansion of the GSM network in Hungary. Network operator Westel 900 GSM has placed an order for switching equipment and radio base stations valued at SEK 160 million. Delivery and installation will take place during the year.

Slovenia selects GSM

Slovenia is yet another country, the 41st to date, that has selected Ericsson's GSM system. A contract was signed recently with GSM operator Mobitel which encompasses technical cooperation over a five-year period and an initial order totaling SEK 100 million.

Mobitel is a state-owned company that has successfully operated an analog NMT network since 1992. The company's goal is to provide coverage with its GSM system for some 150,000 subscribers within five years. The first stage of the network will be taken into operation this summer.

Hong Kong goes digital

Pacific Link is one of the four companies that together operate Hong Kong's nine different mobile telephone networks. In this city, in which the battle for subscribers is probably more fierce than any place else in the world, the number of subscribers is growing at a rate of 1,000 a day!

Now Pacific Link has turned to Ericsson for help in expanding its digital D-AMPS network. An order for mobile telephone switches and radio base stations, valued at SEK 280 million, will enable the operator to significantly increase capacity. At year-end, there were 160,000 subscribers in the network. After the expansion, this capacity will double.

Spanish unit wins quality award

Ericsson S.A., which was one of the three companies to receive the prestigious European Quality Award in 1994, has reaped yet another prize for quality. The well-respected Spanish business magazine *Dirigentes* has awarded its prize 1995 Quality Excellence to Ericsson's Spanish subsidiary.

In October 1997, the Cassini/Huygens project will begin one of the longest space odysseys in history.

It will take seven years for the spaceship to reach its destination, where equipment from Saab Ericsson Space will perform a three-hour assignment. Destination: Titan, a satellite of Saturn.

They have been delivered and paid for – six antennas and three microwave amplifiers from Saab Ericsson Space – for the spaceship Huygens. The company has fulfilled its commitment for the longest space trip in history. The equipment will not be used for another eight years, and then everything must function perfectly. Just one chance, three hours of operations, is the only window of opportunity.

Increased knowledge

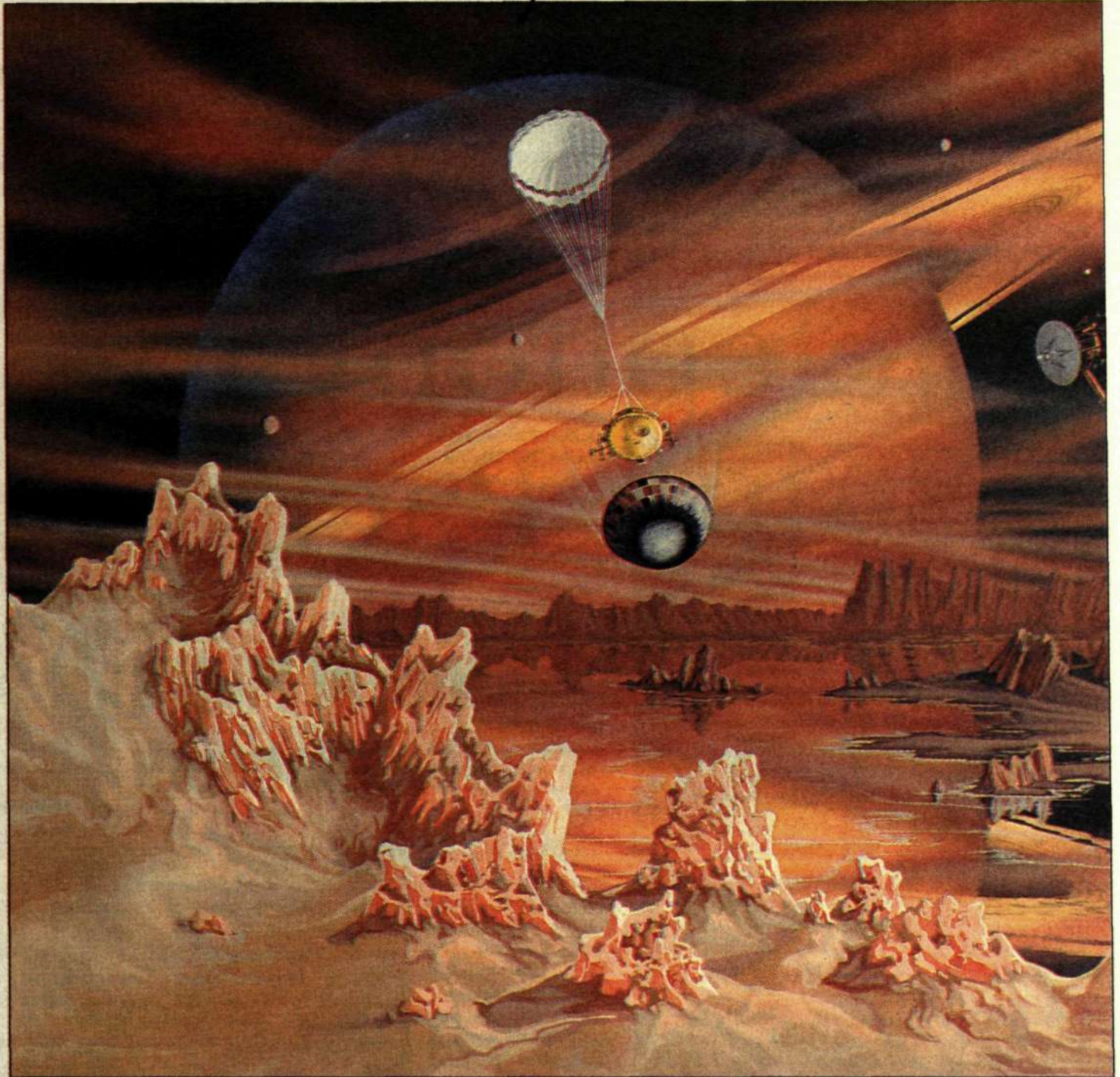
Cassini/Huygens is a joint space project being conducted in cooperation between the American space organization NASA and European ESA. The objective is to study the solar system in general and the giant planet of Saturn, in particular. The project involves fundamental research to increase our knowledge of the solar system's origins. Cassini is the mothership of Huygens, which will land on Titan, Saturn's largest moon.

The launch is scheduled for October 1997 from Cape Canaveral in Florida. Timing is critical, because a number of planets of the inner solar system will be used for gravitational assistance. To build up sufficient speed, the spaceship will utilize the inner planets to develop kinetic energy. It will bypass Venus twice and Earth once to build up enough speed to project it to Jupiter and then to Saturn. Estimated travel time: seven years.

Maybe like Earth

When Cassini/Huygens arrives in its orbit path around Saturn, Huygens will be detached and land on Titan, Saturn's largest moon. Titan is considered particularly interesting, because it is the only satellite with a permanent atmosphere. The atmosphere and chemical substances in the outer parts of the solar system are believed to have remained intact since the solar system was formed. The composition on Titan, therefore, may be similar to that of planet Earth when it was formed, and the

Huygens – soon on the way to Saturn



An artist's impression of the Huygens landing craft, slowed down by the parachute system, on its descent toward the surface of Titan after being detached from the mothership Cassini. Photo courtesy of NASA/JPL.

living organisms that were born out of the chemical substances.

Huygens will be slowed down as it enters the atmosphere with the help of heat shields. It will then hang suspended in a parachute system that enable onboard instruments to make measurements of the hitherto unknown atmosphere. The chemical composition of Titan's atmosphere, its temperature, pressure and wind speed are examples of measurements to be taken by the spaceship. Also onboard Huygens will be an image projection instrument that will show cloud coverage, the geography and, hopefully, Titan's surface.

Minus 220°C

After about three hours suspended in its parachute, Huygens will land on Titan. Nobody knows what may await there. Perhaps the craft will land on a mountain-top, in snowy terrain or a sea of some sort of liquid. The temperature on the surface is a chilly -220°C , so there may be lakes containing liquid methane or ammonia. Scientists hope that Huygens will survive the landing and be able to transmit measurements from the surface back to Earth.

"If it can do that, it will be a bonus effect of the mission," says Jan Persson, project

leader at Saab Ericsson Space in Gothenburg. The main mission is to take measurements in the atmosphere and transmit them back to Earth.

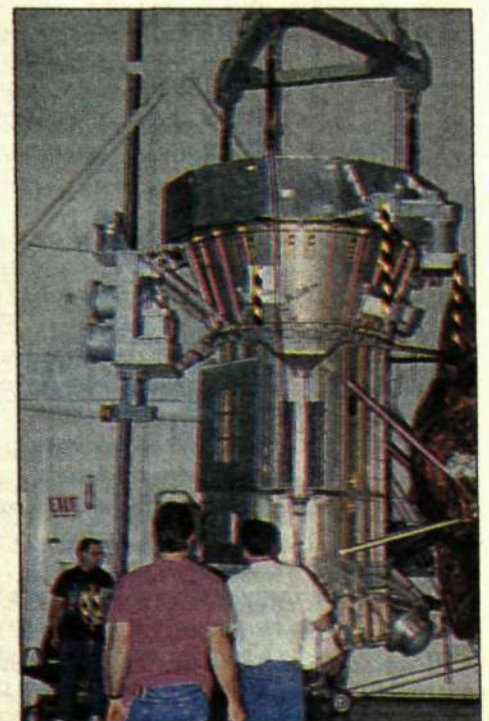
The procedure will not comply with traditional methods. Cassini will be in contact with Earth until measurements of Titan begin. Then it will turn away from Earth to face Huygens for three hours to receive data being transmitted from Huygens. It will then turn back toward Earth, establish contact and transmit the information to our researchers.

"It's a very critical moment in the project. If Cassini is not able to 'find' Earth again, all efforts will be lost and we'll never know the results of Huygens' measurements or what happened," explains Jan Persson.

Cassini/Huygens will be sent out on its long voyage all by itself. It has been done before, but the most common method is to send two satellites on the same mission. One is always held in reserve just in case something goes wrong, and the reserve might also be able to tell us what happened to the other ship.

So, in about eight years, sometime in the year 2004, we hope to know the fate of Cassini/Huygens.

LISS TANGER



The mothership Cassini, measuring more than six meters in height, is seen here with the Huygens landing craft mounted on its side as it goes through mechanical testing at the Jet Propulsion Laboratory in the U.S. Photo courtesy of NASA/JPL.

"This has gone extremely well, much faster than we hoped!" Aslam Khan, President of Vodafone Fiji, is more than satisfied. From an initial target level of 1,000 subscribers, the first (and largest) GSM network in the South Pacific has reached more than 2,500 subscribers in just a year and a half.

Cellular telephony in South Pacific

Rapid expansion of Fiji's GSM-network

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Aslam Khan, President of Vodafone Fiji, is at least as happy over his team's success in rugby. His Vodafone Fiji team recently beat arch-rival Samoa to emerge victorious in a large rugby tournament.

Tropical rains are falling on Suva, Fiji's capital. From nowhere, a huge traffic jam develops. Drivers in the line of traffic grimace and wait, and wait. Occasionally, one of them glances up at a large billboard with Vodafone ad, blaring out the message. "Traffic doesn't have to slow down your business."

Fiji is a pearl in the South Pacific. Coral reefs, palm trees, beautiful glittering beaches and several hundred islands to explore or just choose one at random, lay back and relax. The country is also a regional center for industry and commerce, however.

Largest of island groups

With a population of 750,000 spread over approximately 100 habitable islands, Fiji is the largest island group in the Pacific Ocean. Since the early 1800s, when colonial powers established their first trading stations, Fiji has been an economic center. It was still considered somewhat of a daring move, however, when Vodafone started the region's first GSM network in August 1994.

The initial investment was approximately USD 7.5 million, a large capital expenditure in such a small country. Vodafone Fiji had 593 subscribers committed to its network when the venture was started. Would that be enough?

"It's true that many people had their doubts but, at the same time, there was pressure from industry to do something," says Aslam Khan, President of Vodafone Fiji.

It was no coincidence that Ericsson was commissioned to build the network for Vodafone Fiji. For the past 40 years, Ericsson has supplied wired lines for Fiji's telecommunications company, whose telecom traffic today is virtually all through digital exchanges - probably a record in the region.

Vodafone Fiji is owned jointly by Fiji Post and Telecom (FPTL), the government telephone company, and Vodafone of Great Britain (49 percent).

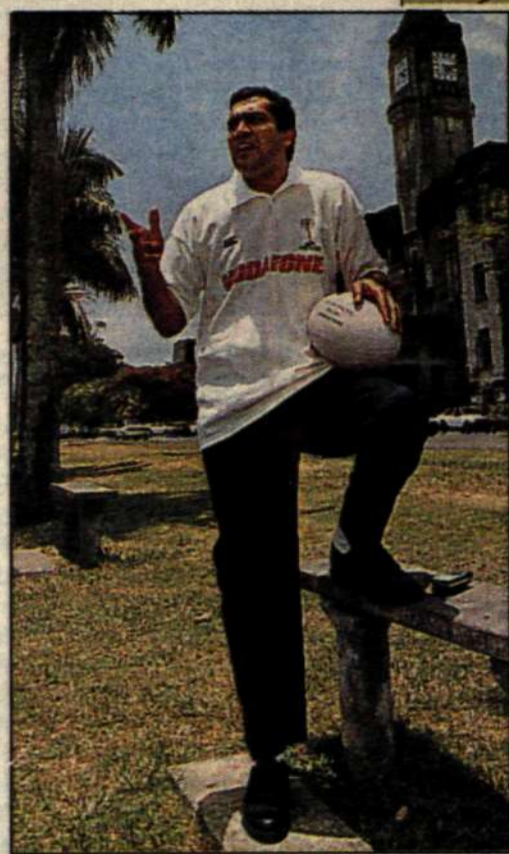
When its first mobile telephone network came under consideration, Fiji went directly to GSM, choosing not to start with an analog system despite apparently lower costs in the early planning stages.

"In 1992-93, extensive discussions were held concerning which technology we should choose, and many people preferred AMPS, perhaps mainly because the terminals were so much cheaper then. Yes, we took a chance by choosing GSM instead, but today we know we obviously made the right choice. The price of telephones has gone down, and we have a much more modern network than if we had chosen AMPS," continues a satisfied Aslam Khan.

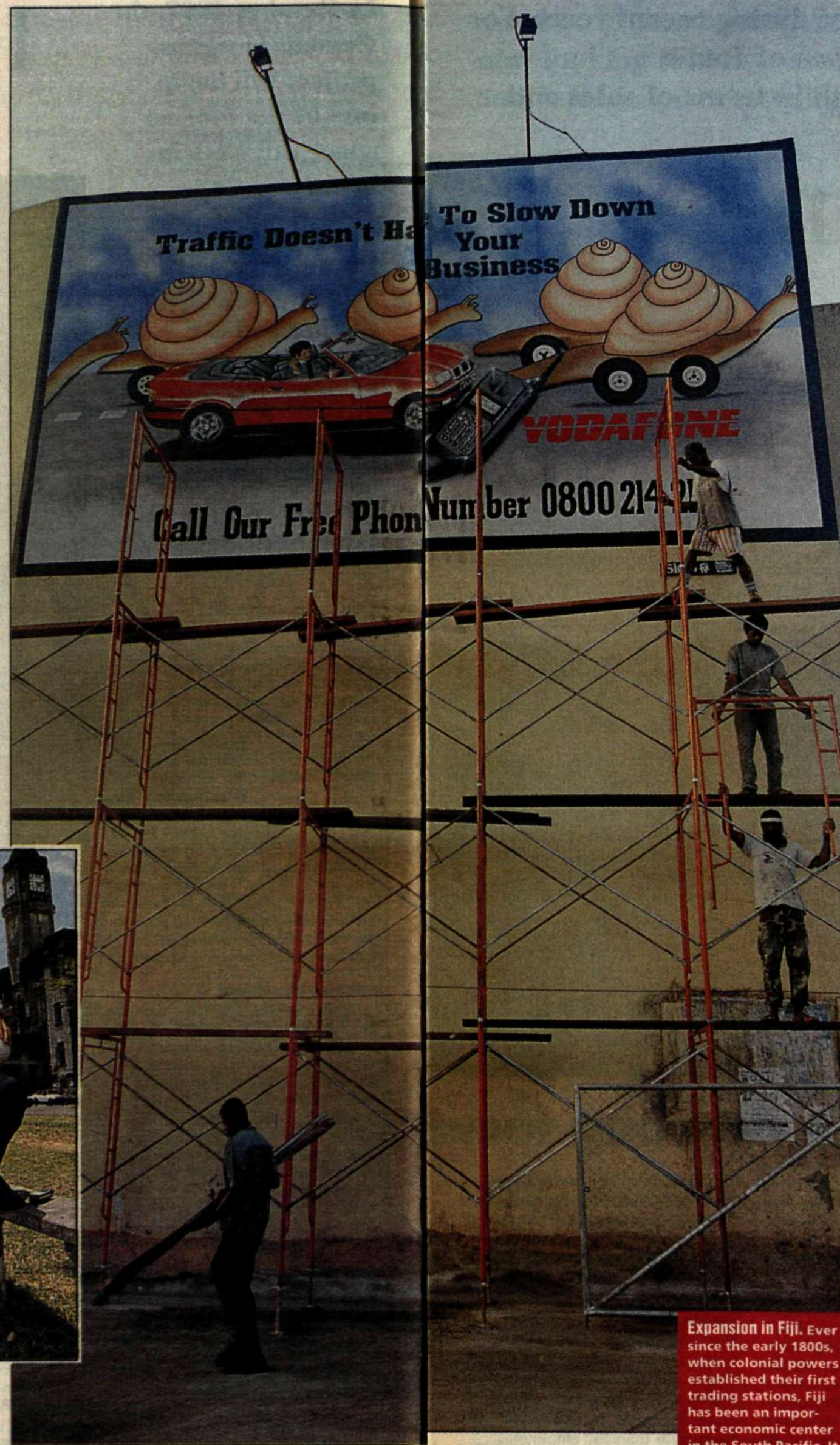
Today, he supervises a young team of 45 persons totally committed to developing a profitable and dynamic company. The man is vast reservoir of new projects, plans and ideas. Aslam Khan is not just President and CEO, he is the soul of Vodafone Fiji, a communicator for whom nothing is impossible and this reporter can hardly take notes fast enough to keep up when Aslam talks about his company.

Rapid development

An important reason for the development of a GSM network of its own in Fiji is to offer roaming services with Australia and other countries. Many businessmen and



Aslam Khan, President of Vodafone Fiji.



Expansion in Fiji. Ever since the early 1800s, when colonial powers established their first trading stations, Fiji has been an important economic center in the South Pacific. It was still considered somewhat of a daring move, however, when Vodafone started the region's first GSM network in August 1994.

"The network build-up proceeded extremely well, and not just by Fijian standards," continues Raj Deo and laughs. "Quality is important, and the goal this year is to gain ISO 9000 certification."

With one switch and 24 base stations, the GSM network today covers the western reaches of White Levu, Fiji's main island and home to the majority of its population. The distance between Suva and the city of Lautoka,

women travel back and forth between the two countries. Fiji also has many Australian tourists who want to bring their telephones with them on vacation now that they can. "We estimate that roaming traffic accounts for about 20 percent of total traffic," says Raj Deo, operations manager of Vodafone Fiji.

Installation was started in January 1994, and the network was on-line in July 1995. The inauguration of Fiji's network was celebrated with a bowl of kuva, a local potable with a pepper fruit base that makes the tongue go slightly numb.

Only about 50,000 of Fiji's total population of 750,000 inhabitants have regular wired telephones. In addition to the regular mobile network, therefore, Vodafone is also offering a system with stationary mobile telephones, Vodafix.



Few people have telephones

Only about 50,000 of Fiji's total population of 750,000 inhabitants have regular wired telephones. In addition to the regular mobile network, therefore, Vodafone is also offering a system with stationary mobile telephones, Vodafix. Although telephone charges are slightly higher than normal local call charges, they are much cheaper than mobile telephone fees.

Two-thirds of Fiji's population lives in rural areas, many in villages with poor overland accessibility and no telephones at all.

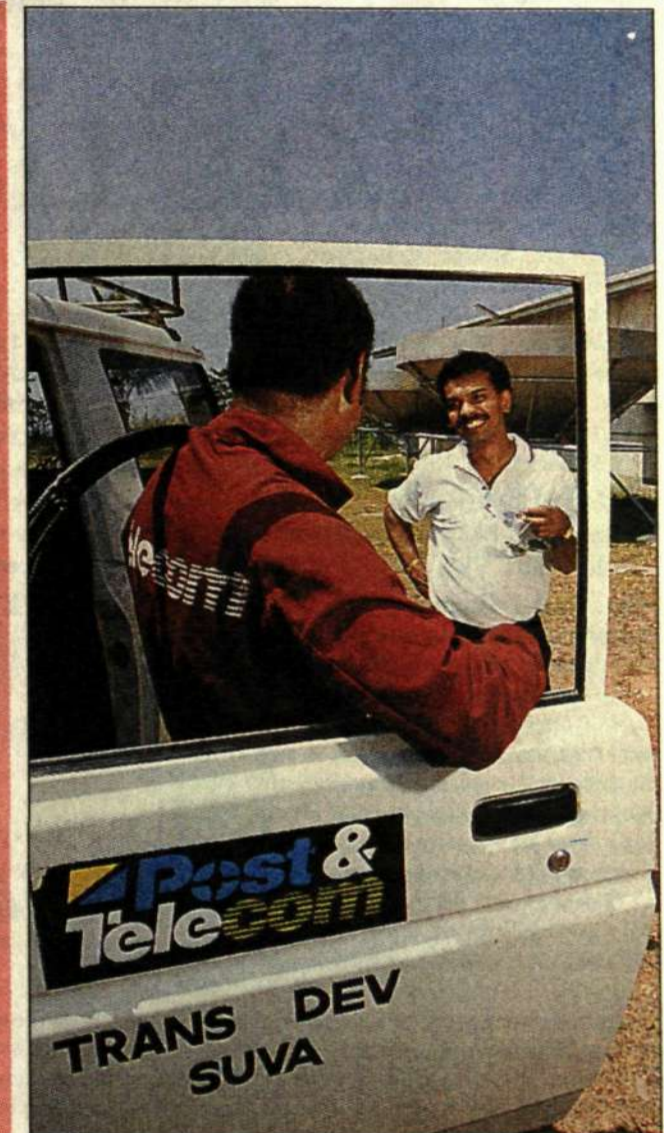
Installations of fixed lines to remote areas is expensive and complicated. For this reason, Vodafix has excellent potential to develop into a very interesting supplement to the country's stationary telephone network.

Joesteki Tamalaba was one of the first customers to sign on with Vodafix. When her small boutique caught on fire, and she had no way to call for help, she decided to get a telephone.

"I was never able to have a telephone before Vodafix. Now I feel safer, more secure," says Joesteki Tamalaba.

Vodagroup is the name of another interesting product; it offers everybody with business mobile telephones a card number similar to a regular business exchange. Mobile internal calls are actually cheaper than calls over the regular wired network.

For the time being, Vodafone still concentrates on businessmen and women. Call charges are relatively high but, in the future, the company also hopes to attract private customers.



Fiji's beet sugar growing center, is about 250 kilometers. With the exception of a few areas of minor importance, the entire area is covered by the GSM network. Vodafone Fiji plans to make further improvements and, eventually, extend service to Levu, the country's second largest island.

But Fiji's mountainous terrain presents problems for network expansion. In a country where almost all land is owned jointly by its villages, it has been difficult at times to get permission to set up base stations.

"The main problem in installations is usually power supplies. Although the island is not large, I might be on the road for a week when I'm servicing and checking base stations," says Shailendra Narayan, company technician.

Trained by Ericsson

He and other technical personnel were trained by Ericsson Australia (and Ireland), which also manages installation, service and sales of telephone handsets.

"The cooperation has functioned smoothly and, today, we have the technical skills to handle installations of new base stations ourselves," Mr. Narayan continues.

Fiji has a special technique for selling telephones. Instruction manuals are too much for customers here. So they emulate the method introduced by Vodafone in Great Britain, and give a video film to every customer. What's even more unusual, perhaps, is that here in Fiji, the salesperson drives to the customer's office, demonstrates how to use the telephone and then places it in operation in the network.

"The personal approach has been much appreciated by people in industry, but when we also start to focus on pri-

ivate customers in the future, this method will no longer be practical, or possible, for obvious reasons," explains Aslam Khan.

However, as in the case of Mohammed Sahque, customers can come to Vodafone's sales office and pick up their telephones personally.

"I used to think it would be too expensive to have a cellular phone, but I am often on the road visiting customers when other people might need to reach me," says Mohammed, who has a small company with four employees for the repair of engines and heavy vehicles.

All phones are Ericsson

One of his sons carries the case. Their choice was an Ericsson GH 198, a telephone that is subsidized by Vodafone. Customers, however, have to pay the full price for Ericsson 337, which has not been a deterrent to sales, however, as every other phone sold in Fiji is made by Ericsson.

The stationary telephone network's penetration today is in the range of 10 percent. Present objectives call for an increase to 14-15 percent by the year 2000. How great is the potential for GSM in Fiji?

"Based on our plans today, we expect to have 10,000 subscribers by the year 2000. But I believe we may reach twice as many," says Aslam Khan.

There is no doubt about the man's enthusiasm!

DAVID ISAKSSON

Although the island is not large, I might be on the road for a week when I'm servicing and checking base stations," says Shailendra Narayan, a company technician.

Photos: Victor Brott

Mobile telephony has undergone explosive development during recent years. For Ericsson, mobile's strong growth has led to the emergence of Radio Communications as the largest business area today, both in terms of sales and

Search is on for engineers of the future

Skilled radio engineers and technicians are a "shortage item" on the market today. To secure its future development, Radio Communications is placing an increasing part of its development work outside Sweden.

"Nuremberg, Germany, Ericsson's development department in Raleigh, North Carolina in the U.S., and Mölndal, Sweden, are three locations where we will expand in terms of developing radio base stations for mobile telephone systems," says Jan Uddenfeldt, Vice President, Engineering, Radio Communications.

The Radio Communications Business Area has a tremendous need for personnel, and there is particularly strong demand for skilled engineers and technicians.

"We need radio technicians, an area of expertise that is sorely lacking in supply in Stockholm," explains Jan Uddenfeldt. In addition to Kista, just outside Stockholm, radio base stations are also under development at Mölndal in Sweden, Nuremberg in Germany and RTP in North Carolina. All three facilities are undergoing dynamic expansion. In parallel with increased concentration of radio base stations outside Stockholm, a number of technical consultants will be handed pink slips."

In Mölndal

Ericsson Microwave in Mölndal has extensive experience in development of radio base stations. In the spring of 1990, development work was started on the so-called MDE, a transceiver for the digital mobile telephone system used by NTT of Japan. Development has continued in parallel with new efforts to develop base stations for the PDC system standard, also called the Japanese standard. Some development is also concentrated on base stations for the European standard. Mölndal also has a center for development of antenna technologies. About 200 people are engaged in mobile telephony development work in Mölndal. According to plans, the staff will be doubled in the next two years.

American standard

"Until now, about 85 percent of all radio base station development work has been done in Kista," says Urban Fagerstedt, the man in charge of radio base station development for the American standard. Of the 600 people who work on development projects, 440 are full-time employees, 60 are internal consultants and about 100 are outside consultants. Because of the large number of independent consultants, Radio Communications obviously has not been self-sufficient in radio base station development."

In December of this year, there will be 525 employees working for American



Jan Uddenfeldt.



Urban Fagerstedt.

Standard in Kista, a number that will grow to 725 by year-end 1997, including personnel from Ericsson's foreign subsidiaries and internal consulting companies.

"Now that we starting to build up internal resources, we plan to replace outside consultants with Ericsson employees. The biggest increase will be at the American RTP center in North Carolina," Urban Fagerstedt continues.

Easier in RTP

Ericsson began developing terminals, or mobile telephones, at RTP in 1987 and base station development work in North Carolina was started six years ago. Until now, RTP has employed about 40 men and women in its development unit, working with certain microbase stations. RTP now plans to increase its development staff to about 70 employees, who will work exclusively on the development of base stations for the American mobile telephone standard.

Finding qualified technicians is easier at RTP than in Stockholm. There are three universities in North Carolina, all situated in close proximity to RTP, and the surrounding area is a popular growth area in the U.S., with a rapidly increasing population base.

Consultants

"As the number of consultants is reduced, we will focus mainly on eliminating outside consultants," he continues. "Today, we use about 60 internal consultants from Ericsson's consulting companies in Hålsjöholm, Karlstad and Luleå, all in

Sweden. We also have about 60 employees at Ericsson in Ireland working on the development of switching software for mobile telephony. Internal consultant assistance will be increased in Sweden and abroad."

Germany

With 70 employees, the Nuremberg unit is Ericsson's smallest radio base development center. By year-end 1996, the center plans to increase its development staff by more than 90 new employees. The German unit, which is included in Ericsson Eurolab Deutschland, conducts development work on base stations for mobile telephone systems in compliance with the GSM European standard. Development of certain variations of GSM telephone will also be conducted in Nuremberg.

Many variations

During the early days of mobile telephony, base stations were just that, base stations with little or no variations. Today, we speak of macro, micro, pico, indoor and outdoor variations for all different standards and frequencies.

Customer demands and requirements should be the guiding light for development, with particular emphasis on lower equipment costs and reduced network operation expenses.

"In parallel with development of an increasing number of variations, we also have to develop base stations for mass production. This calls for a new development culture for our design engineers, whereby the user's situation will become the driving force in future development," explains Urban Fagerstedt.

If Ericsson is to maintain its strong position in mobile telephony, it is essential that development of radio base stations retains its position of leadership on the cutting edge of new technological development.

"We need skilled radio technicians, and we will find them in Nuremberg, North Carolina and Mölndal," concludes Jan Uddenfeldt.

Harald Thomas and Michael Niegel are two of the approximately 70 engineers working with development for Radio in Nuremberg. The unit there, part of Ericsson Eurolab Deutschland, began operations in 1994. The three areas in which the Nuremberg unit is active are: research in radio communications, product development of radio base stations and development of mobile telephones.

Photo: HANS-JÖRG ZIEROLD



Strong focus on research in Nuremberg

The focal point at Äusserer Bayreuther Strasse 350 in Nuremberg is the future. Here at Ericsson's Eurolab center for radio communications, more than 70 employees are engaged in the development of radio base stations for GSM and variations of GSM telephones. Nuremberg is one of the Ericsson units outside Sweden where Radio Communications is focusing on research and development. By the end of this year, the center will have more than 160 employees.

While there is a shortage of skilled radio technicians in Sweden, the situation is completely different in Nuremberg. The city is a German center for radio communications, and several large electronics companies have conducted research and development work here. A few years ago, many reduced their investment efforts, which made it possible for Ericsson to find skilled employees with 5-25 years experience in radio development work.

number of employees. And the need for personnel continues to grow. Radio is now looking into new and sometimes unconventional channels to find engineers and technicians who will help Ericsson develop radio solutions for the future.

"Seniors" go abroad

In addition to radio technicians, Radio Communications needs older personnel with radio background who are willing to work with development abroad for several years. Initially, there are positions available in Nuremberg and at RTP in North Carolina.

"Our average age, 32, is low. Most foreign assignments are filled by young engineers out of college and the interest from older personnel is limited. We hope that we can change this," says Kjell Ostergren, personnel manager at Radio Communications' research unit.

Radio technicians who are 40 and older are knowledgeable and experienced, with the added advantage of having a broad contact network within Ericsson.

"There are valuable attributes and there is a great need at our research units abroad," Kjell notes. For more information about development positions in Nuremberg and North Carolina, contact Kjell at the memo address ERAKJEL or telephone +46 8 757 25 45.



Wolfgang Koch and Martin Vogel, two research managers in Nuremberg, open the symbolic door to the future.

The R&D center in Nuremberg is part of Ericsson Eurolab Deutschland GmbH, a subsidiary based in Aachen, Germany.

The activities were started on a very limited scale in September 1994 with just a handful of employees.

"We began to build up areas of expertise during the first year and created a solid foundation for continued efforts. Since we all come from different companies, it's important that we work together in creating an Ericsson culture," says Jürgen Schmidt, manager of the Nuremberg unit.

"We have seven Swedes working here on long-term contracts, a number that will be increased to 15 by the end of this year. Having Swedes work here is good for communications with Sweden and helps us become familiar with the Swedish culture," he continues.

The German development center concentrates on three areas: mobile commu-

nications research, product development of radio base stations and product development of mobile telephones.

Wolfgang Koch is responsible for mobile communications research. Before joining Ericsson, he worked for many years in the same R&D area for Philips in Nuremberg. In addition to his experience, Wolfgang also brought many valuable contacts with different specialists at several German universities.

"We have about 20 staff members today working in three different areas. Our largest research project focuses on wideband radio technology," explains Wolfgang. He also emphasizes the importance of close contacts with development departments, an essential component of all research work. He considers it only natural for employees to monitor a product from the research stage right through final development.

From Kista

Mikael Hofverberg transferred from Ericsson Radio Systems in Kista to Ericsson Eurolab in Nuremberg in

October 1995. He is responsible for product development of radio base stations in a department that has 37 employees today. By year-end 1996, his department will be increased to about 100 workers.

Finding personnel is not difficult. It is not uncommon for one classified ad to attract as many as 700 replies, many of which are very interesting.

The job in Nuremberg is Mikael Hofverberg's first assignment outside Sweden. To work in management in a foreign company is, in his own words, both interesting and educational.

With Lund and USA

"Since we work with mobile telephones, we have many contacts with Lund and Ericsson's development center in Raleigh, North Carolina (RTP)," explains Martin Vogel, a German employee who has been with the Nuremberg center from the start. He is responsible for product development of telephones. The department

works in particularly close cooperation with RTP on projects designed to develop a telephone that embodies all the qualities of a mobile telephone, office telephone and "normal telephone at home."

Martin Vogel's department has 20 employees and, like other departments, they all have extensive experience.

"The experienced staff enabled us to start working immediately. It's important to get a fast start so we can see the results of our efforts relatively quickly," says Martin Vogel.

Ericsson's development center in Nuremberg is situated in a large industrial park about five kilometers from the airport and about the same distance from the center of the city.

"The building is almost new, we were the first tenants and there is room for expansion," says Jürgen Schmidt. GT

Elite university graduates with special language skills are a prime target group in Ericsson recruitment programs to meet ever-growing manpower needs in all parts of the world. Ericsson Radio Systems AB has participated in three major job market exhibitions in recent months, introducing itself and the Ericsson Group to thousands of qualified college graduates waiting in line for top jobs in industry.

Recruiting at elite level

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No more than 30 years old, fluent in three languages, and top grades at the college/university level. Those are three of the qualifications that Ericsson and large international companies and banks look for in management candidates.

Ericsson has already "positioned itself" as a prospective employer by taking part in three career fairs. In December 1995, a broad search for qualified engineers was conducted in Brussels and, in the beginning of January, a similar program was held in London to find "the best brains" with Asiatic origins for future jobs in Ericsson's subsidiaries in China, India and other Asian countries.

Then it was back to Brussels in search of candidates with the very top marks in Masters of Business Administration studies (MBA). Most of the candidates in the second Brussels search were American students, since the best schools are located in the U.S.

"This is a new and interesting recruiting method," says Eva Andreassen, a member of the personnel staff of Radio Communications. I don't think there's a better way for us to recruit this particular personnel category.

Tough selection process

The student "trade shows" are arranged by EMDS, started in 1987 by two Belgian students, and specialize in international recruitment of young college/university graduates. After sifting through tens of thousands of applications, the top 600 candidates are selected for interviews with prospective employers.

EMDS reviews which schools the graduates attended and appraises their grades, social skills (behavioral patterns in different situations and cultures), languages skills and other qualifications.

The selection process then becomes an interplay process with prospective employers, which state the types of profiles they need compared with EMDS files of persons who have expressed their interest in careers in those industries.

Many interviews

During the course of three fairs we interviewed about 250 people, although we had only booked about 85," explains Eva Andreassen. Many just turned up unannounced and there quite a few 'finds' among them.

Pär-Anders Pehrson, personnel manager of Ericsson's mobile telephony department for European systems (GSM, NMT and TACS), cites an example from London where one student, who failed to pass the EMDS screening process and refused to accept his rejection, put his CV in an envelope and slipped it under the door to Ericsson's office.

"When we opened the envelope and looked at his qualifications, we immedi-



She has a doctorate degree in engineering, specializing in radio, and wants to return to China. One of the candidates at the London recruitment fair where Ericsson went looking for highly qualified personnel of Asian origins to work in the Group's local companies in Asia.

ately started a search to locate the young man and booked an interview that went very well. His personal initiative was rewarded," says Pär-Anders Pehrson.

The applicants are all highly qualified but, otherwise, have highly diversified backgrounds. For some students, everything is paid for by their families, others study on scholarships or get through school on student loans. All are internationally oriented, having lived and worked in different countries, taken personal initiatives, worked at summer jobs and the like. Most of the students under Ericsson's watchful eye are engineers, but future jobs may also include project management, marketing or other aspects of business operations.

"We interviewed a Chinese student who spoke Norwegian with a Bergen accent," says Pär-Anders. "And there were others who spoke Swedish. Knowledge of Scandinavia is a plus, which we feel would make it easier for candidates to adapt to our corporate culture."

Interest in Sweden was generally strong, although knowledge of Ericsson left a little to be desired. With the exception of

MBS candidates, most were very well-read, to the point that roles were almost reversed in some interviews. The students being interviewed were telling the interviewers about Ericsson, future prospects, strong and weak points, etc.

Next stage

Between 20 and 30 persons are selected from every student fair. Of these, five-eight persons per category will be offered employment, according to present plans, in local companies but also in Kista and other locations in Sweden.

"They are highly qualified young people, and I wish we could hire them all," says Eva Andreassen.

"Processing procedures should be completed in a few months, but then we start focusing on the next student fair, which will be held this autumn in Stockholm and cover the entire Nordic region. At year-end 1996, the three fairs in Brussels and London start all over again. Ericsson has not decided if it will take part again next year. Evaluations of this year's results will be studied first."

LARS CEDERQUIST



"We found several highly promising candidates and are now mediating with local Ericsson companies, which will handle the actual employment process," says Pär-Anders Pehrson, personnel manager of the mobile telephony business unit for European systems.



"The concept of being a good citizen should permeate throughout the entire organization, and its essential that executive management is the driving force," according to Anders Mårtensson and Olof Tenghoff. The two men have written their thesis at Ericsson on the importance of Corporate Citizenship.

Photo: KARL-EVERT EKLUND

Company's role as a good citizen

Growing importance of showing good judgment

Can a company be a good citizen? The answer is yes! And it's becoming increasingly important for companies to show good judgment in winning the confidence of customers and society in general.

A company has many different fields of interest: customers, suppliers, business partners, employees, owners and society in general. Its success may depend on the confidence of all interested parties in the company, and its standing as a good citizen in the community is becoming an increasingly important factor.

The subject was discussed at a seminar at Ericsson in January, which was based on a thesis entitled "Corporate Citizenship," written recently at Ericsson by Anders Mårtensson and Olof Tenghoff, two economics students.

"The concept of being a good citizen should permeate throughout the organization, and it's essential that executive management is the driving force," according to Anders and Olof.

Environment important

A company can be a good citizen in many different ways. By taking part in solving social problems, by creating employment, contributing to research and development and by assuming social responsibilities.

Many Ericsson customers also strive to act as good citizens and, for them, it's naturally important that suppliers have the same goals. A prime example is the growing importance of environmentally safe products and processes.

"Environmental awareness can be a vital factor," says

Kurt Vestergaard of Tele Denmark. "Environmental issues are important, both in terms of aesthetics and economics - our customers are also becoming more interested in environmental protection and conservation."

"It's important to be politically correct today, and there is particularly strong focus on the environment today," says Svend Fredslund, Chief Engineer at Tele Denmark.

PR value

Anders Mårtensson and Olof Tenghoff believe that Ericsson is a good citizen, but the company is not as adept in projecting its "Corporate Citizen" image.

"We need a carefully formulated program of activities, and we should emphasize our standing as a good citizen in different circumstances, such as conferences, seminars, press conferences, etc. We contribute to social development with the tools of our business activities and our products, but we don't show that enough," says Olle Wikström, a member of the Corporate Relations staff.

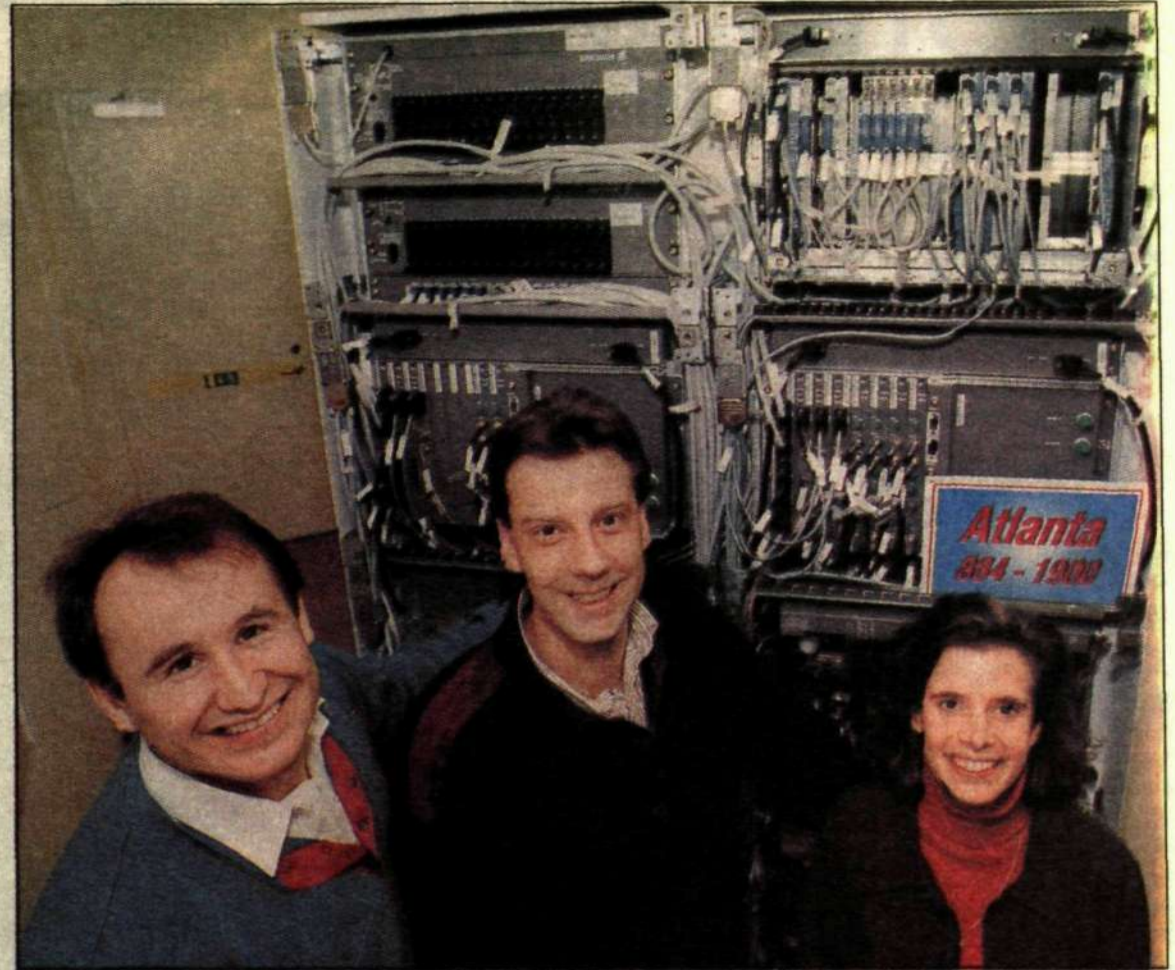
Internal significance

"I'd like to see Ericsson concentrate on external training and education programs, as well as pro-environmental products and processes," says Kaj Juul-Pedersen, Strategy and Marketing Manager of the Public Telecommunications Business Area.

"Being a good citizen has significant values both internally and externally, and it can be an important asset in recruiting new personnel. Our image as a good citizen also affects customer choices," summarized Kaj.

ISABEL WERNER

They produce base stations with highest frequencies



Gunnar Säfvenberg, Jan-Erik Tillberg and Caroline Ström are part of the team that worked on developing a new adaption of the radio base station RBS884 for the 1900 megahertz frequency.

The very first base stations for personal telephony in accordance with the American standard D-AMPS 1900 are now enroute to the U.S. for installation with a customer in Atlanta. Such a delivery requires a great deal of effort.

It all began with the U.S. authorities decision that the frequency area for PCS, the new personal telephony concept, would be about 1900 megahertz. It then became Ericsson's task to devise a technical solution which could be offered to the new operators.

In autumn 1994, the Mobile Telephone Business Unit, American Standard, started a project for developing a base station for the designated frequency area.

Testing system

Ericsson already has a minor testing system consisting of two base stations at its facility in Dallas and, just before year-end, one of the two major goals was attained, namely the first prototypes were delivered to the operator, AT&T Wireless Services in Atlanta, Georgia.

The equipment will be subjected to comprehensive testing before being placed in commercial operation. The next goal is to begin mass production in April 1996. Demand is expected to be extremely heavy.

The new base station is a variation within the RBS 884 family.

"This will not be a completely new base station, the assembly method is the same as before but all frequency-dependent components have been revised," says project leader Göran Svensson.

Doubled frequency

It is mainly two components in the base station which are affected by the more than doubling of the frequency compared with earlier equipment. This applies both to the transceiver, that is, the radio transmitter and receiver and the antenna-related products where the radio signals to and from the antenna are accumulated, filtered and amplified.

One of the difficulties encountered in the project is the absence of standard electronic components for the high frequency. In numerous cases they were compelled to develop completely new ones. This has also involved revising existing PC cards and devising new ones.

Cooling problem

An additional problem of a more mechanical nature has been the cooling of the transceiver. The card as a whole generates more heat than a 100-watt light bulb, which the components will be unable to withstand over a longer period.

Accordingly, an advanced cooling flange of aluminum has been developed which covers the entire card, and effectively conducts the heat away. Certain

parts are so unique as to merit patent application.

The transceiver will be mass produced at the Gävle plant while the antenna-related products will be developed and manufactured by Ericsson Radio Access in Kista.

Small but effective

"This is nonetheless a relatively minor project," according to Göran. "Our unit amounts to approximately 20 to 30 persons who are involved in development and verification. But when we soon begin volume production and deliveries, we will increase rapidly in number."

"The entire project is based on people establishing contacts with one another without a great deal of formalities," Göran relates. "Since we are constantly focused on finishing on time, the emphasis is on rapidly reaching and implementing decisions and concentrating on what is important."

Lead-times at minimum

Among other measures, we have attempted to maintain control of the entire logistics function within the project in order to keep lead-times at a minimum."

Thus, a cohesive, competent team has made it possible to deliver this modestly epoch-making base station on time to a country on the other side of the Atlantic.

LARS ERIKSSON

Modular design halves the size

Multiple chips in a single package – next step in component miniaturization

Usually reducing the size of electronic components means increasing the integration of standard and application specific circuit elements.

However, an alternative technology, called multi-chip modules, becoming increasingly popular. Over the next few years, Ericsson plans to release its first volume products incorporating multi-chip modules.

Multi-chip module (MCM) technology has been around a while but has only recently advanced to the point where it is suitable for general use.

"Many computer manufacturers, for example, have been using MCM in digital circuits for mainframes for more than ten years," relates Einar Mårtensson, MCM project manager at Ericsson Components, who shows us a design supporting up to 133 chips and 30 layers in a single module.

For Ericsson designers, the most common components will consist of two to ten chips, with three to ten layers. Both digital and analog functions will be implemented in which standard components, as well as two or more application-specific integrated circuits (ASICs).

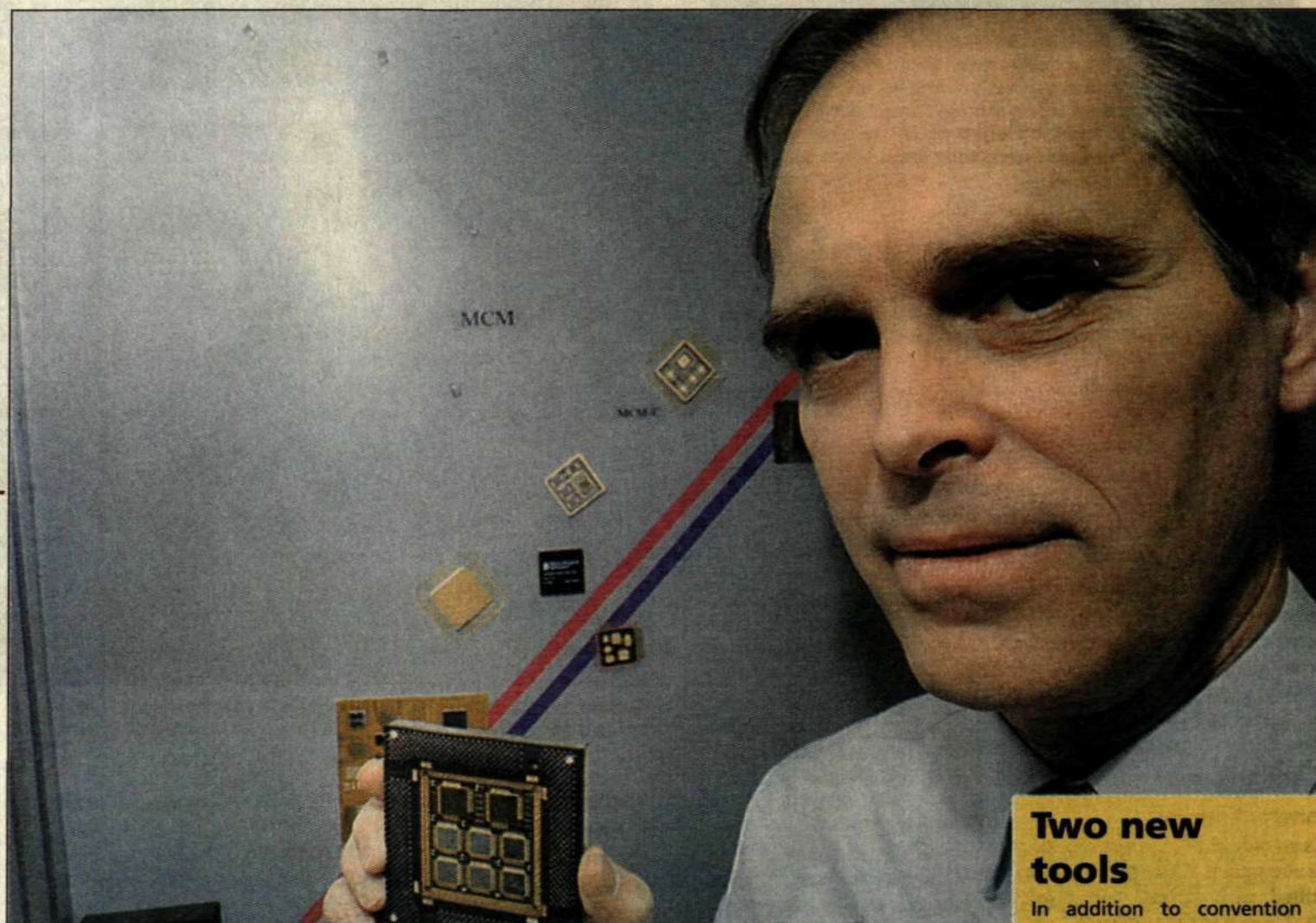
Typical application areas include processing units, switches, optic transmission elements, access nodes and radio base stations and all types of portable equipment.

Naked chips

A chip is a small piece of silicon that can contain several million components, including transistors, resistors, capacitors, etc.

Several hundred chips can be cut from the largest circular silicon wafers, which must first be tested and accepted. Each chip is then sealed in a plastic casing to protect it and provided with pins for connection to other components on a circuit board.

In multi-chip modules, several naked chips are mounted and interconnected in a single capsule, thus saving space and materials. This also conserves power and increases operating speed (and performance) because signal paths are shorter. Failure rates are also lower because the soldered connections between the pins and the circuit board, which are a common point of failure, are reduced in number. An additional benefit is that the product



"Multi-chip technology using several chips in a single module is growing rapidly, both for simple modules and high-performance components," says Einar Mårtensson at Ericsson Components. The technology is now ready for volume production.

Foto: ANDERS ANJOU

in many respects is more environmentally friendly.

It is also desirable to reduce the number of capsules and soldering points for quicker and more reliable assembly and testing of system products.

The best results are achieved when MCM technology is combined with ASIC development so that functions that can be integrated can be put on ASICs, while components produced in other processes or purchased from external suppliers can be included on other chips in the same capsule.

Another advantage to MCM is that a function in a circuit design that would normally require an expensive circuit board can be put in an MCM that can be mounted on a simpler and less expensive circuit board.

Packing density

Another measure of technological limitations is the silicon packing density, which indicates what proportion of the module or circuit board consists of silicon.

Today the packing density of a normal circuit board is about five percent, while density for a mod-

ule can be two to five times greater, or 10 to 25 percent.

"Actually there is a technique that allows packing densities of up to 40 to 50 percent," reveals Einar Mårtensson. "It's called flip-chip technology. Instead of connecting chips with thin gold leads (thread bonding), this technique uses small pellets of tin on the substrate."

However, as in the case of multi-chip technology, technical obstacles are not the issue. It is instead a question of production traditions and investment in new technology.

Necessary development

All signs indicate the multi-chip modules are a necessary next step in development, particularly in terms of competition and performance.

It is not certain that a multi-chip module will be less expensive than the corresponding six components, but the overall savings are evident when such factors as smaller circuit boards, simpler assembly and testing, etc. are considered. In radio communications, MCM also makes it possible to combine

bare chips with a substrate containing filters, transmission components and other RF functions.

Up until now, development has been hampered by the difficulty of obtaining naked chips of the same quality as encapsulated chips, as well as the inevitable resistance to changes in design and production.

In-house and in partnership

Today Ericsson Components produces hybrid modules for radio base stations. These modules can be seen as the forerunners of MCM radio modules with an even greater degree of integration.

For digital MCM, partnering with leading manufacturers and supplier is essential to enable Ericsson to load designs from external suppliers into its own CAD systems and to take advantage of industry-standard technology.

Ericsson is currently working with IBM and Micro Module Systems in the U.S., but the company has contacts with other suppliers and is closely following developments in Europe, North America and Asia.

Two new tools

In addition to conventional simulations and CAD, new systems are being used to address two pressing issues.

In order to make it easier to determine when it is advantageous to use MCM technology, an application called Design Advisor is used in which results from electrical and thermal analyses are combined with assembly data. This provides guidelines for partitioning the system between ASICs, MCMs and circuit boards.

Another tool for MCM used by Ericsson Components is a menu-based system called Micropackaging Guidelines, which can be run on PCs or workstations to obtain information on known good dies (KGD) which have been accepted in testing, as well as general information on microarchitecture.

"I do not foresee any radical break-throughs," says Einar Mårtensson, "but the general trend is toward multi-chip capsules. Less expensive materials and processes also open the door to the mass market and consumer electronics. We will surely be hearing a lot about module technology over the next years."

LARS CEDERQUIST

"I love my job and lot of positive things have happened to me lately. Life just gets more and more enjoyable the older you get."

P

ia Nygård will celebrate her 40th birthday soon. She says she feels better than ever.

Her self-knowledge and self-esteem have increased with age and experience, and Pia Nygård now feels a sense of personal maturity that was lacking earlier in life. It shows. She is aglow with inner energy, both in her body language and beaming expression.

Pia started working at the job she loves so much at the end of 1995. She is department manager of the information systems product area of Ericsson Data, Radio. The department consists of five sections with a total of about 60 employees and 25 external consultants. The department plans to recruit an additional 30 employees this year.

"My department concentrates mainly on supporting Ericsson Radio with effective information systems," explains Pia Nygård.

Inherent energy

As an only child, Pia was spoiled with love, as she puts it. Only children are often instilled with strong self-knowledge and confidence in themselves.

"My parents always talked to me about seeking higher education, they harped on it to the extent that it became tedious at times, but eventually a university degree became a foregone conclusion for me," she continues.

Pia was born and raised in Borås in the west of Sweden.

She studied natural sciences in secondary school. She attended a seminar held by representatives of the College at Linköping and was attracted to the school.

Career woman and mother

Pia studied industrial economics at the College in Linköping from 1975 to 1980. She also met her husband-to-be while she was in college. After graduation, she moved to Stockholm, rented an apartment on Lidingö, and started working as a marketing assistant for an industrial company that manufactured screen-printing machines.

After the birth of her first child, Mattias, in 1983, Pia went to work for what was then AGA's computer processing department. The company was eventually bought out, and its name was changed to CAP Programator.

"I went back and forth between consulting and being a consulting manager, and enjoyed the work. I believe leadership is part of the professional role; it's also important to have a command of skills in



"I always have some work with to me do at home in the evenings and occasionally on weekends. But I definitely don't mind it. I'm too committed and involved in my job.

Photo: PETER NORDAHL

whatever area you work in and be able maintain contacts with customers," according to Pia.

During that time, her second son was born, Niklas, who is nine years old now. Pia Nygård says combining parenthood with a professional career has not posed any major problems.

"My husband and I have always planned together so that everything functions smoothly, and both my parents and his have been there when we needed them. I don't think the children have suffered in any way. Of course, I've had a guilty conscience occasionally when I've watched them leave the house in pants that needed patching because I couldn't find time to sit down at my sewing machine like other

She has her own ideas about management

ment manager following a reorganization at year-end 1995.

"It's like a booster shot in the arm, a new job generates new energy. I have a great gang of people to work with and I'm very proud of everyone of them. There is a spirit of solidarity."

Own philosophy

Pia Nygård has a carefully formulated philosophy that molds her management style. And she differentiates between the concepts of boss, or manager, and leader. You become the boss through appointment, but you become a leader through your own personal qualities.

"A good leader has a positive outlook toward people and doesn't hesitate to trust others, help bring out the best in them. The good leader provides scope for growth and tolerates mistakes, because it's part of human nature to make mistakes sometimes," she explains.

"Self-confidence is a basic requirement for being a good leader, an inner security, as well as a good sense of humor and the ability to open up in front of subordinates. I'm sort of a giggly person, I think it's good to be a little childish at times, which also entails a healthy portion of curiosity and a hunger for knowledge. I can be very inquisitive," explains Pia.

Privileged

Pia Nygård has been afforded ample opportunity to pursue her own personal development and leadership goals during recent months. In the autumn, she attended IFL, a management program conducted jointly by six large Swedish corporations, including Ericsson. In addition to focusing on personal development, other subjects included general business economics and the responsibilities of Boards of Directors. Pia has also been selected as one of two Ericsson women to take part in this year's Ruter Dam program, a Swedish mentorship program for women.

"I really am privileged to receive all these benefits. I think women need the extra push they get from these types of programs and seminars," Pia says.

Female network

She has particularly high hopes for the Ruter Dam program and being part of a female network, seeing how things function in other companies, and continuing to work with her own personal development. Pia also has high aspirations of working with mentors and hopes the exchange will be mutually reciprocal.

Pia Nygård's workweek is often in the range of about 50 hours. She devotes most of her free time to family, a complicated relationship with golf ("I've been trying to learn the game for 10 years") and her beloved half-timbered cottage in Skåne, in southern Sweden, where she goes to relax and "get away from it all." That feeling of "freedom and total release" is often a vital ingredient in maintaining the commitment and enthusiasm needed to tackle future challenges.

LENA GRANSTRÖM

Name:
Pia Nygård
Age: 39
Position:
Department
manager in
Ericsson Data AB
Manager of:
60 employees
Family:
Married with two
children, ages 13
and 9

With offices in seven Japanese cities and 2,700 employees working for the business unit, the pace of development is clearly rapid in Japan.

Focus on Japan

Quality requirements, system expansion and "Japanization" are key concepts for Mats Köhlmark, head of the PDC Mobile Telephone System business unit at Ericsson Radio as he describes the work currently progressing to upgrade the Japan project into a fully fledged business unit.

"It is important not to lose sight of all the good aspects of the project now that its business has acquired new dimensions," underscores Mats Köhlmark.

Apart from a brief spell with the Mobile Telephone Systems, American Standard business unit, he has been involved in the Japan project since the beginning of 1992, when work got off to a flying start. Slightly less than a year ago, he succeeded Gunnar M. Eriksson as manager of the Japan unit.

"We have completed all our tasks to date without missing a single service in' deadline - when a new service is placed in operation," relates Mats with a hint of pride. The most recent system delivery - to Japanese operator DTQ - on January 5 was a full two months ahead of schedule. The system delivered was the fourth release of CMS 30. Today, DTQ's network has 30,000 subscribers and a waiting list of 70,000. The shortage of mobile telephones in Japan means that not everyone can become a subscriber immediately.

Development of CMS 30 is proceeding, and it will be the fifth release that goes into service in Hokkaido at the beginning of next year.

Outside Kista

Today, the PDC business unit has some 2,000 employees, with the number expected to grow to about 2,700 by year-end, the majority being employed in the production units and in other locations, such as Finland, while only about 700 of the business unit's employees work in Kista.

"We are working towards stronger ties with the units outside Kista," notes Mats. "The production units, in addition to the Gävle plant, are located in Visby and Katrineholm, and we also receive components from Ericsson Components, Ericsson Radio Access and the Ericsson plants producing the AXE switches. All are of equal importance," Mats emphasizes.

Today, Ericsson has offices in seven Japanese cities, with approximately 450 employees working in the mobile telephony area. "Japanization," meaning the replacement of personnel on foreign-service contracts with Japanese employees, is regarded as an important task.

Two thirds Japanese

"Progress was slow initially, but now the process has gathered momentum, to the point where about two thirds of the workforce in Japan are Japanese," relates Mats, adding that it is important to increase the number of Japanese employees in management positions.

One reason for the slow initial progress of "Japanization" is that Ericsson has hitherto been a virtually unknown company in Japan. The situation is beginning to improve, and Mats hopes that Ericsson's name will become even better known when Ericsson begins production and sale of mobile telephones in Japan, scheduled to occur in 1997. With this target in mind, the Japan unit is already engaged in a technical cooperation program with the Mobile Telephony business unit.

Finding the source of faults

Quality is a word that has extra significance for all of the Japan unit's employees. Always keeping promises to customers is a fundamental principle, and in this regard the Japan unit sets an outstanding example within the Radio Communications business area.

"While the improvement in our quality has been noted by the customer, we have nevertheless been told it could be even better, which is why our active improvement program is so important," observes Mats. "When something goes wrong, a 'quick fix' is not enough - the Japanese want to know why it went wrong and find the source of the problem in order to prevent its recurrence. It is an attitude worth emulating."

Shorter lead times

Mats goes on to explain that lead times for development work need to be shortened. "One of our problems is that we sometimes start development work too late compared with our competitors."

Development in the Japanese market is proceeding so rapidly that it is essential to be present in the country in order to keep up. To this end, a technical unit is being established in Japan to work on development specifications.



Creating closer ties with Japan. Mats Köhlmark, checks progress with Japanese employee Akira Kawada, who joined Ericsson Toshiba one year ago.

Akira is currently spending six months with the Japan unit in Kista prior to returning to Ericsson Toshiba's headquarters in Shin-Yokohama.

Photos: KURT JOHANSSON



As the most important tasks during the current year, Mats singles out improving customer relations, keeping up with the rapid pace of growth and meeting customers' expectations regarding new system functions.

The future looks bright for Ericsson in the Japanese mobile telephony market, and earnings are expected to increase strongly in this segment.

However, Mats concludes on a cautionary note: "At the same time as competition becomes increasingly fierce, pressure on

prices is also expected to increase as operators reduce their own prices."

"We must maintain our favorable position in Japan, which is expected to become our most important market for the PDC system."

"While there is certainly also interest in this system standard outside Japan, particularly in other Asian countries, I do not believe that PDC will attain such an extensive worldwide distribution as, for example, the GSM system."

GUNILLA TAMM



Ericsson system approaches one million subscribers

Ericsson's decision at the beginning of the 1990s to focus on development of a digital mobile telephone system for the Japanese market has paid off handsomely. It is unusual for such a large-scale development project to bear fruit as rapidly as the CMS 30 has done.

When Ericsson's first mobile telephone system in Japan was placed in commercial operation in Tokyo in April 1994, would-be subscribers swarmed to sign up, and the rapid pace of growth has continued. Today, there are some 8 million subscribers in Japan, of whom 3.3 million use the digital PDC system. In December of last year, Ericsson's CMS 30 system had 800,000 subscribers. Early this spring, it will pass the one-million mark.

"The number of subscribers using our system grew more

rapidly than expected last year," notes Mats Köhlmark, manager of the PDC business unit. "We had anticipated a quiet in-between year in 1995, in advance of a renewed upsurge in demand during 1996, but that's not how it turned out!"

Four customers

To date, Ericsson has delivered systems to four operators in Japan, while another two operators have signed contracts for systems scheduled to go into operation at the beginning of next year.

Tokyo Digital Phone (TDP) was the first operator to place its system in operation, followed by Kansai Digital Phone (KDP) in Osaka and Central Japan Digital Phone (CDP) in Nagoya. The fourth Japanese customer, Digital Tu-Ka Kyushu (DTQ) in Fukuoka, placed its system in operation at the beginning of January this year.

Ericsson's two other Japanese customers, Digital Tu-Ka Hokkaido (DTD) in Sapporo and Digital Tu-Ka Hokuriku (DTH) in Kanazawa, are scheduled to place their systems in operation at the beginning of next year.

Orders surge

NTT is the Japanese operator with the most rapidly growing mobile telephone system. The MDE radio base station used in NTT's system was developed by Ericsson Microwave Systems in Mölndal and is produced at the plant in Gävle. The success of NTT's network has brought a flood of MDE orders to the plant, which has now expanded the MDE production area to meet the demand.

The continued development of the MDE includes a number of different projects, such as packet data transmission.

GUNILLA TAMM

Personnel to Japan via the U.S.

Attending a recruiting fair in Boston for the purpose of acquiring personnel for Japan is actually not as far-fetched as it may seem. This is how Ericsson Toshiba in Yokohama established contact with numerous Japanese students with degrees from U.S. colleges, who have become Ericsson employees.

Disco is a Japanese trade fair arranger which twice annually arranges a recruiting fair in Boston and San Francisco, respectively, which focus on Japanese students who are studying at American universities. At the latest fair held some weeks ago in Boston, about 50 companies participated. Many different industries were represented, with Ericsson, NEC, AT&T and others representing the telecom industry.

"During the three days the fair was in progress, we succeeded in interviewing some 80 persons, of which about 30 were deemed suitable, and with whom the recruiting process will continue," reports Anders Lindström, who works with operations development at the Japanese unit in Kista.

Together with three colleagues from Ericsson Toshiba in Yokohama, he represented Ericsson at the fair in Boston.

The students who visited the fair came from all parts of the U.S. and had received a special invitation. The common denominator was that all are in their senior year and have Japanese as their mother tongue, or are able to read the language.

The "Japanization" of Ericsson Toshiba is a vital task. It involves replacing foreign personnel, on contract abroad, with locally employed Japanese. Obtaining competent Japanese technical personnel who are fluent in English is difficult. Accordingly, one approach is to go via the U.S. Following the three preceding recruiting fairs, some 15 applicants have been employed. They are now undergoing a training program and, this spring, will, spend three months in Sweden.

GT



In December last year, Ericsson's CMS 30 system had 800,000 subscribers. This spring it is poised to pass the one-million mark.

Photo: JONAS HÖGBERG

GT

World record in GSM construction

Ericsson S.A. in Spain probably holds the world record for establishing mobile telecom networks. During nine months, from February to October, a network was installed. It included, among other things, 250 base stations and five switches for the country's second GSM operator, Airtel.

"We could never have managed without the extraordinary dedication on the part of our own employees in Spain and from the involved units in Sweden," explains Raimo Lindgren. "Our reward is a very happy customer, for whom we are continuing the network expansion."

It is important to say that this was achieved without lowering the very high service and attention levels to Telefónica, main customer of the company, whose subsidiary Telefónica Moviles was building its own GSM network at full speed as well.

On February 3 last year, Ericsson S.A. in Madrid was confronted with a real challenge. That was the day that Ignacio Sanchez-Galan from the GSM operator Airtel signed a contract specifying Ericsson as main supplier for the first phase of the company's mobile telecom network. The prerequisite for securing the assignment was that Ericsson undertake to have the network's initial phase ready for commercial operation on October 3. For Airtel, this date had a mystical quality since the authorities required the start-up on the same date.

The contest for the license

"At first, five different consortiums were vying for the second GSM license in Spain," Raimo Lindgren relates. "Telefónica, the country's main telephone operator, had already obtained a GSM network license."

"We elected to deal with all five of the competitors and established close relations with all of them. Ericsson assisted with planning, submitted budget bids and openly declared the entire time that they were treating all the possible winners alike."

At the same time, we kept Telefónica informed about our intentions to become suppliers of the future GSM operator - which was of course the aim of all the rest of the telecoms suppliers in Spain.

"Ericsson proved to be the best possible option, and I believe that we would have landed the order regardless of who won, if not exclusively, then in company with some other supplier," says Raimo.

Five became two

As happens in such cases, the field subsequently narrowed as the bidding proceeded. Some gave up and others combined so that only two remained to contest the license. Then, there was no longer any doubt that Ericsson would be the supplier.

"In order not to jeopardize our relations with Telefónica, to whom we were already delivering GSM network equipment, we divided up our radio operations into two separate organisations so that all activities vis-a-vis with both customers were clearly independent from each other." Raimo Lindgren considers that this measure is the key to being a supplier in a market in full competition.

"It was also necessary that we maintain our credibility with those competing in the bidding," Raimo adds.

Enormous investment

The final selection was announced in December 1994. Airtel, a consortium with American Airtouch as technological partner and leading Spanish companies and financial institutions, obtained the license. The fee for becoming the second GSM operator in Spain cost Airtel 85 billion pesetas - close to 700 million US dollars.

"When so much money is invested, it is of course important to become operational as soon as possible. We were well prepared as far as Ericsson was concerned, since they participated in the planning from the beginning. When the contract was signed on February 2, we were assured of the necessary resources and back-up to cope successfully with the first phase of the establishment in only nine months," says Ingemar Naeve, head of Radio in Spain.

"However, it was a little sticky at the start. Airtel needed

more time than had been planned for reaching agreement with the property owners regarding the placement of the radio base stations, which created more pressure on us in terms of deadlines.

Support from Sweden

Our colleagues in microwave communications in Sweden are entitled to a real commendation for their extraordinary efforts. Despite the already difficult delivery situation for the increasingly popular MiniLink, the Spanish requirements were given priority. Orders received by Retevisión, the carrier company, for MiniLink continued to increase the entire time.

"We received almost unbelievable support from Borås during this project. During the very last stages, we planned deliveries and installations in hours rather than days - and it all worked out!"

Raimo also wishes to express his appreciation for the work performed in the power area. In this situation, the Spanish power operations were the key, with invaluable support received from the Söderhamn plant.

Ericsson strength

When Airtel placed the network on-line at exactly the designated time, it was a highly satisfied customer who announced that this world record in GSM establishment could never have been achieved without Ericsson's assistance.

"The entire project demonstrates our unmatched strength and ability to combine forces when the chips are really down. Radio base stations, AXE switches, MiniLink and power equipment - these are all Ericsson items. Our local experience concerning Spanish conditions and our strong expertise in network planning were other factors which explain the success of the project," Jose Maria Ibanez, head of Ericsson Radio Airtel division, points out.

The first phase of Airtel's network encompassed 250 base stations and five AXE switches. The continuation of the expansion is proceeding at full speed. In the second phase, 400 base stations will be placed in operation. The final goal appears to be about 1,800, with an extra couple of switches in the network.

"Airtel has opted in favor of Siemens as the second supplier in order not to 'have all its eggs in one basket.' However, we aim maintaining 60 to 70 percent of the overall Spanish market. With the fast start we have with the first two GSM networks, I am optimistic," says Raimo.

Indelec the key

The successes in the radio sector have meant a great deal for Ericsson in Spain. An important explanation is Ericsson's emphasis on the Spanish company, Indelec. It has been taken over in stages from Telefónica and other shareholders and is now an important production resource for the radio segment, both in Spain and elsewhere.

"The involvement with Indelec was already a key factor when we landed Telefónica's GSM contract. The prerequisites for obtaining the other license included local manufacturing, so without Indelec, we would have been out of luck."

LARS-GÖRAN HEDIN

At the Headquarters of Airtel, some of its 1200 employees so far are working. An entrepreneurial spirit is characterizing this young company, which only a year ago only employed a handful. Ericsson S.A. has located its Airtel division to the same area of Madrid.



"Thanks for a fantastic job!"

Ignacio Sanchez-Galan describes himself as a very satisfied customer. He is head of Airtel, one of the two Spain's GSM operators.

"Thanks to everyone at the Ericsson international organisation, who supported us during the past year. What you have done has helped Ericsson S.A. a good way into the future. We still have a lot of radio base stations to be installed in Spain."

In one year, Airtel has grown to 1,200 employees. With 40,000 subscribers in the network after only five months in operation, the company has established a position as an alternative to Telefónica. Ignacio Sanchez-Galan, president of Airtel, does not hesitate to give Ericsson a large share of the honor for Airtel's successes to date.

"We had decided on our selection of supplier already before we were granted a license. It's a choice we do not regret. The cooperation with Ericsson has proceeded

extremely well. I have never seen foreigners who were so well integrated into the Spanish culture."

"Completion of the network prior to October 3, was a fantastic effort. I know that there were many persons at Ericsson who gave 100 percent and who worked day and night in recent weeks."

Most populous in Europe

Airtel began building its network in the major cities. After the second phase, at the end of the year, 80 percent of the population in Spain will be covered. Coverage will be 95 percent in 1997. This means more than 40 million potential subscribers, but the possibilities are greater in this tourist country.

"We are planning the network so that it can handle the doubling of the population which occurs in the tourist sites in the summer," relates Ignacio Sanchez Galan. The fact is that during certain parts of the year Spain is the most populous country in Europe. GSM with a panEuropean standard opens fantastic business opportunities for those who have a well functioning GSM service to offer.

One of the largest interest in Airtel is American Airtouch. The company has dealt with Ericsson for many years, a relationship which has not always been totally without problems.

Improved image

John Samarron, chief engineer at Airtel, was transferred to Spain from Airtouch. In his opinion, Ericsson's professional efforts for Airtel has also reaped benefits in the form of a significantly improved image with the American company.

"Airtouch and Ericsson had some problems in their relationship, but now you have demonstrated your capabilities. I believe that Ericsson must continue to focus heavily on being the technology leader and not get involved in such adventures as becoming an operator," says John.

"Now that we have chosen Ericsson, it is important that you are also the leaders in new areas.

"For example, we are now starting to cooperate with Ericsson regarding DECT and at the end of the year we will be testing PCN/PCS." LGH



Louis Lada, head of Telefónica Moviles.

Telefónica Moviles is leading in the fight for Spanish GSM subscribers. Ericsson has delivered radio base stations and switches to the network since 1991. The president of Telefónica Moviles, Louis Lada, is not concerned that Ericsson is now also a supplier to Airtel, a competitor. "We will continue the fine cooperation we have enjoyed for many years," he says.

Ericsson's major customer in Spain is Telefónica. The company has been one of the main suppliers to the wired network for many years. The big success

No threat to Telefónica cooperation

in mobile telephony came when Telefónica Moviles chose Ericsson as the main supplier for its GSM network. "We opened our GSM network in the summer of 1992, in conjunction with the World's Fair in Seville and the Olympic Games in Barcelona, but we were only allowed to market the service some months ago" relates Louis Lada, president of Telefónica Moviles. Technology from Ericsson was used, with which the engineers at Telefónica were already familiar. At the beginning of the year, the number of radio base stations in the network had grown to 1,300. They cover 50 percent of the area of Spain. Expansion is proceeding, with another 1,000 radio base stations during 1996, which will improve coverage to 75 percent.

"It is important that we improve the geographical coverage," contends Louis Lada. "There are many people who vacation in Spain and expect to be able to use their GSM telephone everywhere."

"We now have a total of one million mobile subscribers in Spain, but there are only 50,000 who have GSM. Development has not yet gained pace, but should accelerate from the beginning of 1996."

"We project 6 million subscribers by the turn of the century. This corresponds to 15 percent of the population - a figure not impossible to achieve."

Cooperation tradition

Louis Lada is not particularly concerned by the fact that Ericsson is also supplying the main competitor, Airtel. According to him, on the other hand that there are also advantages for Telefónica Moviles.

"The more who buy from Ericsson, the lower you can set your prices. And, from our viewpoint, we are receiving just as good a service from Ericsson today as we did before Airtel entered the scene. We have a long tradition of cooperation to build on and the personnel in both organizations are very well acquainted."

"In the future, there will be at least three, perhaps more, operators. With higher subscriber density, there is also room for others. The cake is big enough for everyone to share."

Smaller radio base stations

Louis Lada is optimistic about the future of his own company and for mobile telephony in Spain. He expects a near million GSM subscribers in his own network by the end of 1997. This assumes continued expansion, also indoors.

"One of our strongest desires at the moment is that Ericsson develop smaller radio base stations which are less expensive and easy to install, with built-in antenna and transmission equipment so that they can be easily installed in such areas as hotels, and shopping centers."



Ignacio Sanchez-Galan, head of Airtel, second GSM operator in Spain.

No one needs to tell our readers that things are done differently in the West and East. In the West, a red flag means a warning or signal that something could be wrong or needs attention. In China, MD110 customers award "red flags" to Beijing Ericsson Communication Systems Co., Ltd in recognition of excellent service. Ask Phil Canfield, Director of Service and Maintenance – he already has a dozen red flags in his office.

In China a red flag means thanks

Red flags are a nice Chinese tradition to say thanks for a job well done," Phil Canfield begins. "In the West, a customer might send a letter of thanks now and then when an extra effort is made. Here, our Service and Maintenance Department has received flags from MD110 customers primarily in connection with upgrades. We have also been given them for providing valuable installation assistance. Our customers appreciate it when we can upgrade an entire system without interrupting their day-to-day operations."

Phil Canfield, an American, has been working at Beijing Ericsson for about two years. He was previously Operations Manager for Ericsson's Western Region in the U.S. In China, his main task is to build up a nationwide service and maintenance organization in the world's largest market for MD110. If the size of the potential service market is not a challenge, establishing the concept of preventive maintenance is.

"Preventive maintenance is a new concept in the Chinese market that is slowly making inroads," says Phil Canfield. "The general attitude is 'why should I pay for something I don't need done – equipment should be fixed only when it breaks down or starts to malfunction'."

The attitude towards remedial maintenance is also different, Phil Canfield points out. "As in the West, if a system goes down, the customer knows he'll lose revenues or his company will have serious problems. However, phones aren't as common here, and if one goes down, it may take some time before the problem is actually reported and service is requested."

Targeting activities

Thus, the idea of selling a maintenance agreement hasn't been so obvious to the Chinese up to now – especially for a highly reliable product like the MD110, which usually has a low percentage of faults. "But preventive maintenance is slowly gaining ground as a concept – for example, we re-



From left: Hu Wen Bing, Gu Ju Ying and Fei Jue Ping proudly display typical examples of "thank-you flags" that satisfied customers have given to Ericsson Beijing Communication. The flag on the left, from the Jin Zhou Chemical Company in Jin Xi, Liaoning Province, states "For Classic Service and Outstanding Technology".

Photos: THORD ANDERSSON

cently signed our first service maintenance contract for Proctor & Gamble's Chinese network."

Phil Canfield has set a number of targets for Beijing Ericsson's service and maintenance activities. Within two or three years he hopes that a large percentage of MD110 lines will be under contract in China. This goal will be fulfilled by first signing

maintenance agreements with joint venture and representative companies operating in China. After that, operations will be expanded to include Chinese MD110 customers.

Today, Beijing Ericsson's service and maintenance department has only 85 employees to cover the entire Chinese market.

"If service was provided as in the West, a preventive maintenance organization for a market of this size would normally require about 400 people," comments Phil Canfield. "But here, we don't even do installations the same as 'back home'. We put the MD110 in, somebody else does the cable plant and phone installations, the customer provides the database and we simply enter it. The various local PTIs bring in the trunks and do those connections. We put in the MD110 system and power it up. We can sometimes provide advice to customers in the background. We're slowly working to make contacts with the local PTIs to sell our capabilities and explain our desire to become more involved in service, maintenance and installation for our joint customers."

Promoting service

Phil Canfield's department has no staff of its own for selling maintenance agreements. Service contracts for upgrades are being promoted through Beijing

Ericsson's sales and marketing organization.

"We will attach maintenance contracts to upgrades and include warranty agreements in the initial sale which can be easily activated later," he explains. "We will also put in incentives for the sales force to push maintenance."

Today, the organization has to be capable of handling a number of BC software releases, from BC 1 up to BC 7. BC 6.3 is the most commonly used release in China at present.

Inviting PTT representatives to participate in User Group Meetings is another way to inform them about Beijing Ericsson's preventive maintenance, service and installation capabilities. "Our relations with the local Chinese PTIs are much better today as a result," says Phil Canfield. "The Users Group has actually employed one of the reps as a consultant. Today, we deal directly with the local PTT offices around the country. About 75 percent of our activities are currently out in the provinces, away from Beijing."

CESEC, a Chinese military organization, is a demanding customer. BEC sells and delivers MD110s to CESEC and provides technical support. One of the new service providers, Ji Tong, is a leading-edge customer that utilizes MD110s and Eripax for video and data transmission through satellite links connecting various locations in China.

Patience is a virtue

With professional experience from the U.S., the most competitive and dynamic telecom market in the world, Phil Canfield has learned to accept that things move differently and more slowly in China.

"It's been an education and great experience," he says with a smile. "Here, patience is a virtue and you have to use a different managerial style. I am learning to adjust, and as a result, our service and maintenance organization is on the right track today."

"The transition has also been smooth for my wife, Lin. We're having a grand time here in Beijing," Phil Canfield ends. "Every day is a new adventure."

THORD ANDERSSON



The switchboard operator at Beijing Power Bureau, where Phil Canfield and his crew recently upgraded the company's MD 110 system. The PBX was expanded from 6,000 to 10,000 lines, making it one of the largest in Beijing.

Beijing Ericsson Communication Systems

Beijing Ericsson Communication Systems Co. Ltd is the largest joint-venture company to be started by Ericsson in China to date. Ericsson has a 55 percent interest, while the remaining 45 percent is owned by Ericsson's partner, the Beijing Wire Communication Plant, a company owned by the City of Beijing. Beijing Ericsson Communication Systems manufactures and sells Ericsson's MD110 digital PBX. About 400,000 lines are sold annually.

In addition to Beijing Ericsson Communication Systems, Ericsson has joint venture companies in China within the radio communications (mobile telephony) and public telecommunications fields. PBXs of the MD110 type have been sold in China since the mid-1980s. Despite stiff competition from all leading manufacturers, Ericsson now has a customer platform with more than 1.4 million sold MD110 lines in China.

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Lithuanian GSM network ready in three months

It's impossible! This was the reaction when it became known that the next major project for LM Ericsson A.S. in Denmark was to install a GSM network in Lithuania in just three months. The first phase was scheduled to be in operation already in October, according to the contract signed with Mobilios Telekomunikacijos, a consortium comprising Tele Danmark International, US West and the Lithuanian telecom Telekomas. Nevertheless, what was considered impossible by all was accomplished, within the prescribed time. Installation personnel from Ericsson in Denmark were already in the country when the contract was signed. They had just completed installation of an Axe exchange in the port

city of Klaipeda and were familiar with the work condition in Lithuania. There involvement was key for rapid installation.

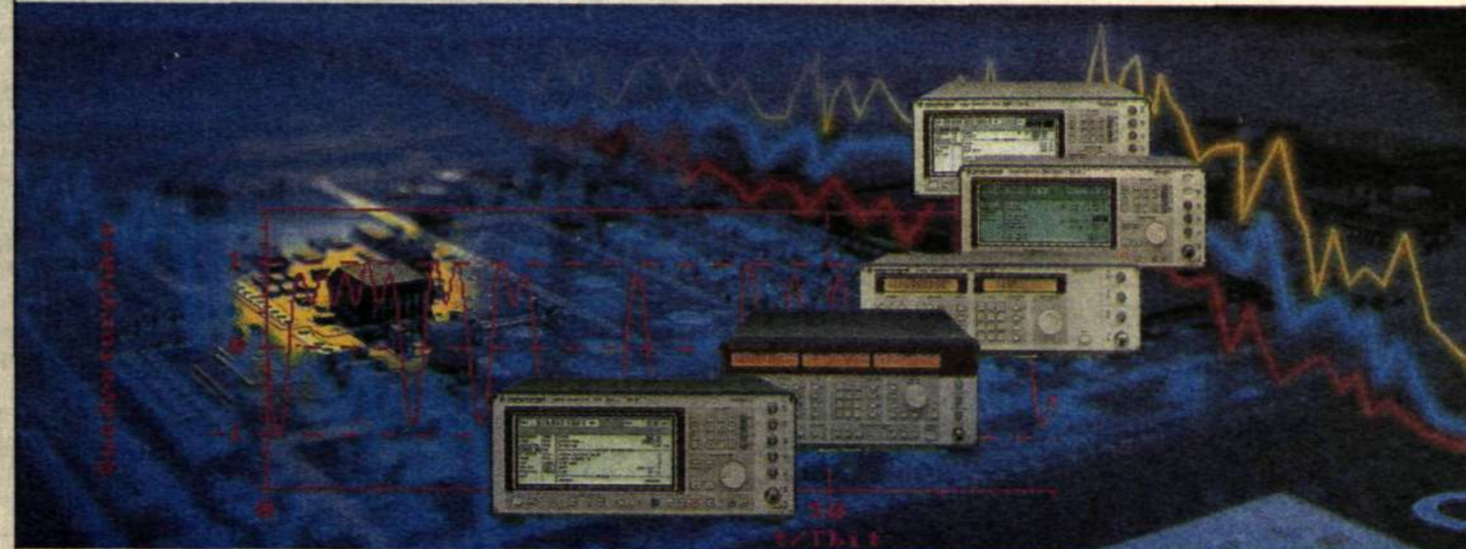
Long work week

The installation work in Lithuania was carried out on a scheduled that could be described as virtually 'round-the-clock'. A normal work week was 8 a.m. to 7 p.m. except on Saturday and Sunday, when work was halted at 5 p.m.!

The working conditions were somewhat different than in Denmark. In Lithuania, the mobile switch was installed in a building that was still under construction. The room for the exchange was the only room that was completed,

the rest was a building site. There were no toilets.

The base stations and antenna masts were installed on the roofs of apartment buildings in the city. This was not an easy task. Many Lithuanians viewed the antennas suspiciously and were worried about electromagnetic radiation and other hazards. There were instances of building tenants actually blocking the roads into the housing areas. The Danes had to call on local authorities to assist them so that they could proceed with their work. Despite the difficult conditions, the Danes succeeded in installing a system that could be turned over to Mobilios Telekomunikacijos on October 2 last year.



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AXE has a function for networks of the future

AXE of today has little in common with the switching systems which first saw the light of day in Södertälje in 1976. However, the basic structure is the same, which is AXE's strength.

Fundamentally, AXE is designed so that new functions and technology can be added, in recognition of changes in market conditions and technical development.

"The trend we perceive in network structures and technical development is that AXE will have a function to fulfill in future networks well into the next century," says Roland Nordgren, who heads Switching product management within the Switching and Network Systems business unit.

A highly comprehensive modernization of AXE hardware has been under way during the past six months.

Rationalization measures within hardware are nothing new for AXE. Since its inception, these have been conducted continuously according to the principle, cheaper-smaller-simpler.

However, in contrast to earlier measures, an overall hardware concept has been adopted, accompanied by a complete modernization and rationalization of AXE's entire core.

Quite simply, AXE must cost less to manufacture, occupy less space and be simpler to handle, both for the supplier and the customer.

"We will update all AXE hardware products in successive stages," says Hans Giertz, who is responsible for hardware modernization at Switching and Network Systems.

The figures he presents demonstrate that drastic measures can be expected. The manufacturing cost shall be significantly reduced by 1998. Hardware shall undergo a 60-percent reduction in size by next year, and 80 percent by 1998.

At the same time, production, installation and maintenance of AXE shall be rationalized through active standardization, and a reduction in the number of product variants. There presently exist hundreds of circuit card variants in AXE. These are to be significantly reduced in number during the next two years.

Three basic preconditions

"Modernization is based on three basic preconditions: Firstly, we are introducing a new fabrication approach, secondly, we are altering the internal interface of AXE hardware. Thirdly, we are implementing more modern hardware technology," Hans relates.

One concrete result is that the amount of cable can be reduced 16-fold. More modern technology also facilitates replacement of the large number of code receivers in AXE with a single hardware product, a digital signal processor. This can replace about 50 hardware products. The functions are placed instead in the software.

"We must have a balance between the market and technical development"

"We will also improve functionality, for example, by adding a wideband group selector and by updating the interface to the operator with the aid of IOG 20," Hans continues. "IOG 20 can handle debiting functions, among other features."

An additional advantage with hardware modernization is that it can be used for expanding and updating old exchanges.

Customer advantages

Modernization has numerous advantages from a customer standpoint. These include shorter delivery and installation time, and increased delivery precision. It is also anticipated that the modernization program will result in higher quality and improved system functionality, and reduced operating and maintenance costs.

Ericsson Telecom's Switching and Network business unit and Ericsson Radio Systems are the organizations stipulating the modernization requirements, since they have the same basic AXE requirements. However, Switching and Network Systems and Ericsson Utveckling AB are responsible for implementing the project.

Renewal of the subscriber stage

Improvements will be successively unveiled during the year. However, the major release will not occur before 1997 and encompasses both AXE's core and the SSS (Subscriber Switching System) subscriber stage. Renewal of the subscriber stage is in progress as a separate hardware project called AXESS M, which is presently in the initial stage of a preliminary study. Here as well, it is a matter of cost rationalizations and reduced size.

"We are rationalizing as well as modernizing in order to cope with the competitive price squeeze. We are aiming at devising a new way of viewing the mechanical structure. We wish to capitalize on technological advances and to provide more up-to-date hardware units while making them more compact," says Hans-Erik Svensson, one of the project's requirement-formulators.

Similar efforts are under way in AXE software, including the implementation of the AM (Application Modularity) structure.

"AM affords us the possibility of reusing software. This, in turn, results in lower costs for us and shorter lead-times and higher quality for the customer," interjects Roland Nordgren.

Future product

But how will AXE look in the 21st Century? How far have we progressed with the development of total network solutions? What significance will Internet have for the future of telecom networks? Who will be the purchasers? Who will do the selling? There are a multitude of questions and at least twice as many answers.

"I view AXE as a platform for all types of future telecommunications. There is an increasing integration of fixed and mobile telephony, with each having AXE as its foundation, as is the case with our other business communication products. The further development which we are now involved in thereby benefits many of Ericsson's business areas," says Magnus Braxell, who is responsible for strategic business planning and systems development of AXE within Switching and Network Systems.

As with all product development, the modernization of AXE is being conducted on a commercial basis. Ericsson must ensure that its profitability and competitiveness are sustained while keeping a vigilant eye on the market and technology.

Magnus emphasizes the latter aspect.

"We must have a balance between the market and technological development. It is of vital importance for AXE's long-term development that we remain in the forefront of technology. This provides us with possibilities for offering solutions to customers that they may not have uncovered. Successes in the mobile segment are examples of this," he points out.

Cost and delivery time

The development of AXE is proceeding both in the long and short term. In the long term, continuous technical development of the platform is what is important. In the short term, the focus is on satisfying today's customers by rapidly devising solutions based on the existing product assortment. This applies particularly to new operators who have emerged in pace with market deregulation in country after country.

"In addition, extreme price competition and customer demands for faster deliveries contribute to a drastic requirement that we reduce our costs and shorten the delivery flow to customers."

"Accordingly, we have now taken a firm grip on the delivery-flow aspect and have defined an improvement program, TTC 55, which in principle affects all Ericsson Telecom functions, from product management to installation," Roland Nordgren concludes.



"AXE definitely has a future in the network structure of tomorrow," according to Roland Nordgren who heads Switching product management within the ETX business unit Switching and Network Systems.

AXE a product with an assured future

AXE began being developed at Ellemtel in the early 1970s. In 1976, the first switch had been completed in Södertälje.

Since then, AXE has been altered numerous times, but the basic structure is the same. It consists of two components: the APT telephony segment and APZ, which is the control and memory segment. APT is subdivided into various subsystems. If compared with the human body, APT can be described as the heart and APZ the brain. Both APT and APZ consist of hardware and software.

AXE is a computer-controlled system, a so-called SPC (Stored Program Control) system. The advantage of having the switching software controlled in this manner is that alterations and additions of new functions can be readily handled within the system, in pace with changes in technology and customer demands. The basic architecture, with a control segment and a telephony segment, is the same in all SPC-based telephony systems. This makes it completely independent of the technology being applied. This is why AXE is said to be future-proof.



LOWER IN PRICE, SMALLER, SIMPLER. Ericsson is now implementing a complete modernization and rationalization of AXE's entire core. In the future, the world's most widely used switch will cost less, be more compact and simpler to handle, both for the supplier and the customer.

Illustration: MAGNUS ANDERSÖ

Telecool keeps it cool

New generation of Ericsson cooling and climate installations

Telecool is the name of Ericsson's cooling and climate control systems. The installations are critical for the efficient operation of today's compact electronic switches and base stations.

Telecool helps telecom installations stay cool in more than 50 countries today.

Modern electronic switches for public telephony are highly sophisticated and very compact. Base stations used in mobile telephony are also becoming smaller and more efficient. The trend toward "smaller" has yielded certain advantages, but has also presented some problems. One problem is the heat generated in telecom rooms, which must be cooled down. That's where Telecool enters the picture.

About 50 people from different Ericsson companies gathered in Stockholm for a three-day seminar in January. Most business areas were represented with personnel from Sweden and abroad, ranging from Moscow to São Paulo.

In addition to presentations of existing and new products, the participants were also provided with detailed information about the most important cooling principles for telecom equipment.

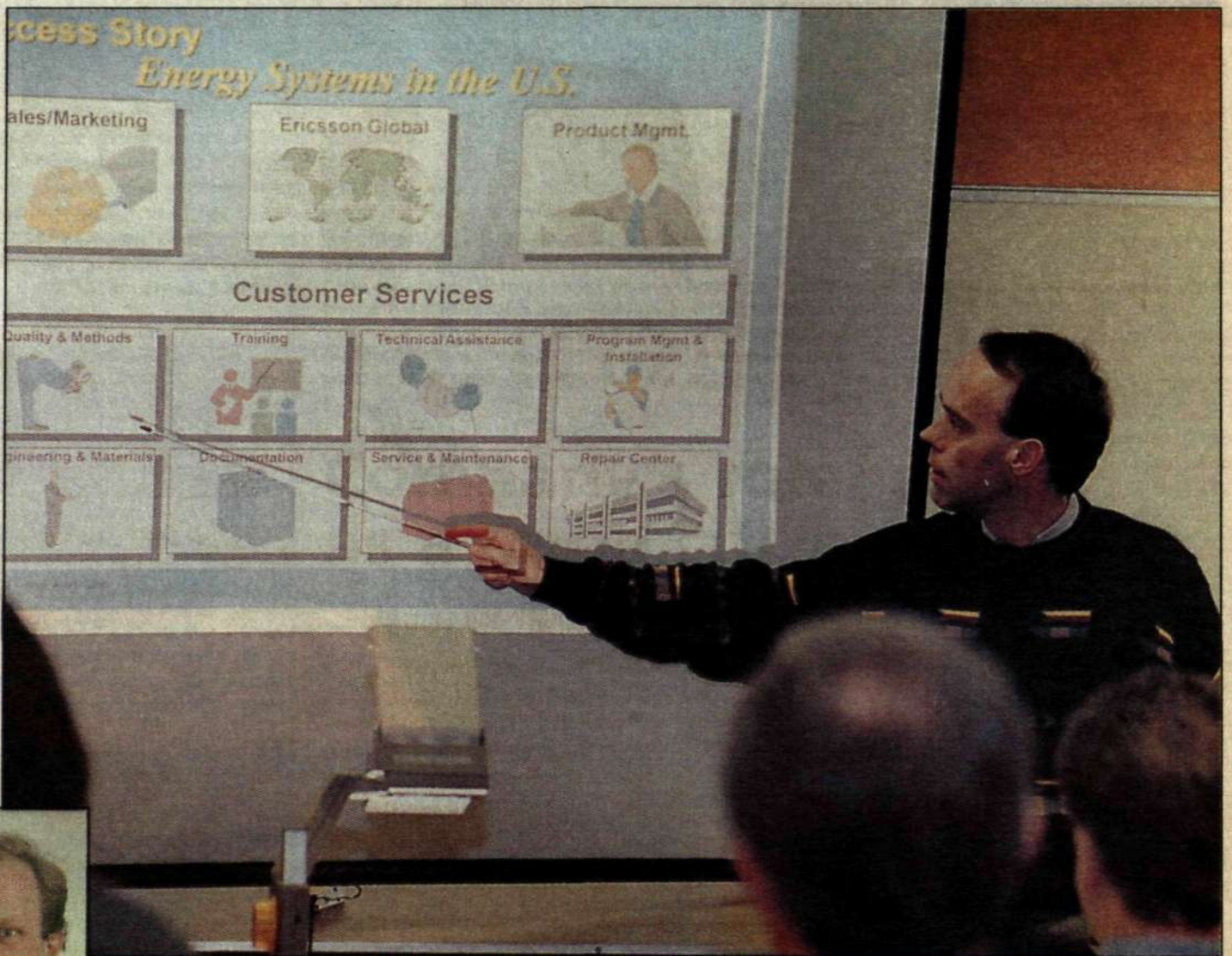
Products unknown to most

Everybody in Ericsson is familiar with AXE and GSM. But many are in the dark about Telecool, although it is a series of products that enables AXE exchanges, for example, to function efficiently. The switches and base stations that form the hub of today's sophisticated telecommunications systems would encounter serious operational problems if they were not cooled properly.

For this reason, Ericsson is one of very few telecom companies in the world today that, since the late 1970s, has developed and manufactured its own climate control systems. Many other suppliers of telecom equipment rely on cooling systems made by independent manufacturers. Most systems were developed originally for other applications, such as air conditioning of stores and hotel rooms. Ericsson, however, chose to develop a series of climate control systems designed specifically for telecom technology.

Furious development

As in all other areas of telecommunications, new developments in equipment used to cool telecom installations have been fast and furious, both for conventional and mobile telephony. The Energy Systems Business Unit, which is part of Ericsson Components, includes a "cooling department" with about 40 employees working almost exclusively on



Lennart Ståhl, coolant product manager for Ericsson in Dallas, Texas, presents Ericsson's coolant and climate control systems. Henrik Albrecht (inset) is marketing manager of Telecom Cooling within Ericsson Components.

Photo: Anders Anjou

telecom cooling, or climate control systems.

"Our staff also works in the field for other Ericsson companies. The employees of Ericsson Radio serve as coolant technology consultants and help formulate solutions to cool the very smallest base stations for mobile telephony," says Henrik Albrecht, marketing manager of Telecom Cooling within Energy Systems.

New generation

During the first half of 1996, Ericsson will introduce a new generation of Telecool systems, which include three different systems designed specifically for large, medium-sized and small spaces for telecom installations, Telecool DP, Telecool DP-S and Telecool Split, respectively.

Telecool Compact is an older product that has contributed to eliminating the need for large rooms with bulky cooling installations.

A successor, Telecool Classic, led to further reductions in installation times. An efficient climate control unit that does not require a great deal of space can make significant improvements in the cost-effectiveness of telecom installations.

There is also an even smaller and more complete cooling unit, Telecool Aero, which is delivered in containers ready for operations. It was developed to meet Ericsson Radio's climate specifications and requirements for a simple installation in containers.

Pro-environmental

"We use water as the coolant. Refrigerants used in our systems do not contain any freon," says Micael Norén, manager of the coolant department's market communications function.

In addition to familiarizing themselves with Telecool products, the seminar participants also listened to different experiences from sales of Telecool in the U.S. After launching its different climate control systems in the American market recently, Ericsson has sold more than a dozen units in a rather short period of time.

Only telecom company

An important element in its success on the American market has been Telecool's lower total costs over prolonged periods of time, compared with the products of several competitors.

No other companies in the coolant sector are telecommunications companies. In the U.S. and throughout the rest of the world, Ericsson competes with more conventional climate control companies. In its business dealings with telecom companies, therefore, Ericsson's proven ability to meet the needs of an entire chain of industries is a strong sales argument.

Serving all

"Our Telecool products can even be installed to serve telecom equipment supplied by other manufacturers," explains Håkan Zirath, marketing manager for Europe, Latin America and the U.S.

Nearly 700 complete units and about the same number of smaller systems have been delivered to customers in more than 50 countries in all parts of the world.

In addition to AXE, Telecool is also used today to cool telephone systems from Alcatel (E10 and 1240), NEC, Siemens, Fujitsu, Northern Telecom, Nokia, AT&T and System X installed around the world. No doubt, this is a tribute to the system's functionality and high performance standards.

LARS BÄCK

Relay manufacturing sold

Ericsson Telecom AB is selling the relay manufacturing unit at the Main Plant in Stockholm to the Japanese electronic company Anritsu Corporation as a part of the business area's ongoing restructuring program.

Selection of Anritsu was easy. Ericsson has manufactured relays on license from the Japanese company for many years. Anritsu will establish a new company to be located in the Stockholm region and that about 70 persons who work with relay manufacturing will be offered employment in this company.

AXE to Krasnoyarsk

Ericsson Nikola Tesla has signed a contract with Elektrosviaz, the largest operator in Krasnoyarsk, Russia. The contract, valued at SEK 90 million, comprises AXE equipment for digitizing and modernizing of the public telenet in Krasnoyarsk in the Siberian region of the Russian federation.

The contract runs for a five-year period and installation will begin next year. This order strengthens Ericsson's position as a supplier of digital exchange equipment to the Russian federation.

The Consono MD110 PBX provides the user with a variety of functions, services and applications. In order to provide increased user flexibility, Ericsson Business Networks AB is providing a product package in the computer-supported telephony area under the collective name of Consono Personal Application Suite.

Telephone debuts in your PC

the first of the new products, Consono Personal Screen Call, was officially launched at the beginning of October, when a new unit for end-user applications was also formed within the Business Communications Business Unit.

"Our products are designed to support sales of the more "heavy-duty" Consono packages," notes Kurt Hörnqvist, manager of the new unit. "Core products such as the MD110 switch itself, Mobility Server, Call Center, Network Management and IsoEthernet make up the base package. But functional user applications serve to make the entire package more attractive."

Great potential

Some 8.5 million MD110 lines have been installed worldwide to date, and this figure is increasing by about one million lines each year. End-user applications are offered both to first-time purchasers and customers with the base package already installed.

"We present a uniform application offering for all the users in a company," continues Hörnqvist. "The customer benefits from having a single supplier, thus simplifying both support and upgrades. The advantage for Ericsson is that a single transaction brings in many new users and thereby sells many application licenses."

Today, products such as end-user applications are based on the Open Systems Interconnection (OSI) standard. All the complications associated with proprietary solutions are a thing of the past, with openness taking over as an important competitive feature. There are also plans to make the base applications developed by Ericsson Business Networks available to independent application development companies in the open market.

Early in 1996, the new products will be joined by the Software Development Kit "toolbox," which comprises base application modules, development tools, standard interfaces, codes, technical support and

training, and verification – to ensure that the application developments actually work.

"For example, an Ericsson local company could cooperate with a third company to develop customer-specific solutions," explains Hörnqvist. "A case in point was when Ericsson Software Technologies, in Ronneby, developed a customized catalog function based on Personal Screen Call for Nestlé France, already an MD110 customer."

Future vision

PC-supported telephony, Computer Telephony Integration, Screen Based Telephony – these are just some of the names applied to this class of products. Kurt Hörnqvist predicts that the next few years will also see the development of more versatile terminals.

"Today, a reasonably advanced business user possesses a wireline telephone, a mobile telephone, a fax machine, a PC and in many cases a cordless company telephone, each of which may perform various special functions.

"The trend is towards some form of integrated universal fixed terminal that can be customized to suit individual preferences and used in conjunction with the mobile telephone of the future, which could be a refinement of the new integrated Dect/GSM terminal equipped with a graphical user interface, or GUI."

End-user applications are one way to maximize its market position and capitalize fully on features that are unique to Ericsson products. Users, who navigate among the increasingly sophisticated services provided by today's communications packages, have become an increasingly significant target group for all Ericsson companies. Corporate customers naturally have larger financial resources and a greater willingness to invest than private individuals. This is why Ericsson Business Networks is breaking new ground in this area, but similar types of products for consumer applications cannot be far behind.

KARL MALMSTRÖM



ABOVE: The combination of wireless Freetel and computer-supported telephony is setting the future trend.

The operation is run by Reddy Kosuri, Bertil Allén, Mats Fellidin, Kurt Hörnqvist, Magnus Föllinger and Johan Myrberger.

Photos: PETER NORDAHL



Helping you to communicate freely

New applications bridge the gap between the telephone and the more accessible computer screen. Now the computer can graphically display the technical functions performed by the telephone.

The aim is to enable you to handle all your communications directly from your PC. The first of the new applications, Consono Personal Screen Call, lets you make an ordinary call in a new way.

Incoming and outgoing calls and queued calls can be more clearly identified by on-screen displays showing, for example, who is trying to contact you when you are already answering a call. Frequently used numbers can be preprogrammed so that you can place a call by simply clicking on the screen with the mouse. You will also be able to make notes on-screen during the course of a conversation. The notes will be automatically referenced to the call and stored with clear information about who you were talking to, and when.

Personal Screen Call also makes the company switchboard's directory information available to everybody, and not just to the switchboard operator as is the

case today. The need for printed telephone directories is virtually eliminated.

Next in line is an application for users wishing to access PCS – or personal telephony – services via Consono Mobility Server. The user will be able to control and direct the communication flow on-screen, having first entered a customized user profile containing frequently called numbers.

This is how PCS services already operate today, but having clear instructions, numbers and names displayed in readable form on-screen is obviously a more user-friendly procedure than pressing function buttons on a telephone. The more advanced a service is, the greater the need for clear graphical presentation of its capabilities.

Computer-assisted telephony is developing rapidly, with more ways to help the user becoming available. The Consono range currently comprises some applications developed by Ericsson and some that are purchased externally. In addition to the new Personal Application Suite, it includes, for example, Visual Mailbox, for receiving voice and fax messages, and ProShare, which supports computer and video conferencing. **KM**

New packaging is better for environment

Mobile phone cartons can be nested

As part of Ericsson's effort to be a company that assumes responsibility for the environment, Ericsson Mobile Communications in Lund has developed an environmentally compatible packaging system for its mobile telephones.

"The new concept is based on avoiding the use of plastic material and is based instead on the use of recycled paper," says Thomas Westman.

He works in the Global Product Support unit where, as a packaging specialist in the mobile telephone field, he is responsible for both EMC's packaging and that of suppliers, as well as marking and labels. The new cartons are already being used in the Kumla factory and Thomas also has plans to introduce them in the Lynchburg, Virginia plant in the U.S. where EMC produces telephones for the American market.

Environmental concept

"It is important to introduce a packaging concept in all sectors of operations,"

Thomas says. "Beginning with product development, we should consider designs that can enable us to reduce the total volume of packaging, including packaging that is to be stored and transported.

"In addition to the fact that they cost less for our company, smaller volumes of transports also have less impact on the environment in the form of reduced exhaust emissions from trucks." The new ("egg carton") telephone cartons made of corrugated fiber that are now being used – and that can be "nested" inside each other when empty – are a good example of improved packaging, he thinks. The packaging used earlier, which was made of expanded polystyrene, required much more space since it lacked the "nesting" feature.

Differentiated charges

It also costs more to dispose of expanded polystyrene. The charge levied in the German Duale system is DEM 2.95 per kilogram, compared with DEM 0.40 per kilogram for paper-based products.

"Sweden also has a comparable system, REPA, with differentiated charges de-



The new telephone carton made of corrugated fiber is a good example of how Ericsson has given increased consideration to environmental issues in the packaging field. The new carton material saves space and is easier to recycle.

pending on the material used – although it is not as explicit as the German system," Thomas notes.

In connection with the change of the inner packaging that holds the telephones, the outer carton is also being changed.

"We have a carton that snaps together, locking its sides, and we don't have to glue it together. The entire system is designed in such a way that packing can be handled automatically by machine, which saves manual labor," Thomas notes.

He adds that all packaging of accessories has also been reviewed. In this area, the percentage of plastic material used will be reduced and more environmentally compatible materials will be employed.

"At present we are buying the new fiberboard from Assi Domän Porpac, which is

located in Lindesberg, close to Kumla, Sweden. But we are naturally keeping track of what other companies can offer," Thomas says.

Important "Rs"

Developments in the field are occurring rapidly and Thomas, as a packaging specialist, is the chairman of a technical committee in Packforsk, an industrial research institute that promotes studies in the field.

"We are looking for research projects that can be applied in electronics and the engineering industry," he explains.

In the United States packaging specialists speak of "three Rs" where environmentally compatible packaging is concerned: Reduce (the amount of packaging), Re-use (old material) and Recycle (material for new uses after processing).

"In Europe," Thomas says, "we would like to add two more Rs – for Recovery (of the energy in packaging through incineration) and Refusal (to use materials that are not environmentally compatible and which have to be dumped.)"

ALF ÖST

Formal inauguration

Ericsson Cables opens new joint-venture plant in Malaysia

A formal inauguration of a plant for manufacturing optical-fiber cable took place on January 19 in Sham Alam, outside Kuala Lumpur in Malaysia. The plant is owned by Opcom Cables Sdn Bhd, which was formed in October 1995 in a joint venture between Opcom Holdings and Ericsson Cables AB.

The inauguration was presided over by Vice Premiere Y.A.B. Dato' Seri Anwar Ibrahim, Mr. Mukhriz Mahatir, Chairman of Opcom Cables and Bert Jeppsson, who heads the Components business area.

"These commendable efforts reflect the business activities which will ensure our progress toward becoming a well-developed country by the year 2020," said Malaysia's Vice Premiere. Mr. Mukhriz Mahatir unveiled Opcom's vision of becoming the dominant manufacturer of optical-fiber cable in Southeast Asia.

Transfer of technology

"The fact remains, however, that optical-fiber cable is a global industry and that a strong manufacturer should not limit itself exclusively to the home market. But to compete with the international telecom giants, we must first grow strong in our own backyard," said Mr. Mukhriz.



Janne Sjöden poses with personnel from Opcom Cables, many of whom were trained in Hudiksvall, Sweden..

"With Ericsson's state-of-the-art technology, Opcom is able to master optical-fiber cable know-how and can focus on competitive optical-fiber cable of highest quality," said Mr. Mukhriz.

Opcom Holdings selected Ericsson among four Japanese and European cable

companies. Ericsson Cables made the strongest impression.

The transfer of technology from Hudiksvall has proceeded since spring 1995. The company was established a year ago in a joint venture in which Opcom Holdings owns 70 percent and Ericsson

Cables AB owns the remaining 30 percent.

A number of engineers from Malaysia have been trained in Hudiksvall, with machine operators in Malaysia having been trained, in turn, by the engineers who visited Hudiksvall.

On November 1, the first kilometer of cable rolled forth from the Sham Alam plant, which was built and made ready for operation in record time.

The plant's production capacity will be 12,000 km of optical-fiber cable annually, mainly duct cable and aerial cable, with up to 96 fibers on plant premises of 6,000 m². This will also be the site for manufacturing and marketing optical-fiber cable accessories.

"Opcom Cables has started production very rapidly, with the company the object of intense mass media coverage, both in Malaysia's newspapers and TV," Janne Sjöden, president of Ericsson Cables, confirms.

"Malaysia's economic and social development is extraordinary. To have proceeded so successfully is only possible through the people in the country being susceptible to development, encouragement and motivation for future challenges," said Bert Jeppsson in his formal address.

INGER BJÖRKLIND BENGTSOON

Incredibly easy to use

New PCsystem simplifies radio network planning

Radio network planning has always been complicated. However, with Ericsson's PC-based RAPS system, a new version of which is now being introduced, you can learn to plan sophisticated radio networks in just one week.

The new version is also able to calculate both radio coverage for omnidirectional antennas and the path for radio links.

"You can usually recognize network planners by the shiny surface on the knees of their trousers, which they get from crawling around on large maps spread across floors," says Dan Haglund, who works with RAPS (Radio Planning Service), a system for radio networks.

"That era will soon be history, however. With our new system, all maps are fed into the computer, thereby enabling planners to roll out maps in different directions, zoom in on details, insert radio transmitters, recognize obstacles, move stations and much more," he continues.

Radio networks growing

New telecommunications networks are using increasing degrees of radio to rapidly reach large numbers of subscribers. This applies to mobile telephony, so-called personal telephony, "fixed cellular" (mobile telephone networks for fixed telephony) and "Radio in the Local Loop" (RLL), which uses radio to replace copper wire in local networks.

A common feature of radio networks is that, in parallel with growing numbers of subscribers, they are taking on more radio base stations and the cells are becoming smaller.

Transmission

As a result, focus in many cases is shifting toward transmitting within the network, connections between switches and base



The screen displays the Ludvika area in Sweden, with maps of surrounding areas to facilitate calculations of link paths; terrain profile of the path is shown in the upper left-hand corner. The so-called sight-coverage diagram can be seen in the lower left-hand corner; it is used to identify suitable sites for transmitters. The unmarked sections indicate areas with good coverage.

stations. The work involves connecting the increasingly complicated networks with radio links, making sure the links are optimally placed so that signals reach their destinations without interference from natural obstacles in the terrain (or each other, for that matter.)

A smoothly functioning simulator system is needed to accomplish these objectives, as well as for radio coverage. RAPS, Radio Planning System, which is based on techniques for calculating the propagation of radio waves, meets all requirements. The technique was originally developed 20 years ago for military applications.

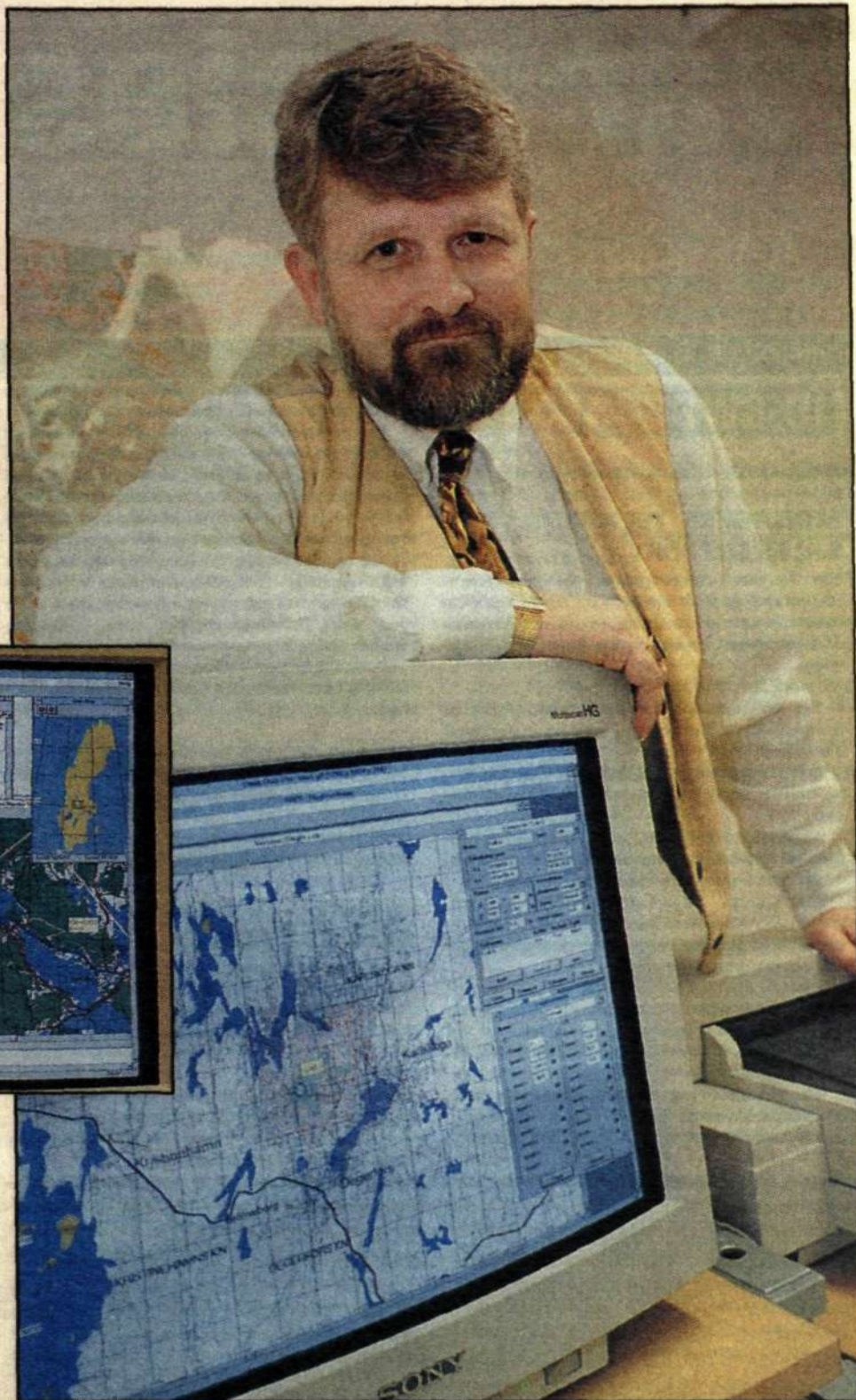
RAPS is suitable for all radio systems that use several frequencies, such as field radio, radio sites, mobile telephony, land mobile telephony, etc.

Powerful PC

Equipment required for the new RAPS 30 version includes a powerful PC with windows, a quality screen and high storage capacity. RAPS uses several databases. One for background maps and terrain, another for radio material and a third for storage and retrieval of data created by the networks.

"Personal computers are not some sort of 'toys' today; technical development has been tremendous and PCs are approaching the level of such work stations as UNIX, VAX and the like," explains Dan Haglund. "Also, many people have their own PCs today, as well as Microsoft software, or Windows."

The screen displays a map that has been entered into the system. The map shows an area west of Stockholm. If necessary,



"The new version of the Radio Planning System (RAPS) is a broad coverage and user-friendly tool for calculating radio coverage for omnidirectional antennas and paths for radio links," explains Dan Haglund, of Ericsson Microwave Systems AB

the scale can be zoomed up to 1:10,000. Everything is marked by elevation lines and clearly denoted in colors that symbolize different types of landscape, for example, forests (green), open fields (white), marshland, water, etc.

Using the mouse arrow, the user can move around the map and "roll in" surrounding areas.

Network planners can then place a site with a radio transmitter on the desired spot and easily produce clearly marked surfaces that show how radio waves propagate, the best locations for reception, areas where there might be radio shadows, etc.

Network planning always involves working with several alternative solutions. The system, consequently, has to "know" which transmitters are "on the air" simultaneously, or which transmitters might affect (disturb) each other and which are the alternatives.

Surveying

It looks good, but how do you get the map there?

"Maps are undoubtedly extremely important to network planning, and we could say we have entered the land survey industry," says Dan Haglund.

"In five-six years, there will almost certainly be computerized maps that cover the entire globe, but the situation today is somewhat different. Nevertheless, network planners need electronic maps to calculate signals, so we have to provide them with just that. We have to sell him the service. This is not exactly what we commonly refer to as our 'core activities,' but I call it practical engineering."

Comprehensive knowledge of many mapping agencies throughout the world is needed to meet this requirement, in addition to the utilization of unconventional methods of compiling map data, which is stored on CD via a specially designed Application Programmers Interface (API), pending the approval of an internationally standardized format.

Not a black box

Network planning is not a "black box" but rather a service that often arises down the line. Customers demand functional communications, and it is important that network planning is not too expensive or cumbersome. The difficulties involved in network planning should not be oversimplified nor exaggerated.

Instead, the new version of RAPS is a tool so user-friendly that any telecommunications engineer with average skills can learn how to plan a network in less than one week, including consideration and calculations of the effects of possible obstacles in the terrain, control fading and frequency propagation, etc.

LARS CEDERQUIST

RAPS...

Calculates

- signal level/fading statistics
- signal/interference relations
- combined radio coverage
- interference, intermodulation

Presents

- maps
- elevation data, land profiles
- network graphs
- data for radio materials

Requires

- PC, 486 or Pentium
- 16 Mb primary memory
- Windows 3.1, 95 or NT

vacancies

AT ERICSSON

Contact no. 2 1996

Updated 1996-02-26

In Sweden

KI/ERA/AM/TA - Ericsson Radio Systems AB

MANAGERS, TECHNICAL SALES SUPPORT

The Technical Sales Support, Cellular Systems - American Standards is responsible for the technical sales support to our sales people, both within Sweden as well as at our local companies worldwide.

■ The job involves sales presentation, answer to technical SOC's and general support in technical matters.

Due to a rapidly expanding business we are now looking for Section Managers in the following areas:

Application Engineering - You will together with the customer come up with solutions where the customer can better utilize the existing system.

Basic Systems - You are responsible for sales support in all AXE related hardware products and responsible for that the products are packaged in sellable standardized sales objects.

WIN and Market Requirements - You are responsible for sales support in Wireless IN related areas and that all market requirements received from the customers are effectively communicated to the design organization.

Sales and Marketing - You are responsible for the sales support towards new and potential customers, where the main challenge is to take new orders.

Please send in your application to Human Resources, Karin Enberg, memoid: ERAKEG, phone 08-764 1786. For further information please contact Håkan Olsson, memoid: ERAHKO, phone 08-757 0159

Ericsson Telecom AB, Market Unit Western Europe & North America

CONTRACT AND BID MANAGEMENT

■ With the ongoing liberalisation and changes in the Telecom Market of today the new and more business-oriented Operator has emerged on the scene. Ericsson has a strong focus on this new and fast growing Customer segment. These Customers calls for more and longer active Ericsson support and guidance than the traditional PTT's do.

In order to meet the requirements from this expanding business we need to strengthen our unit with one more Bid Manager able to lead the Tender Process.

We are looking for you with a broad commercial and technical background/experience.

The right person can expect to work in a both exiting and challenging atmosphere and have a broad contact network both towards the customer and within the Ericsson organisation.

■ **Contact:** Mikael Bremer 719 6887, ETX.ETXMIB or Barbro Södergren, personal 719 5775, ETX.ETXBA-SO.

Marketing Western Europe and North America

BUSINESS MANAGER & ACCOUNT COORDINATOR

■ With the deregulation of the European Telecommunication Market in 1998 we can already see many new opportunities for providing total net solutions to telecommunications successes like MFS, ATLAS, Meganet, FT Nordphone, Acores, France Telecom, BT etc.

In order to keep up with the accelerating pace and maintain Ericsson in a leading position we are looking for Business Managers for France with international experience and the knowledge to build excellent relations and in the same time drive for results.

The responsibilities will be to establish business plans, strategies and monitoring the development of the market.

You will in close cooperation with Product Management develop our competitive strength of Ericsson's product portfolio (advantages and or disadvantages). Establish long-term partnership with

Old and New Customers. Coordinate and develop the most efficient use of our resources.

Naturally you have previous marketing/sales and product knowledge. However, more importantly, we expect you to be an assertive individual, ready to take a pro-active and service minded approach towards our internal and external customers, and possess good written and oral communications skill.

The requirements are: - University degree, M.Sc., MBA or similar - Ten years experience in international business and marketing. - Preferably five years work experience within Ericsson. - Fluent in English and second language French.

We will give you a stimulating working environment with an interesting job in an expanding business.

■ **Contact:** HF/ETX/X/FB Olle Westerberg, ETXOWBG, 94279 or HF/ETX/X/FB Jan B. Hultgren, ETXJEAN, 12243 or HF/ETX/X/FH Barbro Södergren, ETXBA-SO, 95775

ERICSSON BUSINESS NETWORKS AB, SUNDBYBERG

MARKETING & SALES, EXPORT MARKETS

■ We need to reinforce our team, supporting Marketing & Sales of complete networks within Network Engineering Division. Therefore we are seeking for a number of individuals with ambition and drive.

We work with large projects (turnkey) world-wide containing total responsibility of delivery of complete solutions to national and international operators with support from other Ericsson companies and external suppliers.

You will be responsible for a team producing tenders, where commercial co-ordination and calculations are important ingredients. The work means frequent contacts with Ericsson companies and applicants must be prepared to travel.

The successful candidate has an academic degree in engineering and a minimum of five years telecommunication experience. You are service-minded, well structured and have a drive to get things done. Good command of English both verbally and in writing is required, further languages are a merit.

■ **Contact:** Robert Spertina, tph +46 8 764 3312, EBC.EBCROBS Richard Tersander, tph +46 8 764 0326, EBC.EBCTERS

Ericsson Telecom AB, BU Switching and Networking Systems, AXE-provisioning, LDC ISDN Services, TN

TECHNICAL PRODUCT MANAGEMENT IN ISDN-E SERVICES

■ System-engineer needed for the system management unit responsible for ISDN-E Services. Our unit constitutes, the core of ISDN-E system competence within Ericsson.

The Technical Product Management (TPM) work is aimed at activities in early phases; Quick Studies, Prestudies, Feasibility Studies, development planning, Statement of compliances, RS/FS validation, monitoring/participation in standardization etc. The work requires a good functional and implementation understanding of ISDN-E. We also expect you to have very good communication and inter-personal skills.

The importance of TPM work is growing rapidly. We now need to put further emphasis on our role as a proactive provisioner of ISDN Services, globally. That's where we hope you will come in!

■ **Contact:** Christian Nordberg, +46-8-7199786, ETXT.ETXCNN Els-Marie Tidelius, +46-8-7191992, ETXT.ETXEHG Susanne Norström, HR, +46-8-7190659, ETXT.ETXSUNO

ERICSSON HEWLETT-Packard Telecommunications AB, Västberga

PRODUCT MANAGERS

Product line *GENERIC PRODUCTS*, (PLG) is responsible for the definition, procurement and marketing of competitive software modules, design environ-

■ 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.

ment tools within the telecom management area and element management packages for Ericsson network elements. Customers to PLG are primarily Ericsson Business units, but also where appropriate HP Product Divisions. We are now building up our new organization and are looking for people with the profiles and characteristics meeting the following two job descriptions:

■ 1. BUSINESS ORIENTED PRODUCT MANAGERS
Tasks: -Agreements and product definition with Ericsson Business Units, -Product programmes and plans for the packages as agreed with the Ericsson business units. Responsibilities: -The right TMOS product packages will be defined and handled with a minimized time to market and optimal long term profitability.

■ 2. PRODUCT MANAGEMENT OF TMOS MODULES
Responsibilities: -Strategic product management of the PLG owned modules, being designed and maintained by the EHPT controlled Design Centres, -Firm commitments on product programme contents and release times, -Handshaking of requirements, -Life cycle profitability. Last date for application: 1996.02.29

■ **Contact:** Lars Hamrå, T. 031-672421, memo EHS-LAM, Börje Larsson, T. 08-7191311, memo EHSBALN or Kjerstin Ljungqvist, Human Res. T. 031-672606, memo EHSKLT.

KI/ERA/LP/M - Ericsson Radio Systems AB

BUSINESS INTELLIGENCE ANALYST

The Marketing Support Unit LPIM within LP has an immediate need for a Senior Market-and Business Intelligence Analyst.

Monitor our competitors on the market and analyse their strategies.

■ You will be responsible to establish a competitor monitoring function in collaboration with existing function responsible for Pricing.

Your main task is then to compile data and provide analysis in order to support our Area Sales Managers and geographical local companies(LC).

Co-operate and co-ordinate the work with our Central Marketing Communication unit LMU in comparing our product portfolio with those of our competitors in order to analyse our competitive advantages and disadvantages.

Provide monthly reports on competitors actual product and price levels in current quotations to LP/MO units.

You will work very closely in the sales process by providing competitor information.

You are expected to have a university degree (M.Sc, MBA or similar), preferably be experienced in marketing and analysis of Mobile Telephone Systems and excellent knowledge in English.

■ **Contact:** Bo Nordberg, phone +46 8 757 3669 memoid ERA.ERABNG Klas Åkesson, phone +46 8 757 1729 memoid ERA.ERAKLAK. Please send your application to: Ericsson Radio Systems AB Att. LP/LH Anita Malmström S-164 80 Stockholm

Ericsson Telecom AB, Global Product Line Management, Network Intelligence

BUSINESS DEVELOPMENT

Network *INtelligence (IN and Operator Systems)* is the fastest growing area within Ericsson, with 100 % growth per year. Ericsson is the world leader in *IN (Intelligent Networks)* for fixed and mobile access networks, with more than four times as many customers as our competitors, in more than twice as many countries. We intend to be the leader also in the future for all-access all-band Network Intelligence.

■ Do you want to be a key person in forming the Network Intelligence of the future? Do you want to take part in the rapidly growing success of IN today?

You will drive GPLM NI business development through pursuing business ideas, driving business cases, making business plans, business analysis, negotiate agreements, analyse and maintain agreements, formulate business and agreements strategies and principles.

You will work with the Ericsson Strategic Planning, the GPLM NI Business plan, agreements on licensing, Right-To-Use, Intellectual Property Rights - for advanced software products.

You will work with Ericsson products as well as sourced products, and products developed in cooperation with other companies, products based on the AXE platforms as well as general purpose computer platforms.

Interested? We are looking for highly motivated persons, who enjoy a dynamic business environment.

■ **Contact** Anders Hultgren (tel. 7197090, memo ETXT.ETXANHU), Manager, Business Strategy Contact Human Resources: Ewa Brandt tel 7198289, memoid ETXT.ETXEWAB.

Ericsson Telecom AB Global Product Line Management, Network Intelligence

BUSINESS DEVELOPMENT

Network *INtelligence (IN and Operator Systems)* is the fastest growing area within Ericsson, with 100 % growth per year. Ericsson is the world leader in *IN (Intelligent Networks)* for fixed and mobile access networks, with more than four times as many customers as our competitors, in more than twice as many countries. We intend to be the leader also in the future for all-access all-band Network Intelligence.

■ Do you want to be a key person in forming the Network Intelligence of the future? Do you want to take part in the rapidly growing success of IN today?

You will drive GPLM NI business development through pursuing business ideas, driving business cases, making business plans, business analysis, negotiate agreements, analyse and maintain agreements, formulate business and agreements strategies and principles. You will work with the Ericsson Strategic Planning, the GPLM NI Business plan, agreements on licensing, Right-To-Use, Intellectual Property Rights - for advanced software products.

You will work with Ericsson products as well as sourced products, and products developed in cooperation with other companies, products based on the AXE platforms as well as general purpose computer platforms.

Interested? We are looking for highly motivated persons, who enjoy a dynamic business environment.

■ **Contact** Anders Hultgren (tel. 7197090, memo ETXT.ETXANHU), Manager, Business Strategy Contact Human Resources: Ewa Brandt tel 7198289, memoid ETXT.ETXEWAB.

KI/ERA/AM/TO - Ericsson Radio Systems AB

PRODUCT MANAGER - PRODUCT PLANNING FOR INTERNATIONAL MARKETS

We are in the process of building up an organization within RMOA Technical Sales Support department at ERA to handle product planning activities CMS88 product line for markets outside of North America. These represent markets in Asia, Oceania, Africa, Pacific, and Latin-America regions.

■ We are looking for product managers for the following areas:

- Switching Network Products (HLR, MSC) - radio Network Products (RBS) - OA&M Products (OSS products and OA&M functions) - System Applications (Data, Messaging, WIN)

The main responsibilities and activities are:
- Making customer presentations on product proposals - Evaluation, planning and consolidation of new market requirements - Participation in Package Definition exercises for every release - Market support on new products

These positions will work closely with RMOA SPM and other local product management organizations for the CMS88 product plans and strategies.

The required experience and skills for these positions are:

- At least 3-4 years of experience with Ericsson (preferably with Product Management or System Designs for cellular systems) - Technical expertise in the area of interest - Strong communication and presentation skills - Good knowledge of another foreign language is an asset. These positions will also involve international travel and contacts.

■ **Contact** Vu Nguyen at 46-8-4044624 (memoid ERA.ERAVUNG). Send your application to: Karin Enberg Ericsson Radio System AB 164 80 Stockholm

Ericsson Business Networks AB, Nacka Strand

SYSTEM MANAGER

■ The Business Support Department, is looking for an additional System Manager within Sales and Marketing Systems as well as Direct Marketing /Tele Sales. We need to strengthen our team in the above field to meet the future requirements from our Local Companies.

Experience in the following areas would be of value: - Direct Marketing/TeleSales, - Sales & Marketing automation tools as an end-user, - Database Marketing - Collection or Management Within Sales & Marketing Information,

The following requirements are desirable:
- Understanding how IT can help increase business performance - Understanding and knowledge of how to translate business needs into the corporate datamodel and application functionality. - Conceptual understanding of relevant RDBMS - Understanding of Client/Server technology - Sound understanding of Windows - Good command of Swedish and English

Contact: Göran Possander, Manager - Business support Systems Phone: 08/422 0119, Memoid: EBC:EBCGPO, Mail: ebcgpo@ebc.ericsson.se Applications to Susanne Petterson, EBC:EBCSP Ericsson Business Networks AB 131 89 Stockholm

Telefonaktiebolaget LM Ericsson, Corporate Audit and Security

SECURITY CONTROLLER

■ We are looking for a security controller whose main responsibilities will be to co-ordinate security issues within the Ericsson group, as well as to hold the position as Security Co-ordinator for Ericsson's parent company, Telefonaktiebolaget LM Ericsson.

The successful candidate will run projects and work groups, the main tasks derived from security committee work in Ericsson's various Business Areas and companies. Additional tasks are mapping, investigatory work, and preparatory work within the decision-making process, as well as conducting security surveys and running security assessment programs. The successful candidate will also be responsible for co-ordinating reporting procedures for incident handling as well as compilation of the risk outcome for the Ericsson group.

Additional tasks are to support the implementation of Ericsson's Security Policy and Directives world-wide. When necessary, for example in crisis situation, the ability to handle relevant parts of the Corporate Security Director's routine business will be expected.

Prospective applicants would benefit by having experience from, but above all knowledge of, the security field and be comfortable with independent and target oriented project work. The ideal candidate should have good interpersonal skills and be good at working in teams. Broad knowledge about the Ericsson group and a good command of English are essential, and a university education or equivalent, as well as knowledge about statistical methods are preferable.

Contact Ingrid Ud'n-Mogensen, LME:LMEUDEN, +46 8 719 9335 or Per Svahn, LME:LMEPSVA, +46 8 719 8037. Applications should be sent as soon as possible to: Telefonaktiebolaget LM Ericsson HF/LME/P Per Svahn 126 25 STOCKHOLM

Ericsson Radio Systems AB, Kista

CELLULAR SYSTEMS - AMERICAN STANDARDS

Business Unit Cellular Systems - American Standards is the market leader in providing products and services based on Cellular Systems - American Standards D-AMPS/AMPS. Today, over 45 million subscribers worldwide rely on D-AMPS/AMPS cellular system. We are working with the development, sales and provisioning of products and services to carriers providing wireless services.

AREA SALES MANAGER, NEW BUSINESS US

■ The US market is currently our most important market. It is the market that takes a leading role in the development of new and future products. It is also evident that we will be providing products and services for an increasing number of customers.

In order to strengthen our position and meet all the demands in the US market we are expanding our New Business function within Market Support US. One objective for setting up this function is to better understand the specific market requirements in the US so that our Business Unit can coordinate the resources in an even more efficient way.

Your responsibility will be to support and coordinate new business activities in very close cooperation with the New Business team in the US. This means you will work with the latest products and with our newest customers.

We are looking for people that currently are involved with international systems selling and are willing to take a further step in their career. You have a B. Sc or M. Sc. or similar. Good knowledge in telecommunications as well as experience from working within Ericsson is desirable.

Contact: Harald Nabseth, Manager New Business, +46 8 404 5828. Memo-ID ERA:ERAHANA or Lars Jehrlander, Manager Market Support USA, +46 8 404 7838 Memo-ID, ERA:ERALAJE. Send your application to: Mariana Olsson AH, Ericsson Radio Systems AB, 164 80 STOCKHOLM

AREA MANAGER, BUSINESS SUPPORT, US

■ The US market is currently our most important market. It is also the market that takes a leading role in the development of new and future products. It is also evident that we will be providing products and services for an increasing number of customers.

In order to strengthen our position and meet all the demands in the US market we are expanding our Business Support function within Market Support US. One objective for setting up this function is to better understand the specific market requirements in the US so that our Business Unit can coordinate the resources in an even more efficient way.

Your responsibility will be to support and coordinate business support activities in very close cooperation with the US organization. This means you will work with the latest products and with our largest customers.

We are looking for people that currently are involved with international market/sales support and are willing to take a further step in their career. You have a B. Sc or M. Sc. or similar. Good knowledge in telecommunications as well as experience from working within Ericsson is desirable.

Contact: Per H Bramefelt, Manager Business Support, +46 8 404 6654. Memo-ID ERA:ERAPEBT or Lars Jehrlander, Manager Market Support USA, +46 8 404 7838 Memo-ID, ERA:ERALAJE. Send your application to: Mariana Olsson AH, Ericsson Radio Systems AB, 164 80 STOCKHOLM

Ericsson Radio Systems AB, Kista

CMS 30 "AFTER SALES SERVICES"

■ We are looking for a person who has experience from "After Sales Services", Repair and Reclamation Handling.

The work is to support our local company in Japan regarding "After Sales Services". Communication will be by phone and/or electronic mail. The work will require close contacts with other local Ericsson companies. The handling is for both RBS and AXE products. You will actively work for improvement of our processes. You will participate in meetings and projects for HW quality and process improvements.

Skills and abilities required: You are used to keep good order. You have own experience and initiative in solving problems. You have a technical and/or logistics background. You are good in writing and speaking English.

Experience of similar work is a plus.

Contact: Hans-Robert Olson, tel 08-4045635, memoid: ERAHAOL or Håkan Wallin, tel 08-4045631, memoid: ERAHWAL. Please send your application to: K/ERA/JHS Gunilla Åsberg

Ericsson Radio Systems AB, Kista

SERVICES MARKETING & MARKET COORDINATION

Around the world, wireless and PCS markets are growing rapidly. D-AMPS/AMPS mobile systems today serve nearly 60% of the world's subscribers. CMS 8800, is the world's most sold system, all standards considered

Our new concept The Alliance for services has been successfully deployed world-wide during 1995. We now need to strengthen our resources within Sales & Market Operations in order to meet increasing demands from our markets with professional marketing, market coordination and sales support of services. Within our business unit, Cellular Systems - American Standards(RMOA), the Services Marketing & Market Coordination unit is responsible to drive sales, to develop arguments and strategies, to support the commercial deployment of our service offering and to provide sales support to our sales channels.

SERVICES MARKETING MANAGER

■ This position require both commercial and technical competence. The successful candidate will be able to translate the detailed content of the services into clear, concise commercial arguments which highlight the advantages and values of our services offerings.

As services marketing manager, you will be responsible for the definition of sales objects and introduction of these to the market. You will also be responsible for production of service descriptions and sales bulletins within your field of responsibility. Additionally, you will be formulating marketing messages and coordinating the development of marketing material to convey those messages to the field.

This position will involve co-ordination of different functions within the RMOA organization. It is therefore essential that you are outgoing, independent and self-motivated.

You should possess strong interpersonal and communication skills. You should have a university degree, with a minimum of five years experience in the telecom industry, where you have gained knowledge of commercial issues perhaps from an operators perspective.

You should also be comfortably working in an international context and demonstrate professionalism both in regard to your work output and image. Fluency in English is required.

SERVICES MARKET COORDINATION - AREA MANAGER

■ Your task is to drive sales of services, and together with our sales and account managers organize sales of services from offering to order. You will also be responsible to analyze and evaluate the potential of sales of services within your area. Your focus will be on former USSR and Eastern Europe.

This position will involve co-ordination of different functions within the RMOA organization. It is therefore essential that you are outgoing, independent and self-motivated. You should possess strong interpersonal and communication skills. You should have a university degree, with a minimum of five years experience in the telecom industry, where you have gained knowledge of commercial issues perhaps from an operators perspective. You should also be comfortably working in an international context and demonstrate professionalism both in regard to your work output and image. Fluency in English is required as well as being able to communicate in Russian.

SENIOR SALES SUPPORT ENGINEERS

■ Your task will be to support our sales and account managers with responding to request for proposals and quotations, and also writing statement of compliance. You will prepare offers and give commercial support regarding services. You will assist in negotiations of service contracts.

This position will involve co-ordination of different functions within the RMOA organization. It is therefore essential that you are outgoing, independent and self-motivated. You should possess strong interpersonal and communication skills. You should have a university degree, with a minimum of 3 years experience in the telecom industry, where you have gained knowledge of commercial issues perhaps from an operators perspective. You should also be

comfortably working in an international context and demonstrate professionalism both in regard to your work output and image. Fluency in English is required, Spanish is a plus.

Contact: Fredrik T. Strandh, phone 08-757 3834, memoid: ERAFSH. Please send your application to: Karin Enberg AH Ericsson Radio Systems AB 164 80 STOCKHOLM

Ericsson Radio Systems AB, Kista

PROJECT MANAGERS FOR OPERATIONAL DEVELOPMENT

■ To survive in today's fierce competition, state-of-the-art products do not suffice, Customer Satisfaction has to be increased by having world-class processes. Therefore we have to make significant improvements in our operation to retain as market leader.

To improve methods and processes in different areas, such as time to customer and time to market as well as for management and support processes, we need senior project managers for our strategic improvement projects.

The successful candidates have a track-record in different areas and/or different companies within the Ericsson Group. Experience of personnel responsibility is required, as well as good knowledge of the English language.

If you are focused and task oriented, interested in creative work, let us hear from you!

Contact person: Jan Hansson, phone 08-75 71187, MEMOid: ERA:ERAHJO or Magnus Holmgren, phone 08-75 75709. Application to: K/ERA/LHS, Jaana Norén, Human Resources.

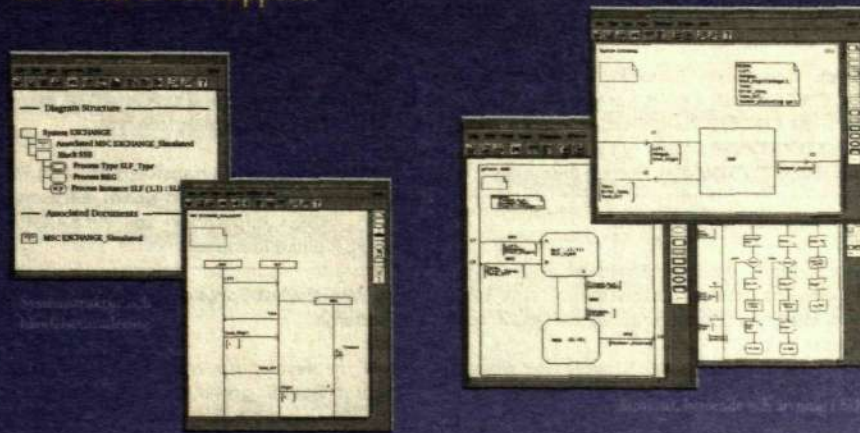
Ericsson Telecom AB, Business Unit Switching and Network Systems, AXE Provisioning Local Design Centre - ISDN, CTM Services

INCREMENTAL DEVELOPMENT SUPPORT PERSON ISDN SERVICES IN THE FMP4.1 PROJECT

■ We are currently establishing incremental development for three development teams in the IUS part of the FMP4.1 project. The three teams are -Abbreviated dialling/Fixed destination call -Equal access -IUS Test tool. All our development is done by

SDT - from specification to realtime applikation. As easy as that.

A world leading development tool, now with OOA support.



SDT is a unique software development tool for object oriented design, based on standardized formal methods. The tool supports the development of real-time applications in general and telecommunication systems in particular. SDT offers a comprehensive solution throughout the whole development process. The automated transition from system specification to real-time execution has become reality.

See us at

CeBIT 96
HANNOVER

in hall 13 stand E 50

If you wish to have a meeting arranged please contact:

Petra Ericson

e-mail: petra.ericson@telclogic.se

Telelogic AB
Phone: +46-40 17 47 00,
Fax: +46-40 17 47 47,
E-mail: info@telclogic.se

see us also at: <http://www.telclogic.se/>

Telelogic
ERICSSON GROUP

working with the latest AM technology including HLPlex. In coming projects our plan is to use incremental development to a greater extent.

We are now looking for one person which can assist

- the project manager for IUS Design
- the project manager for IUS Test
- the three development teams in applying incremental development technique.

This position would be suitable to a newer or experienced employee with an open mind willing to explore possibilities and get them to work in an established organisation.

The scope of the position and the opportunities it opens will depend on the calibre and drive of the individual. We will support you to gain experiences by undertaking the appropriate courses, e.g. AM, HLPlex, Change Management.

Qualifications wanted: -knowledge of development in AXE 10 according to the waterfall model -basic knowledge of incremental development or AM technology including HLPlex -able to work towards defined goals with little direction -willingness to learn, flexibility and positive attitude

Contact: Hans Norelius, Ph:+46 8 719 1697, Memo:ETXT.ETXHAGN; Karl-Johan Brinck, Ph:+46 8 719 3603, Memo:ETXT.ETXBRKA or Susanne Norström, H.R. Ph:+46 8 719 0659, Memo: ETXT.ETX-SUNO

Ericsson Telecom AB Switching and Network Systems, Market Communications

Visibility and a positive image are key words for a company operating in a competitive market. Active communication is a pre-requisite. In order to increase the customer awareness of Ericsson as a major player on the public telecommunications market we need to strengthen our market communications unit.

We are looking for the following resources:

PRESS OFFICER

■ with the responsibility with the responsibility to support the whole unit with press activities e.g. - produce articles about products, cases, new orders etc. for both external and internal use - manage our part of the official press material - initiate and coordinate mass media training - support the business area press officer

MARKET COMMUNICATOR

■ with the responsibility to analyse the external communication needs and to create and implement the suggested activities.

COMMUNICATOR FOR EASTERN AND CENTRAL EUROPE

■ - to support the organisation market communication activities

- to be responsible for the units internal image
- to collect, structure and distribute relevant information externally as well as internally

The unit is based in Stockholm and supports local organisations in approx. 40 countries.

For all three positions we need skilled and competent people, with experience from similar jobs.

Contact: Anna-Karin Klinteskog 08-681 10 30, memo ETXT.ETXAKN Cecilia Zarbell 08-719 73 77, memo ETXT.ETXCEJE Kerstin Halén 08-719 20 54, memo ETXT.ETXKER. Send your application to Kerstin Halén, TN/ETX/X/SH, Human Resources

Ericsson Radio Systems AB, Kista

Cellular Systems - American Standards is one of the fastest growing business units within Ericsson Radio Systems. We are expanding rapidly and many challenges await us.

Within the Technical Sales Support Unit we support the Sales and Marketing departments, Local Companies and Field Support Staff with product documentation of the CMS 8800 Product Line. All these documents are collected in the Marketing Manual. To further improve our service we are now looking for

TECHNICAL COMMUNICATORS

■ Your task is to make the technology comprehensible, clear and accessible for users. You will research, write, edit, and review documents with all aspects of content, style, readability and usability in mind. You will proof-read documents, assist with vocabulary control and support others in information structure and layout. You will also function as an advisor in matters of content and style, readability and usability.

So far, our Marketing Manuals have been distributed as binders. Now, they will be made available in the WWW! That's why it is a merit if you have experience of using the Web as a distribution channel.

You should be able to express yourself easily, clearly and instructively in English. Other languages, such as Spanish, are a merit.

Previous technical writing and technical editing experience is required. Goal orientation, flexibility,

self-sufficiency, problem-solving and cooperativeness are other requirements. Technical education/experience, computer familiarity, graphical experience, educational experience and knowledge of AXE are merits.

Contact: Elsi Brandström, 404 6915 or Debra Grahn, 404 2152. Please send your application to: Ericsson Radio Systems AB, K/ERA/AH Karin Enberg 164 80 Stockholm

Business Unit Switching and Network Systems - Communications

2 INTERNAL COMMUNICATORS

■ ETX/X/1 are responsible for supporting the internal communications activities at BU X. The unit consists of 8 persons. Our main channels of communication today consist of the World Wide Web, Snapshot (our internal newsletter), ITV (internal television), various brochures/publications and employee meetings on various levels.

To strengthen our unit's competence and resources we are now looking for 2 INTERNAL COMMUNICATORS to fill the following positions:

- with the main responsibility of supporting the organisation with communications material in various forms
- with the main responsibility of further developing internal television. This position is for a period of one year.

Requirements: You might be experienced in other areas but the essential criteria is that you feel confident with expressing ideas both in written and visual form. You should be familiar with all standard PC programmes used internally and it is an advantage if you have worked with the WWW. Experience in the use of external consultancy services is also a merit.

Contact: Susanne Sundling at personnel or Anna-Karin Klinteskog Tel.11030 or Kim Sjölund Tel.95853.

Ericsson Radio Systems AB, Kista

FACILITATORS, COMPETENCE DEVELOPMENT

■ To survive in today's fierce competition, state-of-the-art products do not suffice, Customer Satisfaction has to be increased by having world-class processes. Therefore we have to make significant improvements in our operation to retain as market leader.

Competence development is essential for a successful outcome of Process Management. We now need to extend our resources to our competence centre for methods and tools within operational development.

The main responsibilities and tasks are: - Facilitate operational development within RMOG - Support our organization with methods and tools

The requirements are as follows: - Knowledge about methods, such as Accept Modelling, Seven Management Tools, Team-Training, etc. - Practice of facilitating work-shops, seminars, etc. - Several years experience working with competence development - Good communication skills - Fluent in English

If you are focused and task oriented, interested in creative work, let us hear from you!

Contact person: Jan Hansson, phone 08-75 71187, MEMOid: ERA.ERAHJO or Kenth Karlsson, phone 08-75 73266. Application to: K/ERA/LHS, Jaana Norén, Human Resources.

Ericsson Hewlett-Packard Telecommunications AB, Västberga

EHPT is developing and marketing Operations Support Systems and Business Support Systems for the telecommunications operators. The business is growing fast and our products combine state-of-the-art telecommunications and computer technologies. Design Center Västberga are looking for:

SYSTEM DESIGNERS & OPERATIONAL PRODUCT MANAGERS

■ You will work with either, or both, operational product management and systems management. You will break down the basic requirements from customers and product managers into detailed requirements and systems design solutions to guide our software designers. You will keep development plans up-to-date, coordinate pre-studies and investigations. You will also work to identify new products and new technologies for our product portfolio.

Your background should include complex systems product development experience, preferably of UNIX based or telecommunications related systems. You should be familiar with systems development, including the mixing of internal designs and third-party products.

You 'see the big picture' and are an energetic motivator. Your ability to communicate well and convince others will be an invaluable asset.

Good social skills are important as you must meet and mix with external suppliers. You should have a Masters's degree in engineering or its equivalent.

Contact: Johan Linnhag, tfn 08-719 1318 Mats Bern, tfn 08-719 9246

Ericsson Radio Systems AB, Kista

PROCESS SUPPORT FOR RMOG MAIN PROCESSES, OPERATIONAL DEVELOPMENT

■ Process Management is the way to manage continuous improvement of our business operations across organizational and functional borders, while keeping the customer in focus. We are now looking for an ambitious colleague to support process developers in all our different areas.

The main responsibilities and tasks are as follows: - Co-ordinate RMOG Process Management (documentation, measurements, etc.) - Manage the Process Management network at RMOG - Co-ordinate improvement work between different main process areas together with Process Owners - Support our Process Developers - Define the Process Management training - Support System Owner, PDT (Process Documentation Tool)

This position will give you a wide understanding about all levels and functions of our organization. The success of this role is dependant upon gaining a good working knowledge of all our processes as well as knowing what makes results in improvement work. Experience in Process Management is needed as well as fluent English.

If you are focused and task oriented, interested in creative work, let us hear from you!

Contact: Jan Hansson, phone 08-75 71187, MEMOid: ERA.ERAHJO. Application to: K/ERA/LHS, Jaana Norén, Human Resources.

Ericsson Telecom AB

MARKET SUPPORT FOR CUSTOMER SERVICES

BU BNS have an objective to be a leader within broadband business. The competition is tremendous. Traditional telecom companies have to compete with data communication companies, cable TV companies and many small efficient companies concentrating on specific niches in the market.

BU BNS product portfolio is then complemented with Customer Services. Customer Services is becoming an important differentiator among our competitors. Within BU BNS we are initially focusing on getting the basic support in place for our products, such as HW Services, System Support and Customer Training. Gradually we will move in to more advanced services.

■ Within BU BNS, the Operations unit have responsibility for Customer Services. The unit is new and is actively building up competence in this new field of customer services. One of our teams is supporting the sales process and also the new broadband markets in the area of customer services. You will be part of this team and have your own responsibility for selected markets and customers. The tasks would be to: - Support in the tendering process. - Handle customer service assignments internally. - Ensure high customer satisfaction.

We hope that you have high ambitions and is an enthusiastic person. The job will require self motivation and ability to find solutions to customer demands. There will be many projects and many new people to network with, meaning that this is a great opportunity for personal growth.

A successful candidate should have experience from operations activities, i.e. testing, installation or customer support, and have a genuine interest in customer service.

Contact Johan Axelsson +46 8 7199402, memo ETXT.ETXJAE or Human Resources Catarina Larsson, ETXT.ETXLCAT

Ericsson Radio Systems AB, Kista

PROGRAM MANAGERS AND INSTRUCTORS FOR BUSINESS TRAINING

The newly established Business Training unit within RMOG Training Services in Electrum/Kista will mainly support internal training programs and consultancy within Marketing and Sales.

The deregulated market, new operators with a purely business interest in mobile telephony as well as a strong focus on Customer Services are some of the factors that are causing the nature of selling to change.

This new business environment puts greater demands on our marketing and sales staff. We are now looking for personnel to work with us in a dynamic international environment to fulfill our goals to increase the skills and competence of our Marketing and Sales staff.

PROGRAM MANAGERS

■ As a Program Manager you must be able to take full responsibility from development to implementation of training programs. This means that you will work closely with our clients who may be project and process owners, market operations units, or local companies, analysing their true needs for competence development and offering them the best solutions. As a Program Manager you will also work as head instructor and trainer of new instructors for the already existing "Core Three" and "Alliance" training programs.

The "Core Three" concept was developed to increase customer focus, profitability and shorten lead time for tender work. The training program supports the Core Three team members in their roles as project and sub-project leaders within the Tender and Negotiation processes.

The "Alliance" concept describes how RMOA, RMOG and RMOJ sell Customer Services. The training program is under development and consists of a service products training module and a sales techniques module.

Depending on your earlier background, you might also be involved in the development of new customized courses within Marketing and Sales.

INSTRUCTORS

■ As an Instructor you will mainly conduct the above training programs and other courses within the area. You may also be involved in special projects.

Educational background and professional experience for both functions: Probably you have a Master's degree and experience from training and/or Marketing and Sales.

As Program Manager you have extensive professional experience either from working in a front-line marketing or selling position and/or within competence development.

You are an outgoing personality with a lot of trust in yourself, a true teamworker and your communicative skills are excellent and of course, your command of the English language is very good.

Contact: Birgitta Engardt, +46 8 404 71 47. Send your application to Agneta Nilsson, K/ERA/LY/US.

international

Ericsson Telecom, Market Asia & Pacific

PRODUCT MARKETING IN SINGAPORE

■ We soon expect the Public Network marketing activities in Singapore to increase.

In order to give our customer the highest possible attention we therefore look for an experienced person within the Product Marketing area.

It is envisaged that this position will be a 7-9 months term contract with a possibility for extensions.

Contact: Lennart Carlson, +46 8 6812628, ETX.ETXLEC or Peder Norling, +46 8 7191819, ETX.ETXPNG

ETM, Netherlands

SYSTEM INTEGRATION SUPPORTER, IN

■ At ETM in the Netherlands we are performing a number of System Integration projects for PTT Telecom. We are now looking for a person to support the System Integrator in the IN area covering signalling, service creation and management, billing and network management.

The job is to co-ordinate the test development and test execution for the different systems which involves negotiations with both the customer, other system suppliers as well as internally Ericsson.

You will work closely together with the supporters for the other (C7 and ISDN) services

Candidates for this position must: - have good knowledge of the whole IN area, INAP, SCP, SSP, SMAS, Services etc. - be open minded and positive - have good skills in English communication.

Contact: Henk Buijns, Tel int +31-161-242 136, MEMO ID ETM.ETMHEBR, Rob Veenstra, Tel int +31-161-229 846, MEMO ID ETM.ETMRVE

Ericsson Business Networks, Business Unit Network Engineering & Construction

TELECOM SOLUTIONS MANAGERS - MALAYSIA, MEXICO & THAILAND

■ The Business Unit Network Engineering and Construction (ZNEP) is expanding. We have been awarded several large turn-key projects during 1995. These projects normally include the total responsibility for solution design and detailed network engineering as well as the delivery and project management of the total telecom network, includ-

ing radio and fibre transmission, switching, management systems, outside plant and civil works.

We need to reinforce our presence in several countries. We are therefore seeking Solution Managers for foreign assignments in Malaysia, Mexico and Thailand.

The role of the Solution Manager will be, in the respective country, to have the following responsibilities:

- Develop Telecom Solutions to meet customer needs - Marketing of Telecom Solutions including customer presentations and discussions - Network planning & design - Proposal preparations and coordination

The positions call for individuals with broad telecom and product knowledge in order to create and design competitive telecom solutions tailored for individual customer needs.

It is essential to have a good analytical capability and proven skills in marketing and customer presentations. International experience from telecom projects is of high value.

Contact: For Mexico SL/EBC/ZZ Göran Nordqvist +46 8 764 0849, memo EBC.EBCGNT For Malaysia &

Thailand SL/EBC/ZD Bo Hildingsson +46 8 764 3337, memo EBC.EBCBIL. Send your application to: Ericsson Business Networks AB Network Engineering Division Mats Karemyr 172 87 Sundbyberg, Sweden

Ericsson Ltd. - UK

SALES ENGINEER

■ Sales Engineer within the Technical Sales and Product Support Department within the Network Solutions Business Unit.

Duties: Provision of technical support to /2 account activities and implementation activities associated with new products, project management, consultants helpdesk and product introductions via marketing. This role requires the individual to be actively involved in the sales activities (both pre and post) on and off site.

Qualifications/Skills/Abilities: HND in technology based subject, ideally a science/engineering degree. Minimum of 3 years experience of MD110 combined with in depth knowledge of the product, its features and peripheral attachments. The individual

needs to have a good knowledge of pc's and be suitably skilled in their usage. LAN experience would be an additional advantage. The individual needs to have a flexible attitude. Be a self starter and be capable of working both as an individual and as a member of a team. Must have the ability to communicate and the potential to enhance personal, business and technical skills quickly to meet market and organisational demand. Must hold a valid UK driving licence.

Contact: Kirstie Free, HR Specialist, ETL/B, UK. Memo: etl.etlkefe Tel. +44 444 256150

Ericsson Radio Systems AB, Kista

PRODUCT MANAGER - PRODUCT PLANNING FOR INTERNATIONAL MARKETS

■ We are in the process of building up an organization within RMOA Technical Sales Support department at ERA to handle product planning activities CMS88 product line for markets outside of North

America. These represent markets in Asia, Oceania, Africa, Pacific, and Latin-America regions.

We are looking for product managers for the following areas:

- Switching Network Products (HLR, MSC) - radio Network Products (RBS) - OA&M Products (OSS products and OA&M functions) - System Applications (Data, Messaging, WIN)

The main responsibilities and activities are:

- Making customer presentations on product proposals - Evaluation, planning and consolidation of new market requirements - Participation in Package Definition exercises for every release - Market support on new products

These positions will work closely with RMOA SPM and other local product management organizations for the CMS88 product plans and strategies.

The required experience and skills for these positions are:

- At least 3-4 years of experience with Ericsson (preferably with Product Management or System Designs for cellular systems) - Technical expertise in the area of interest - Strong communication and presentation skills - Good knowledge of another foreign language is an asset

Ericsson GmbH, Düsseldorf Germany

PRODUCT MANAGERS

Ericsson GmbH, Düsseldorf Germany, is urgently looking for **PRODUCT MANAGERS** for fixed network solution based on VPN- and ISDN-standards. The German market place is the biggest in Europe and will be fully deregulated 1 January 1998. Today Corporate Voice and Data are already deregulated. The German authorities will, following EU directions, license a number of new operators which will truly secure full competition on the German telecommunication market.

In this existing environment Ericsson GmbH will serve several new national and international operators with total solutions.

End 1995 Ericsson GmbH in consortium with IBM Germany were awarded the contract of building an integrated German-wide voice and data network based on VPN and ATM standards from Vebacom daughter MEGANET. Vebacom is partner and partly owner of Cable & Wireless.

PRODUCT MANAGER NETWORK MANAGEMENT

For new operators Network Management is the key product for efficient and customer oriented operation. In serving our customer MEGANET we are looking for an experienced person who will become the customers main interface towards Ericsson for Network Management questions. You should have the following skills:

- * M.Sc. or equivalent
 - * knowledge of Ericsson Network Management Solutions (TMOS, XMATE)
 - * knowledge of Network Management standards and principles (TMN, OSI* be able to translate customer needs into products and services
 - * enjoy working close to a new operator in an exiting start-up phase
 - * experience from similar customer tender or implementation projects
 - * team work in a group of high qualified Product Managers
 - * think and work solution oriented
- Your tasks will be:
- * discuss, define and describe features, functions and configuration of Network Management in close cooperation with customer experts
 - * "carry" your knowledge into the customer organization
 - * support sales activities with presentations and descriptions

- * handle product requirements and make sure that they are fulfilled in tenders and other sales activities
- * support implementation activities
- * coordination with and interface to Ericsson Central Product Management
- * work with product strategies, sourcing, consolidation of the requirement of the German market, business cases and life cycle management

PRODUCT MANAGER NETWORK SOLUTIONS

Our role as network providers is to provide customers with complete, cost effective and revenue generating solutions tailored to their business needs. The solutions based on appropriate products from the entire Ericsson product portfolio, as well as from third parties. Ericsson GmbH will customize, engineer and implement total solutions for our customers. For our customer MEGANET we need a person to manage, develop and expand over technical solution in close cooperation with technical experts from the customer. We are looking for a person with the following skills:

- * M.Sc. or equivalent
 - * knowledge of total solutions for combined voice and data networks
 - * see above (Product Manager Network Management)
- Your tasks will be:
- * see above (Product Manager Network

To support one of the world's strongest market places with telecommunication solutions we are urgently looking for a number of Product Managers. In addition there will also be vacancies in fields of:

- * Marketing and sales
- * Operations
- * Implementation

We are looking for long term employments, but all types of employment terms can be discussed.

We will need some experienced key persons from other Ericsson units in helping us start up, recruit and train the long term employees.

Does this sound interesting to you? Please contact Magnar Ringas, phone: +49 221 808 2188, mobile: +49 172 242 8675.

Management) PRODUCT MANAGER IN/VPN

VPN-Networks based on Ericsson AXE IN/VPN-Solution are cornerstone of new networks for several new voice operators in Germany. In serving our customer MEGANET we urgently need a Product Manager IN/VPN with the following skills:

- * M.Sc. or equivalent
 - * knowledge of Ericsson AXE IN/VPN Solutions
 - * see above (Product Manager Network Management)
- Your tasks will be:
- * see above (Product Manager Network Management)

PRODUCT MANAGER AXE

The switching system AXE is the cornerstone of the network solution for network operators. In our group of Product Managers we need a young person with ambitions within technical product management. We are looking for a person coming directly from university, technical high-school or with a few years experience. You should have the following skills:

- * M.Sc. or equivalent
- * knowledge of switching techniques
- * knowledge of ISDN and IN
- * see above (Prod. Mngr Netw Mngmt)

Your tasks will be:

- * see above (Product Manager Network Management)

PRODUCT MANAGER SERVICE MANAGEMENT SYSTEMS

Ericsson Service Management System (SMAS) is the key tool for operators implementing VPN-Service based on IN and other IN-Services. In serving our customer MEGANET we urgently need a Product Manager Service Management Systems with the following skills:

- * M.Sc. or equivalent
 - * knowledge of Ericsson Service Management System (SMAS)
 - * general knowledge of HW- and SW-platforms (UNIX)
 - * general knowledge of distributed solutions (Client/Server)
 - * see above (Product Manager Network Management)
- Your tasks will be:
- * see above (Product Manager Network Management)

If you are interested, please contact Magnar Ringas, phone: +49 221 8082188, or send your application to memoid eddina or to Ericsson GmbH, UB Business Networks, Heerdter Landstr. 193, D-40549 Düsseldorf, Germany.

These positions will also involve international travel and contacts.

Contact Vu Nguyen at 46-8-4044624 (memoid ERA.ERAVUNG). Send your application to: Karin Enberg Ericsson Radio System AB 164 80 Stockholm

Ericsson Radio Systems AB, Kista

PRODUCT MARKETING MANAGERS

■ Around the world, cellular markets are growing rapidly. AMPS/D-AMPS mobile systems today serve more than 50% of mobile world-wide subscribers, with Ericsson having the largest market share. Our successful CMS 8800 family of products continues to be successfully deployed world-wide in both traditional and new applications world-wide.

Within our business unit, Cellular Systems - American Standards (RMOA), a new product marketing unit within Marketing has been created to help develop arguments and strategies to support the commercial deployment of our products and to provide support to the sales channels when presenting and offering our products.

These positions require both commercial and technical competence. The successful candidates will be able to translate the technical functionality of the products into clear, concise commercial arguments which highlight our product advantages and product value. As product marketing manager, you will be responsible for the definition of sales objects and production of product descriptions and sales bulletins for your product area. Additionally, you will be formulating marketing messages and co-ordinating the development of marketing material to convey those messages to the field.

These positions will involve co-ordination of different functions within the RMOA organization. It is therefore essential that you are outgoing, independent and self-motivated. You should possess strong interpersonal and communication skills. You should have a university degree, preferably an advanced degree, with a minimum of five years experience in the telecom industry where you have gained knowledge of commercial issues perhaps even from an operators perspective.

You should also be comfortable working in an international context and demonstrate professionalism both in regard to your work output and image. Fluency in English is required.

We are currently looking for product marketing managers in the following competence areas: RBS Products Switching Products Ancillary network products Operation Support Systems and IN Commercial Support

Contact Mark Miller, phone 08-4044835, memoid: ERAMAMI. Please send your application to: Karin Enberg AH Ericsson Radio Systems AB 164 80 STOCKHOLM

Nippon Ericsson, Japan

HEAD OF BX ACTIVITIES

■ Ericsson is continuing its firm commitment in Japan to become the No. 1 foreign supplier.

We can offer you a very challenging position, based in Japan.

We are looking for you who has well documented experience in marketing and management. You should have a solid knowledge of telecommunication, in general, and BX-products specifically. As the business opportunities are many and of various nature it is essential that you are a business and entrepreneurial minded person.

In addition to this your task will be to continue the build up of the BX-team to ensure our success with existing contracts as well as pursuing new ones. Our company (NRJ) is located in Tokyo.

Contact Mr Morgan Bengtsson, President of NRJ, tel +81 3 3221 8200 MEMOID NRJ.NRJMBE or Mr Tom-Åke Hellberg, Marketing Director, tel +46 8 719 4343, MEMOID ETX.ETXTAAH

Ericsson Radio Systems AB, Cellular Systems American Standard, Kista

INTERNATIONAL CELLPLANNER

■ Radio Network Engineering department are seeking Cellplanners for AMPS/DAMPS and PCS

1900 networks. The work will be focused on the cellplanning and designing of Cellular Radio Networks with customer requirements and system properties as your main concerns.

Your main areas of responsibilities:

- Together with the customer specify and compile requirements on the Radio Network.
- Traffic dimensioning taking into account current and future capacity needs.
- Prediction of radio propagation and frequency planning using computerized simulation tools.
- Responsibility for Radio network properties in the integration phases.

We work in close co-operation with project management and marketing both in Kista and on our customer premises. The frequent customer contacts put high demands on your personal abilities to adapt to our customer needs and to understand his business. Good command of English and Swedish is an absolute demand. Spanish and other language skills are advantages.

Applicants with a Masters Degree in electrical engineering, engineering physics or Bachelors Degree with experience in Radio- or Telecommunications will be considered.

Contact: David Schelin +46 8 404 55 39 or +46 705 85 64 72 MEMOID: ERA.ERADAVS or Jan Lindqvist +46 8 757 17 58 MEMOID: ERA.ERAJANL. Send your application and a CV to: KI/ERA/AH Marianne Molin, Ericsson Radio Systems AB, 164 80 Stockholm

LMC, Region Latin America

CMS 8800 REGIONAL MANAGER

■ - Improvement Programs Latin America

CMS 8800 strongly focus on helping the operators to be the best in their market place and the Total Performance Improvement Program (TPIP) is an integral part of this effort. To take full advantage of the customer perspective the program encourages the M(LC)'s to establish cross functional groups with the operators to identify areas of improvement. TPIP works to raise the awareness of the importance of an excellent In-Service Performance within our own organisation and the customer. We

are looking for a Regional Manager - Latin America to work together with the M(LC)'s to fully establish this concept in this heavy expanding area. Interactions with the Sales and Market operations in Stockholm and the Design organisation in Montreal is vital for success.

To fill this position you should be a department manager or a strong section manager with: - Good interpersonal skills - Good communication skills - Broad Ericsson knowledge - Result oriented - TQM minded - Knowledge in Spanish

We offer a stimulating and exiting job in a dynamic business unit, a two year contract with Mexico as base.

Contact: Tord Larsson, tel +1 (514) 345-7950 or MEMO LMC.LMCTORD

Ericsson Radio Systems AB, Kista

PRODUCT MANAGER - RMOA TECHNICAL SALES SUPPORT

(2 positions)

■ With the introduction of Wireless IN for CMS88, demand for increased support from ERA to international markets outside of North America created opportunities for exciting product manager positions in this field within the RMOA technical sales support organization.

The people in these positions will be involved in:

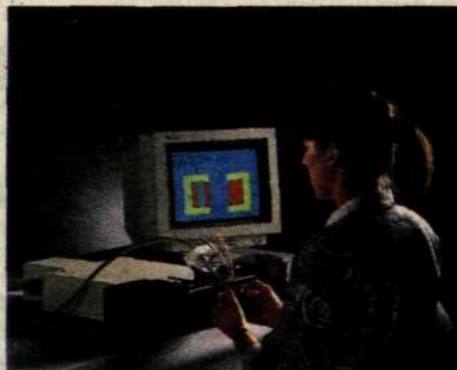
- Responding to RFQs/RFPs from customers on CMS88 WIN
- Making customer presentations on CMS88 WIN products
- Supporting the LC/MLC staff on CMS88 WIN technical and operational issues
- Generating market requirement descriptions on CMS88 WIN as requested by the customers
- Making proposals for product improvements

The required experience and skills for these positions is:

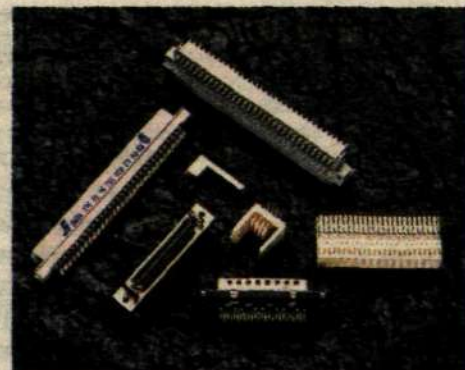
- At least two years of experience with Ericsson (preferably in cellular)
- Good knowledge of telecommunications (IN, Cellular)
- Adequate knowledge of AXE-10 and TMOS products (SMAS)



BURNDY IDC CONNECTORS



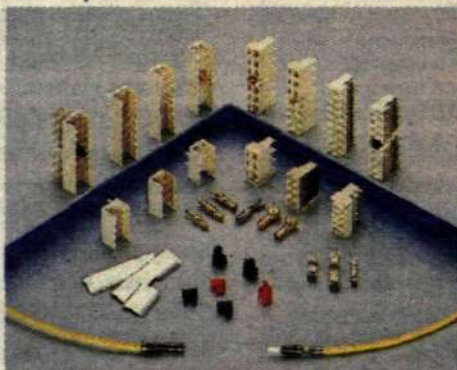
BURNDY IDC MACHINE



SOURIAU/BURNDY PRESS-FIT CONNECTORS



MILLIPACS™ 1 (2 mm spacing)



MILLIPACS™ 2 (2 mm spacing)



SOURIAU FIBRE OPTIC CONNECTORS

FCI connects the world of telecommunications.

Framatome Connectors International is one of the world's biggest manufacturers of electrical connectors. Our assortment is one of the broadest in the market. We have connectors for telecom, computers, heavy and light industry,

aircraft, military, marine, nuclear plant, automotive, consumer electronics and electrical power. We have the resources to offer you either a standard connector or a customer designed solution.

Australia 61 (2) 725 52 88
Belgium 32 (2) 242 33 70
Brazil 55 (11) 514 68 88
Canada 1 (416) 757 87 61
France 33 (1) 39 49 21 83

Germany 49 (211) 92 540
Great Britain 44 (582) 47 57 57
Hong Kong - 852 510 81 31
India 91 (484) 310 132
Italy 39 (11) 451 96 11



Japan 81 44 210 16 12
Mexico 52 (5) 576 23 00
Netherlands 31 (10) 459 63 99
Singapore 65 749 12 32
Spain 34 (3) 771 40 12

Sweden 46 (8) 532 56 330
Switzerland 41 (42) 32 14 34
Taiwan 886 (2) 362 35 80
U.S.A. 1 (203) 838 44 44

- Strong communication and presentation skills - Good knowledge of another foreign language is an asset

These positions will also be required to travel extensively.

Contact Vu Nguyen, phone 08-4044624, memoid: ERAVUNG. Please send your application to: Karin Enberg AH Ericsson Radio Systems AB 164 80 STOCKHOLM

Ericsson Telecom AB, Melbourne, Dallas and Rijen

IN SERVICES, WORLDWIDE SUPPORT

■ Do you have a good knowledge about IN services? Do you want to work abroad? Do you want to grow into a 'guru'? If so, this is a chance for YOU!

The GRCs, Global Response Centers, in Melbourne, Dallas and Rijen urgently need 1 person each to handle support on IN services. The contract is for at least 1 year.

The GRCs are ment to become the only contact our local companies need to get support on Ericsson (BX) products. They will provide 24 hour support, all year round, since they are located around the globe.

The main areas you are expected to cover in the GRC team are:

- IN service handling/administration. - IN service functionality. - SAMtool, GSA, SMAS and their databases (Ingres and Cybase). - Parameters/Exchange data for the services.

If you cover these aswell: - SCP/SSP - UNIX it is fantastic.

Since you are expected to cover 'all' delivered services you will need some 'hands-on' education on the services you are not familiar with and to keep updated about new versions of the services. You will have the other GRCs and the entire design and support competence within GPLM-NI backing you up.

Contact: a.s.a.p. Kent T Olsson KS/ETX/X/USP memo: ETXT.ETXKO Telephone: ECN, 863 3627 (+46 54 193627) email: etbko.solstat.ericsson.se

ETM, Netherlands

CORRECTION HANDLERS

■ At ETM in the Netherlands we are performing correction handling in various AXE areas. The job is to determine the final contents of the AC-A and EC-A packages and the planning and test activities, to deliver the packages as planned.

Candidates for these positions must: - be familiar with the relevant tools - be familiar with mapping and transferring of corrections to and between market CN-A's - be able to test corrections - have performed desk-checks

Contact: Leo Waaijjer, tel int +31-161-229 849, MEMO ID ETM.ETMLWUJ Rob Veenstra, tel int +31-161 229 846, MEMO ID ETM.ETMRVE

Ericsson Ltd, Guildford (UK)

SENIOR TEST ENGINEER

■ Responsibility for the execution of IVA in accordance with given instructions and the contracted customer obligation. Collaborating with the customer in particular when performing acceptance tests. EXPERIENCE

- A minimum of 3 years' experience working in the telecommunications/computing industry with at least one year's experience with Ericsson with cellular applications.

INSTALLATION ENGINEERING MANAGER

■ Responsibility for managing the planning & production of all installation engineering activities within the department, ensuring that all performance criteria and quality standards are met. The role holder will be expected to develop processes and procedures to meet needs with up to 12 staff.

CELLPLANNING ENGINEER

■ Make radio survey at planned RBS sites as a member of the site survey team. make radio survey report in accordance with Ericsson radio standards. Support cellplanning activity. make field measurements in accordance with Ericsson radio's instructions as part of the system optimisation. Assist the cellplanning manager in other field activities. A vacancy for a senior cellplanner also exists (CNO41)

SENIOR COMMERCIAL EXECUTIVE

■ The role involves determining customer requirements and by analysis and consideration of a particular network environment, creating and producing an appropriate solution. Preparation of offers to customers, ensuring that all aspects of price, delivery, payments terms are adequately covered. Attending regular meetings with the customer to ensure the smooth running of the business. Build & manage strong relationships with customer.

Achieving annual sales targets for a specific area. EXPERIENCE - Minimum HNC or equivalent in engineering, business studies or similar Minimum 3-4 years recent experience in business/project team situation. Knowledge of telecoms networks in the UK.

DATA TRANSCRIPT ENGINEER

■ Provide & support data Transcript activities in the areas of switching & cellular parameters for commissioning, IVA & optimisation as part of the Turnkey project. EXPERIENCE - 2 years DT experience, higher technical qualification, computer literate.

SERVICE DEVELOPMENT MANAGER

■ Objective to define, package, market & sell services in the communication networks sector. This includes: Presales activities including the generation of market literature, presentations to potential customers, need definition. Offer & contract definition Management of price levels & margins Resource definition EXPERIENCE - Telecoms or technology service sales background with degree plus commercial experience & knowledge of the customer interface. High motivation.

PROJECT MANAGER X 7

■ The role holder will contribute to the development of the overall strategy, objectives and change plans of the Turnkey project department. It will involve responsibility for the overall management of a project from offer acceptance and authority to proceed to final customer acceptance and completion of upgrades. the role will require regular work with the Marketing, Site Acquisition, Cell Planning, Product Management and Operations departments to define total scope of required deliveries and identify costs, risks & dependencies.

QUALIFICATIONS: At least 3 years' project management experience in a Telecoms environment. Proven understanding of required project processes/models.

Contact Rachel Gray ETLREGY

Ericsson Radio Systems AB, Kista

CELL PLANNER TO INDONESIA

■ We are looking for a cellplanner for a long term contract in Jakarta. The main part of the job is planning and tuning a GSM 900 network in Java together with market support for GSM 900, DCS 1800 and NMT systems in Indonesia. You should have

- * Experience from cellplanning
 - * Good knowledge of cellular systems
 - * Good written and oral skills in English
 - * Ability to build and maintain good customer relations
 - * Ability to work independently
- Start of contract April 1996.

Contact: Nils Torstensson, phone +46 8 7572639, memoid ERA.ERANIT, Jan Lönnström, phone +46 8 757 3314, memoid ERA.ERAJAL. Please send your application to: KI/ERA/LNH Carin Kasberg, memoid ERA.ERACASA.

ETL, Guildford, UK

PRODUCT SUPPORT ENGINEER (OSS)

■ The Product Support Engineer works in a team of engineers that primarily operate both the support and supply processes relating to Complementary Products, Base Transceiver Stations (BTSs) and GSM Interworking Units (GIWUs).

KEY RESPONSIBILITIES:

- Operate appropriate support processes for Complementary Products, BTSs and GIWUs. eg. reception and resolution of trouble reports, consultancy etc.

- Operate appropriate supply processes for Complementary Products, BTSs and GIWUs. eg. verification of new functionality etc.

- Develop close working relationships with engineers in Field/ Customer Support Centres, equipment suppliers and external customers.

- Support and advise trainee engineers in technical issues and with regards to organisational and operational issues.

- Verify packages containing new functionality and/or fault correcting solutions.

- Use PC and W/S and mainframe programs (eg MHS) as required.

- Answer and solve trouble reports within designated lead times.

- Carry out on site problem investigations.

- Conduct trend analysis using appropriate tools. Interpret information and statistics derived from customer sourced trouble reports and advise managers on the potential impact of a known fault with respect to agreed targets.

QUALIFICATIONS, EXPERIENCE AND KNOWLEDGE:

- ONC or equivalent in telecoms/computers/electronics.

- At least 2 years experience as a Trainee Support Engineer or equivalent.

- Willing to work outside normal working hours on occasion.

- Familiar with PC and mainframe programs eg. MHS

Contact: Steve Whitten, Tech Services Mgr, +44 1483 305061, ETL.ETLSNWN Louise Smith, Sector Personnel Mgr, +44 1483 305798, ETL.ETLLESH

SEP - Sociedade Ericsson de Portugal

FSC MANAGER

(2 years assignments)

■ We are looking for a candidate with long experience in the field preferably with GSM systems.

Personnel skills as Cooperation, Initiative, Responsibility and Teambuilding are important.

Contact Lars Ander phone, +4684045252 or Thomas Eriksson phone, +4684045251 at RMOG Resource Agency or send a short application and CV to Ritu Malik, memoid: ERA.ERARIMA.

OPPORTUNITIES IN THE UK FOR AC-A TEST LEADER

■ The ESO department in the Cellular Systems and Special Networks Division based in Guildford (just half an hour train journey from Central London) supports 3 of the 4 UK operators, with 3 to 4 million subscribers today and growing to 15 million by the year 2000. This means that we are operating in the largest market in Europe and will be one of the fastest growing ESOs in the Ericsson world.

We are seeking people who are looking for interesting career opportunities (1 to 2 year long term contract positions available) in the following area:

AC-A TEST LEADER

- working with a team to develop and implement testing procedures and acting as first escalation point for technical issues.

We are looking for experienced people with knowledge of AXE switching who possess plenty of initiative and drive to succeed in a dynamic and challenging environment.

Contact: Hakan Norling, Support, +44 1483 305757, ETL.ETLKH - Louise Smith, Personnel, +44 1483 305798, ETL.ETLLESH

OPPORTUNITIES IN THE UK FOR DATA TRANSCRIPT ENGINEERS

The ESO department in the Cellular Systems and Special Networks Division based in Guildford (just half an hour train journey from Central London) supports 3 of the 4 UK operators, with 3 to 4 million subscribers today and growing to 15 million by the year 2000. This means that we are operating in the largest market in Europe and will be one of the fastest growing ESOs in the Ericsson world.

We are seeking people who are looking for interesting career opportunities (1 to 2 year long term contract positions available) in the following area:

DATA TRANSCRIPT

■ - engineers to produce DT for new/changed functionality for the test plants in Guildford.

We are looking for experienced engineers with knowledge of AXE switching who possess plenty of initiative and drive to succeed in a dynamic and challenging environment.

Contact: Hakan Norling, Support, +44 1483 305757, ETL.ETLKH - Louise Smith, Personnel, +44 1483 305798, ETL.ETLLESH

KI/ERA/JT/XO - Ericsson Radio Systems AB

STRATEGIC PRODUCT MANAGER, CMS 30 NETWORK MANAGEMENT

The CMS 30 mobile telephony system supporting the digital Japanese standard, PDC, has been very successful since it was introduced for commercial service 20 months ago. Our six Japanese customers are growing rapidly and new business opportunities are being explored.

The input to the Product Management department is business goals, market requirements, trends, competitor analysis, technology, standards, etc. It is the responsibility of Product Management to convert this input into product strategies, product plans and main requirements towards System Management and Design. Product life-cycle cost aspects and optimal planning for introduction of new products are also very important issues for Product Management

The Operation and Maintenance (O&M) section within Product Management are responsible for all products in the Network Management area, such as CMS 30 OSS (TMOS based), AXE O&M, radio network O&M, network planning, service management and billing products.

■ The work puts high requirements in analytical thinking and on efficient communication skills, both in writing and orally. Since, there are regular contacts with customers, local product management, marketing, system

management, design, product management at other business units, EHPT and other core units within Ericsson.

Knowledge from any of the areas mobile telephony, network planning, system test, installation, AXE O&M or TMOS is considered as useful for this position. Experience from working for a Telecom Operator with planning, engineering, O&M activities or business process (re)-engineering is regarded as particularly useful.

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Ericsson GmbH, Germany

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

A challenging job awaits you in Germany (Duesseldorf)

Within the unit responsible for "Contract Management - MMO" we are looking for two experienced "Contract Managers" for the Product area's:

1) Digital Switching Applications:

■ You will, from a contractual view point, be responsible for the overall planning and co-ordination of all contracted CME 20 products supplied to MMO and specifically for the SS platform and it's surrounding equipment eg. GIWU, AUC

2) Base Transceivers (BTS):

■ You will, from a contractual view point, be responsible for planning and co-ordination of all contracted RBS products.

Within the product area of responsibility you will further:

- be EDD/Rs customer counterpart on all contracted issues

- participate in tenders and contract negotiations as part of Core3.

- plan and negotiate all activities, according to contract, required to complete the customer order(s) including acceptance negotiation and follow up.

- act as project manager; prepare and maintain a customer project plan within the area of responsibility including responsibility for setting up an internal project organization, budget and time plan in order to meet the customer requirement.

- translate customer activities/orders into internal orders.

- follow up and co-ordinate all activities until the order is completed. -control and settle all issues related to invoicing, penalties and final acceptance.

For both positions the following personal profile should apply:

-25-40 years old,

- engineering degree in telecommunications.

- customer oriented -a minimum of three years of working experience preferable from a similar position.

- at least one year product knowledge within the area of responsibility eg. AXE 10 preferable from GSM.

- experience in project management including budgeting.

- team spirit, organizational talent and ability to work in a dynamic and changing environment.

- good communication skills verbal/writing in English and preferable in German.

Contact Kent Jacobsen on +49 211 534 1281 or via memo edd.eddkj

Support Specialist (BSS):

- act as centre of competence for assigned area (BSS).

- technical co-ordination with customer (acceptance, FOA).

- troubleshooting of complex problems in live network.

- TR handling.

- support for junior staff in TR and HD.

- take part in second line Emergency Support rotation.

- special projects (ISP,DIG,etc.)

The requirements are 6+ years of AXE experience in design, test and/or support, at least 3 years in BSC/BSS area.

Previous experience in customer interface is desired but not a must.

Good communication skills.

Can handle pressure.

Position is based in Duesseldorf and we can offer expat contract with initial period of 2 years. Start Q2 - 1996. Work with the most experienced GSM operator and the network with over 1.4 mil subscribers.

Contact Slavko Kutija via memo edd.eddkut. Or by Phone ++49 211 534 2383. To apply for the job send your application to Memo: EDD.EDDHJV fax: ++49 2117 534 1444

contact

They came from all parts of the world. Twenty artistic and highly creative teams gathered in Sapporo, in northern Japan, in early February to participate in the "Sapporo Snow Festival," one of Japan's largest winter festivals, with more than two million visitors.



Not so much sweat but a lot of hard work went into finishing the ice sculptures before the deadline. (L-r): Martin Ingels, Christofer Geijer, Lars Hagebris and Karin Geijer, all from Ericsson.

Tough competition at Sapporo Snow Festival

Teams from Malaysia, New Zealand, the U.S., Greenland, India, Sweden and other parts of the world had three and a half days each to transform a three-by-three meter snow cube into a first-prize ice sculpture.

The A-Group consisted of 15 nations that all had won first prize in a B-Group competition in the past, thereby earning promotion to the higher level. The Swedish team, undaunted by its lack of past success, entered B-Group competition for the 14th consecutive year.

It was a rather confused collection of Swedes who were greeted by cheering crowds on the competition's first day, as they trod the boards before TV lights in a packed studio. During the festival, the ice sculptors are treated like temporary "Sapporo heroes" and their creative efforts are constantly interrupted by press photographers and fans. The participants are even asked for autographs and it was not without some satisfaction that the Swedes shook hands with new-found Japanese fans.

After an opening ceremony marked by pomp and pageantry, the festival was declared open and the five Swedish amateur ice sculptors began chipping away at their

block. Team leader Christofer Geijer of Ericsson Toshiba and his crew, consisting of Karin Geijer, a teacher, Lars Hagebris of Ericsson Toshiba, Martin Ingels of Nippon Ericsson and the undersigned. We were going against some pretty impressive competition, such as "Ice Carver," "Artist," "Decorator" and "Sculptor," but the spectators cheered us on and encouraged us "to hang in there."

The huge block of snow and ice gave us all something to do, but we had to decide what we wanted to create. What would be typical of Sweden and comply with the theme of this year's festival, "communications"? The Swedes got together, thought it over and the concept was hatched: a hand holding a mobile telephone - "Cool Communication."

After very intensive and even arduous sculpting efforts, the fourth day finally arrived and it was time to name the first-prize winner.

The ice sculpting participants lined up in teams on the festival stage and the master of ceremonies approached the microphone. The excitement was unbearable and finally the winner was announced...the winner of the Sapporo Snow Festival in the B-Group is... United Kingdom." The Danes and Swedes smiled weakly at each other with disappointed looks on their faces.

CHRISTINE CARS



The finished result after much hard work: "Cool Communication."

Photos: CHRISTINE CARS

end line

Escaping the ice age

Winter has held Sweden in its cold, steely grasp for the past several months. It has been an unusually cold winter, with some of the lowest temperatures in years. Many Swedes have looked anxiously northward, fearing a new ice age. Are the glaciers in the beautiful, frozen reaches to the north going to start growing again, merge and begin their slow descent southward, as they did 100,000 years ago?

Ericsson's northernmost city of operations, as far as we know, is Luleå, in northern Sweden. Reports from there have stated that no inland ice has been seen yet, so they probably have enough time to pack their suitcases and head south. The question is, where to go?

Maybe they should apply for jobs with that "Global Response Center," the unit that helps customers around the clock by traveling to all parts of the world. I mean, just think, what if they had a rotation system in that type of job, so you could move from one customer service center to another as the seasons changed. Start with a few months in Melbourne during September-January, move to Dallas for February-April and then to Stockholm for May-August.

In this little mind game, you could enjoy the two most comfortable seasons three times a year. Just think, spring has sprung, and then it springs again, three times a year.

In my dreamy scenario, you would have the added stimulus of changing work venues and cultures at regular intervals. Meeting new and pleasant Ericsson colleagues to work and socialize with for a few months and then look forward to meeting again "next spring." That is, in fact, one of my most positive experiences working for this company - almost everybody I meet, regardless of where I meet them, are darn nice people.

And finally, another little linguistic thought about the "Global Response Center," three little words that describe the unit which would be so nice to work for. We don't even have a name for in Swedish. I realize that English is the first language of the Ericsson Group, but it should be mandatory to name all units something in the respective native languages of every country. It is essential that all the local employees in any company and in any country understand exactly what the names of our different units stand for. As I see it.



LARS-GÖRAN HEDIN