ERICSSON

CONTACT

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Fire, but no hazard

Recently a great fire broke outat Ericsson Mobile Communications in Lund, Sweden. It could have been a real catastrophe for the Group. But thanks to reliable security routines, the result was merely a minor disruption to the development of new mobile telephones. 6

Indian revolution

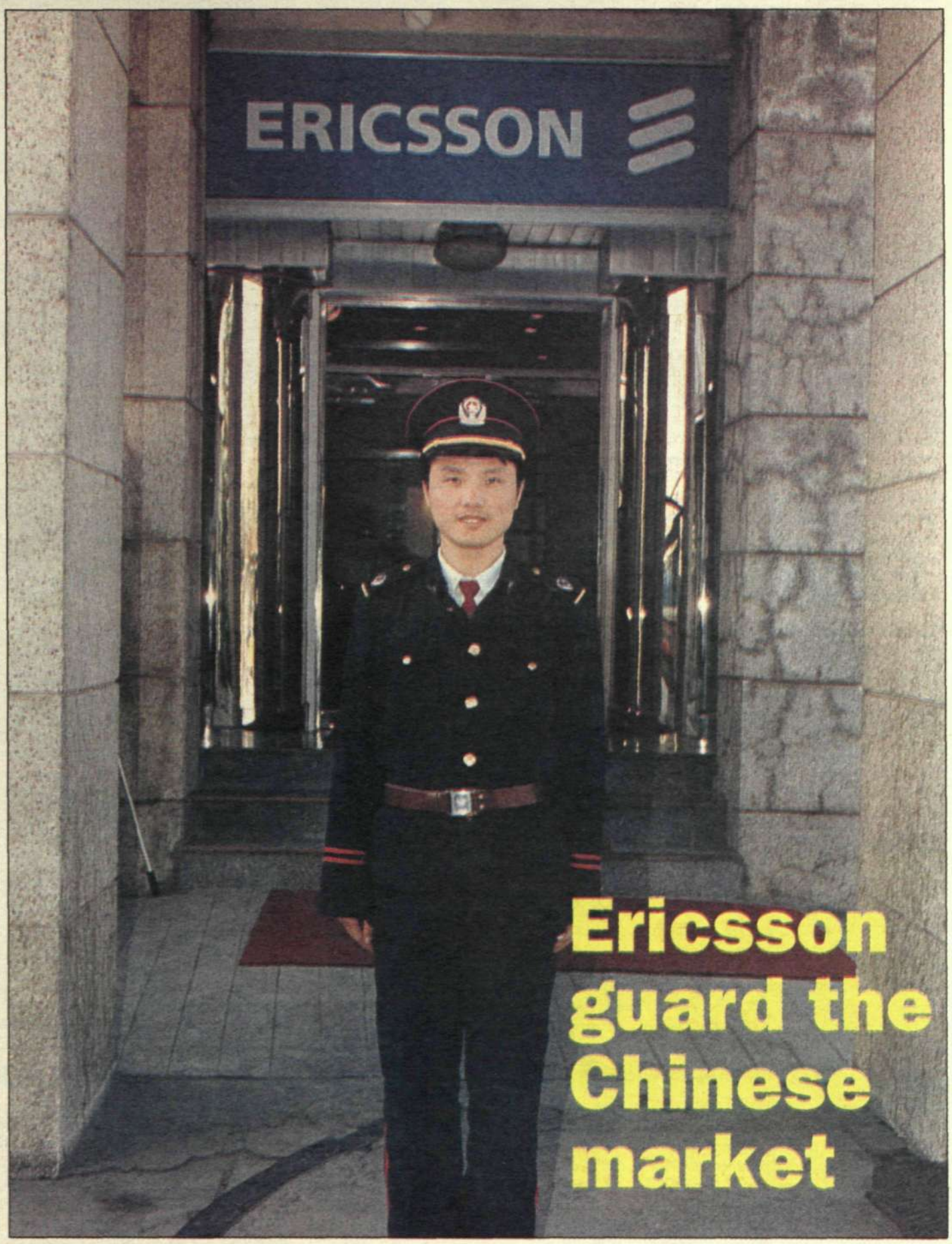
India is experiencing a revolution in telecommunications. The market is being deregulated and mobile telephony is beginning to gain solid ground. Naturally, Ericsson is active in this market in competing for contracts. 16

Exciting jobs abroad

Many Ericsson employees take their family with them when they work abroad for a few years. This is a unique opportunity to see the world and gain new experiences. India - a land of myths and legends – is one of the countries in which the Group currently needs people. 18

Language gaining ground

Erlang – Ericsson's new programming language – is experiencing favorable development. The number of users and projects has doubled in just one year. 11



China is becoming increasingly important for Ericsson. Another joint venture company was recently established to add to the Group's strength in the world's most populous country. Beijing Ericsson Communications Systems Company will be responsible for Chinese operations in the Business Networks business area. The Consono MD110 subscriber switch will be manufactured in a highly modern facility. 3

New Delhi opens first mobile net

Early in the morning of September 27 Sten Heckscher, Sweden's Minister of Industry and Commerce, received a telephone call from his country's ambassador in India, K. G. Engström. It was one of the first calls made when the local operator, Bharti Cellular, placed a GSM system – the first mobile system in the capital city of New Delhi – in commercial service.

Two more systems are on the way

Last December Ericsson received a contract from Bharti Cellular Ltd., which is owned by an Indian company, Bharti Telecom, Compagnie General des Eaux of France, EMTEL of Mauritius and Mobile Systems International of England. Representatives of all the owners were on hand when the system, AirTel, was introduced at a large press conference.

Since this was the first mobile telephone system to be placed in service in the capital city, the launching attracted a great deal of attention. Tommy Eriksson, president of Ericsson Telephone Corp. India AB, and Mats Bosrup, marketing manager for India at Ericsson Radio Systems, were both interviewed on Indian television. Advertising signs along the streets also carried the message: "AirTel – The power to keep in touch."

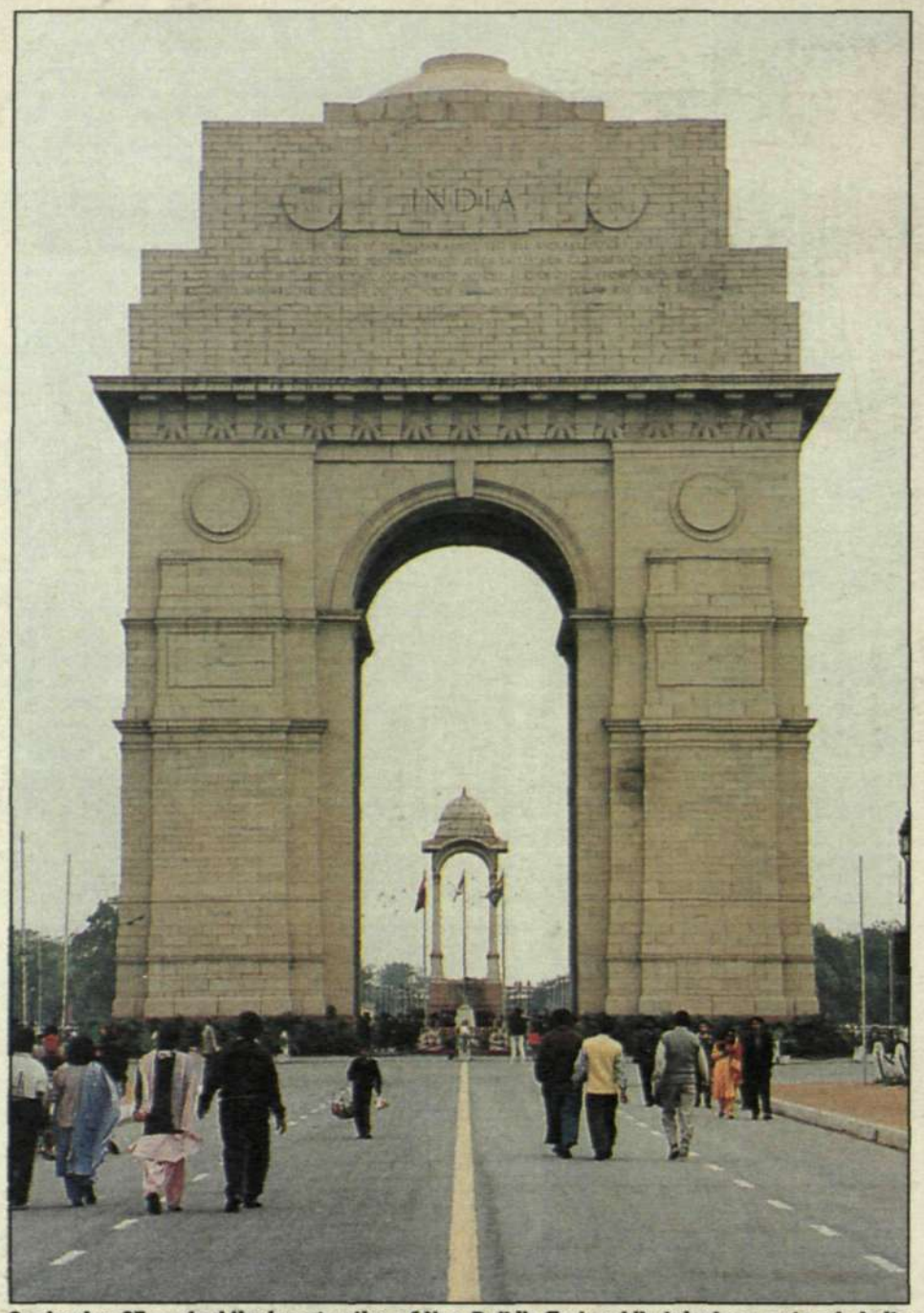
Licenses awarded last year

Last November the Indian Department of Telecommunications awarded eight GSM licenses – to two private operators in each of the country's four largest cities: New Delhi, Bombay, Calcutta and Madras.

"It is very gratifying to have now reached the point where we have placed our system in commercial operation," said Sunil Mittal, chairman of Bharti Cellular Ltd., when he opened the press conference. "It took a long time until we received the license, but everything has proceeded much more rapidly since then." He thanked Ericsson for a fine performance and said he looked forward to continuing cooperation.

In its initial phase the system, which covers all of Delhi and its suburbs, is dimensioned to handle 50,000 subscribers.

Gunilla Tamm



September 27 marked the inauguration of New Delhi's first mobile telephone network. In its initial phase the network will handle up to 50,000 subscribers. Photo: Elisabeth Omsén

Systems in Madras and Bombay, too

Two additional mobile telephone systems using equipment from Ericsson had been – or were in the process of being – placed in commercial service in India as CONTACT went to press.

In Madras, the operator, RPG Cellular Services Ltd., awarded Ericsson a contract on June 27 and placed its system in commercial service only three months later. This system initially has 26 radio base stations with a capacity for 15,000 subscribers.

The second system, which is being opened for commercial service by stages, is in Bombay.

The operator, Hutchinson Max Ltd., has purchased exchange equipment from Ericsson.

The system is initially dimensioned for 50,000 subscribers.

New radio-based Ericsson system for Indonesia

Ericsson's Indonesian partner, PT Erindo Utarna, has received a contract to supply a new radio-based system that provides access to the telecommunications network. The system, which is based on DECT technology, is to be delivered to PT Telekom, the local operator, and will be installed in Semarang on the island of Java. The order comprises a total of 4,000 lines.

The new DRA 1900 system was demonstrated for the first time at Telecom '95. It is designed to serve as an alternative or complement to traditional copper wiring during the final stage of connection to a subscriber.

"We are happy to be able to introduce this new access technology in Indonesia," says Robert Etteborn, who is responsible for Ericsson's operations in the country. Ericsson has been active in Indonesia since 1907. It is currently supplying both GSM and NMT systems, as well as PABX-es and fiber optical equipment.

Mexican company buys paging system

Radio Laser, a Mexican company, has become an important new customer for Ericsson. The company, which is part of the Comtel Group, has placed an order, valued at SEK 38 M, for a nationwide personal paging system. The system is to be placed in service at the end of the current year. The order includes the new Ericsson Compact 925 radio base stations and a distribution network for satellites.

Energy Master selected by Telia

Telia, the Swedish telecom administration, has selected the Ericsson Energy Master system to control power equipment in telecom exchanges. The Telia contract is an important one for Ericsson Components, which manufactures and markets energy systems. The selection of Ericsson Master as a nationwide control system for Telia represents significant recognition of the system's capacity and potential.

First GSM order in North Africa

Orbit Telephone Company in Libya has ordered a GSM system from Ericsson. The order – valued at SEK 296 M – is Ericsson's first of its type to be received in a North African country.

The contract from Orbit comprises a mobile exchange, radio base stations and transport network equipment. The system is scheduled to be placed in service during the first half of 1996.

Optical cable for Telia

Ericsson Cables AB and Telia have signed a contract whereby Ericsson will become the principal supplier of optical cable to Telia during 1996 and 1997. The contract, which is valued at slightly more than SEK 100 M, comprises primarily channelization and marine cable with between 12 and 96 fibers. The optical marine cable was developed jointly by Ericsson Cables and Telia.

Expansion of GSM in Shandong

Shandong Province Post and Telecommunications Administration has placed an order calling for expansion of the GSM network that Ericsson delivered in the province earlier. The order is valued at SEK 140 M. The contract was signed in connection with the recent inauguration of the original network. This network, which was ordered in May, was worth SEK 121 M.

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Joint opening of Beijing Ericsson Communications Systems Company Ltd. Sweden's Foreign Minister Lena Hjelm-Wallén, Board Chairman Bau Yu Tong (right) and Li Runwu, vice mayor of Beijing, cut the ribbon.
Photo: Thord Andersson

Chinese inauguration

The official opening of the new, modern Beijing Ericsson Communications Systems Company Ltd. (BEC) was carried out with pomp and ceremony by Swedish Foreign Minister Lena Hjelm-Wallén on October 16. The event was held in conjunction with a goodwill tour to China which included the Swedish Ambassador to China, Sven Linder, to promote Swedish industrial ventures in the country.

This establishment is another milestone for Ericsson's China operations, which have grown so sharply in recent years, to the current value of nearly SEK 7 billion annually.

The newly inaugurated company is part of the Business Networks business area and is managed by Gunnar Wenneberg, who is also responsible for all of the business area's operations in China.

24 regional offices

Accompanied by Board Chairman Bau Yu Tong, Gunnar Wenneberg welcomed the Foreign Minister and guests. He explained that his company, with 520 employees and operations involving production and sales, with 24 regional companies across China, is the largest of Ericsson's six joint-venture companies in the country.

An ultra-modern unit for manufacturing the Consono MD110 subscriber switch has been established in the building in Beijing, which covers 15,000 m2. The building also houses the sales and service organization and company management.

Glowing communications with the help of interpreter Florence Peng.

Technology transfer

The Foreign Minister expressed great pleasure in having the opportunity to inaugurate such an important joint venture between China and Sweden.

"Ericsson has been active in China for more than a century. Today, China is one of Ericsson's largest and most important markets," she said. "The investment made here are an excellent example of technology transfer to the rapidly growing Chinese telecom market. The local presence of Swedish industry, which has been supported so well by the Chinese authorities and companies, is positive.

President Gunnar Wenneberg thanks the Foreign Minister after the opening ceremony.

"I extend wishes for success and hope that your future in these new premises will be bright," Lena Hjelm-Wallén said.

In traditional Chinese fashion, the opening was a colorful show with flowers, music and red banners highlighting the festive occasion.

The vice major of Beijing also participated in the ceremony.

The multitude of invited guests also included Bo Landin, Senior Vice President Corporate Markets, and the finance officer at Ericsson (China) Company Ltd., Hans Falenius, as well as representatives of the Chinese media.

The program included a tour of the production and office premises, guided by Gunnar Wenneberg. During this event, the Foreign Minister symbolically started production through pressing the start button to the new machine for automatic mounting of components on the surface of a circuit board. Chinese TV featured a lengthy report about the opening the same evening.

Thord Andersson

Ericsson increasingly stronger in China

China is now unrivaled as Ericsson's single largest market for business communications. Since the modest beginning in 1984 when the first contract was signed for the MD110 susbcriber exchange, the Chinese market has expanded steadily – and at a dramatic pace in recent years. This means that *Ericsson has an installed base of almost 1.5 million* MD110 lines nationwide.

As a result of the dynamic development of Chinese busi-ness and industry, there is a relentless growth in the demand for various types of telephony. This applies in particular to business communications. It is estimated that the current market amounts to two million lines per year. Ericsson has about 20 percent of these, or about 400,000 lines. Most of these are Consono MD110, while the remainder is BusinessPhone supplied by Ericsson Schrack.

Majority owned

Beijing Ericsson Communications Systems Company (BEC) is a joint-venture company in which Ericsson holds 55 percent while its partner Beijing Wire Communications Plant (BWCP) owns the remainder. The latter is in turn owned by Beijing City. The company established its operations in July 1994 and initially focused exclusively on the manufacture of the MD110 in the then rather primitive premises which were located in BWCP's gigantic corporate zone on the Jiu Xian Qiao Road, a heavily trafficked main thoroughfare in the north-east of the city, not far from the present site of the Ericsson (China) Company head office.

At the beginning of 1995, the building had neither hot water nor effective air-conditioning. The office areas had not been equipped – there was almost no furniture. Moreover, the building had no elevator. An investment program was launched to bring the premises up to modern western standards. The manager of the installation and service manager, Phil Canfield from the U.S., was given the task of supervising the renovation project in addition to his ordinary responsibilities.

Renovation

The task of renovating and furnishing the company to make it a highly modern workplace was completed in just a little over four months.

The investments amounted to SEK 18 million – money well spent. All furniture and almost all other equipment was bought locally. The office is open plan with movable walls, with all work stations equipped with telephones. The office houses some 300 people. The sales people are seldom seen here since most of the time they are out at customers, as are the 85 employees who work with installation and service.

Managing service and installation throughout the country with so few people requires good planning and imagination. Phil Canfield is working persistently to get the whole thing to function, but much remains to be done. Recently, he received the first fixed service contract. This covers service and maintenance of the communications system in Procter & Gamble's Chinese network.

Millions across counter

Stig Lennart Lindström, the controller, has devoted much effort to building up a functioning administration which lives up to Ericsson's demands. Naturally, the cultural differences impose certain limits. In China, invoices are not always handled in the same manner as in the West and a functioning bank-based payment system does not yet exist. Many payments are made in cash. It is not unusual for customers to come by and pay across the counter.

The amount per transaction is, of course, lower than those Ericsson units which sell exclusively to public sector operators. The number of individual customers is also larger. The average transaction is about SEK 500,000. Since these transactions are spread nationwide, people are required to monitor due payments. Accordingly, Stig Lennart has eight employees who focus exclusively on traveling around and visiting customers for payment. This is, of curse, a risky task. Robberies have occurred on trains, which is the most common form of transport. But generally speaking things function well, although the cashiers may have to stay a week before a settlement is reached regarding payments.

Beijing Ericsson Communication Systems Company is undoubtedly the most "Chinese" of the Ericsson companies in China. Of the 520 employees, only eight are foreigners. These are contract-based employees.

"There is a continual problem of understanding in China," says Gunnar Wenneberg, who speaks good Chinese. "We use interpreters daily in our work. This is time-consuming but it is necessary. Nevertheless, there is a risk that people will not fully understand each other. In such cases, one has to ask again with the help of the interpreter to ensure everything is understood. We are now focusing heavily on training interested personnel in English. A good knowledge of English is necessary for a career with us.

Gunnar Wenneberg's secretary, Florence Peng, is a particularly important person. Originally from Taiwan, she has worked for several years as a secretary with Ericsson Taiwan. She is highly familiar with the Ericsson culture from inside the company and with her background from Taiwan, she is fully conversant with the Western way of thinking. But she can also think like a mainland Chinese. This means that she is probably the most important mental link between the foreign and Chinese managers. Naturally, it is also an advantage that the dialect used in Beijing and Taiwan is Mandarin. During all important visits, such as that of the Swedish Foreign Minister or during meetings of the management group, Florence Peng always serves as the interpreter.

Increased sales

The core customers are found mainly within large public administrations, ministries, military organizations, coal mines, oil industry, energy production and telecommunications. There is a substantial increase among medium-sized companies in all conceivable industries. The new telecom operators, such as Ji Tong (datacommunications) and China Unicorn, are exciting newcomers. In addition to the MD110 and Eripax equipment for data traffic, the company also sells microwave links.

"Ja Tong recently acquired six MD110s and some 20 Eripax nodes. The potential is gigantic. A link is being launched which will connect 300 areas. This may require 5.000 Eripax nodes " says Ulf Jervinge, market manager.

Lü Xiao Na is one of many skilled operators in the production unit. Here circuit boards are produced, both for own products and for other companies. Photo: Thord Andersson

A strong management team: The company controler Stig-Lennart Lindström, manager of service and installation Phil Canfield och marketing manager Ulf Jervinge.

There are many mouths to feed. China has close to a quarter of the earth's population, but less than seven percent of the arable surface.

Raising Quality is crucial. The aim now is to get an ISO 9001 certification before year-end. The Quality manager Jarl Jonsson is posing together with Zhou Xiao Hong who translated Ericssons Quality policy to Chinese.

Deals are completed almost every day. Expansion in the form of thousands of lines per customer is not by any means uncommon. During my meeting with Ulf Jervinge, it was announced that Da Gang Oil Field has just signed an extension order for 5,000 MD110 lines.

At the moment, the company has started to focus on radio products based on the DECT standard. This initially involves the Freeset office telephones and the new access product DRA1900 which is regarded as offering high potential among public-sector operators in China, who need to expand their networks rapidly.

Sales training

"We are now taking major steps to improve sales personnel training. In the long term most of them will need to learn English to be able to utilize all the innovations that are continually appearing.," relates Gunnar Wenneberg. "At the moment we are conducting concentrated sales training programs for our key sales personnel under the auspices of Mercuri International, under the supervision of Soon Yik Mean and Calvin Lim from Hong Kong. These tasks include creating understanding of the changing attitudes which are required to attain good sales results."

Since year-end, Jarl Jonsson is also included in the management group. He is responsible for quality issues and is now struggling (valiantly) for the company will be one of the first in China to receive ISO 9001 certification. The objective is to achieve this status already during 1995.

Easy to learn

"It is a great challenge and hard work," says Jarl Jonsson, " but it is not impossible. My nickname at Ericsson is Jalle. This is also how it sounds when translated to Chinese. I have it written on the back of my business card and it means strict and happy. I think it's a very appropriate name for a quality manager."

The Chinese are very interested in quality matters and find it easy to learn, but they also want very detailed instructions to avoid making mistakes.

Jarl Jonsson's Chinese assistant, Zhou Xiao Hong is now translating Ericsson's quality manual to Chinese. This is being done in consultation with the quality division within Ericsson (China) Company. It is extremely important that the translation is correct and that the language is carefully checked. The core of the text must be crystal clear.

"Quality is an ongoing process aimed at satisfying the customers. Ultimately, the customer determines the quality of our products and also pays for it." says Jarl Jonsson, "and the requirements are rising relentlessly here in China."

Two certifications

"We already have two sub-certifications which have gone fairly well. We have been praised for our document processing, which is the basis for all continuing quality work."

With the air of optimism encountered on a visit to Beijing Ericsson Communications Systems Company, one is quite convinced that ISO certification will be successful. It will be a significant milestone and an important platform for this particular company and for Ericsson's future as a whole in China.

Thord Andersson

At about 2 a.m. in the morning of October 23, a night-watchman on his rounds heard a window breaking. The burglar alarm sounded at the same time, closely followed by the fire alarm. On the ground beneath the broken window, investigators found some old rags, matches and a plastic container half-filled with gasoline.
Photo: Scandia Photo/Patrick Persson

Arson suspected in Lund blaze

Some 70 workplaces were totally destroyed when an office building belonging to Ericsson Mobile Communications in the Ideon research village in Lund burned to the ground in the early morning hours of October 23.

"The alarm system, the fire doors and other technical equipment worked well, and thanks to the regular backup copying of all computerized information, no data was lost," relates Stellan Svensson, security manager in the Radio Communications business area. "So the damage caused by the fire was not as devastating as it might have been."

At about 2 a.m. in the morning of October 23, a night-watchman on his rounds heard a window breaking. The burglar alarm sounded at the same time, closely followed by the fire alarm. The fire department attended the blaze, which was at first not thought to be very serious. On the ground beneath the broken window, investigators found some old rags, matches and a plastic container half-filled with gasoline.

"About an hour later, what fire experts term a flashover occurred, and the blaze spread rapidly from the office where it had started to the entire office building," continues Stellan.

"At one point, the main building nearby was thought to be threatened, but by spraying water on the adjacent office buildings, the firefighters managed to restrict the blaze to the building where it had started."

The police have confirmed that the fire was deliberately set, but have yet to apprehend the arsonist.

Rapid recovery

"It could have been a lot worse," notes Sven-Olof Jönsson, personnel manager at Ericsson Mobile Communications in Lund, where development work on Ericsson's mobile telephones is conducted. "We are undergoing a rapid expansion," he elaborates, "so there was another, fully-equipped office building ready for use. As a result, we were able to move into the building immediately, so that by Wednesday we already had 60-70 percent of operations under way again, and by Friday all the personnel affected were able to get back to normal work."

"The fact that we were able to resume operations so rapidly was largely attributable to the sophisticated security systems that the employees in Lund have incorporated into their computer network," explains Christina Andersson, who is in Charge of IS/IT systems in the Mobile Telephone business unit. "After the fire, it transpired that the network was still largely intact. This, plus the fact that our computer suppliers wasted no time delivering replacement PCs and printers, minimized the extent of the work stoppage."

Damage limited

"I am relieved that the impact of the damage was so limited," adds Stellan. "What could have been a major disaster was limited to the loss of a single office building in the blaze. Also, I am impressed with the initiative, presence of mind and resolute action displayed by the personnel in Lund both at the time of the blaze and during the next few days. Everyone knew what had to be done and acted accordingly.

"This fire demonstrates how important it is that alarm systems and other fire-protection equipment should be installed and functioning properly. It is absolutely crucial to make continuous backups of data files, and in this regard our systems technicians in Lund did a fantastic job," concludes Stellan Svensson.

Gunilla Tamm

More GSM for Australia

Vodafone Australia, which operates one of the country's three GSM networks, awarded Ericsson Australia an order valued at SEK 600 million to expand the GSM network. Deliveries of the order, which covers exchange and base-station equipment, will commence next year.

In 1993, Vodafone Australia selected Ericsson as the main supplier for its network. Since then equipment orders totaling SEK 2.1 billion have been placed.

"We have developed close cooperation with Vodafone," says Kjell Sörme, President of Ericsson Australia. "Orders from this customer have had a decisive role in enabling the Group to build up its Australian manufacturing operations in mobile communications products."

Majority in Indelec

Since 1993, Ericsson S.A., in Spain, has been a shareholder in the Spanish electronics company Indelec. The company has now purchased an additional 40 percent of the shares and is thus the dominant majority owner – with 90 percent of the share capital.

Indelec S.A. – an acronym for Industria Electronica de Telecommunicaciones – has its operations in the northern Spanish industrial city of Bilbao. The company has become Ericsson's manufacturing and development center for terminals designed for technology referred to as Radio in the Local Loop. This technology permits telecommunications cables on the outermost sections of the fixed network to be replaced by radio technology. The Spanish telecommunications company, Telefonica, which was previously part-owner in Indelec, is one of the main customer's for Indelec's products.

New digital network for Japan

Ericsson has gained another important customer for digital mobile telephony in Japan. This is Digital Tu-Ka Hokkaido, which awarded Ericsson a contract for a digital network based on the PDC standard. The order is worth SEK 250 million and the system will be in operation by mid-year 1997.

Digital Tu-Ka Hokkaido's shareholders include Nissan Motors and Japan Telecom. The operator is a member of Digital Tu-Ka Group. This contact means that Ericsson's customers for PDC systems has increased to five. The four previous customers are Tokyo Digital Phone, Central Japan Digital Phone, Kansai Digital Phone and Digital Tu-Ka Kyushu, which have combined subscriptions of 600,000.

President appointed to Ellemtel

In connection with the recent takeover by Ericsson of Ellemtel Utvecklings AB, the company was renamed and the old Ellemtel name was transferred to a new company. Like its predecessor, the new Ellemtel has both Ericsson and Swedish Telia as owners, and it will focus on the development of new telecommunications services.

Anders Carlsson has been appointed president of the company. Mr. Carlsson was previously president of Telia Promoter AB. Anders has been employed at Telia since 1978.

A COOLING OASIS IN TELECOM DESERT

Ericsson's stand at Telecom '95 was unlike most of the others. Instead of a massive offering of products and spectacular drawing cards, the Company concentrated on hospitality and relaxed sessions with visiting customers – actual and prospective.

With one of the best locations at the show – along Telecom '95's "main street" – no one could miss Ericsson's stand. The three-story structure, whose design resembled that of a dignified skyscraper, was an unavoidable eye-catcher. If nothing else, the two window-washers who performed high up on the facade of the structure caught one's attention.

"That little gimmick was added at the last moment," says Arne Johnson of Ericsson Events, who was in charge of Ericsson's participation in Telecom '95. "I thought something was needed to lighten up the 'heavy' impression created by the stand."

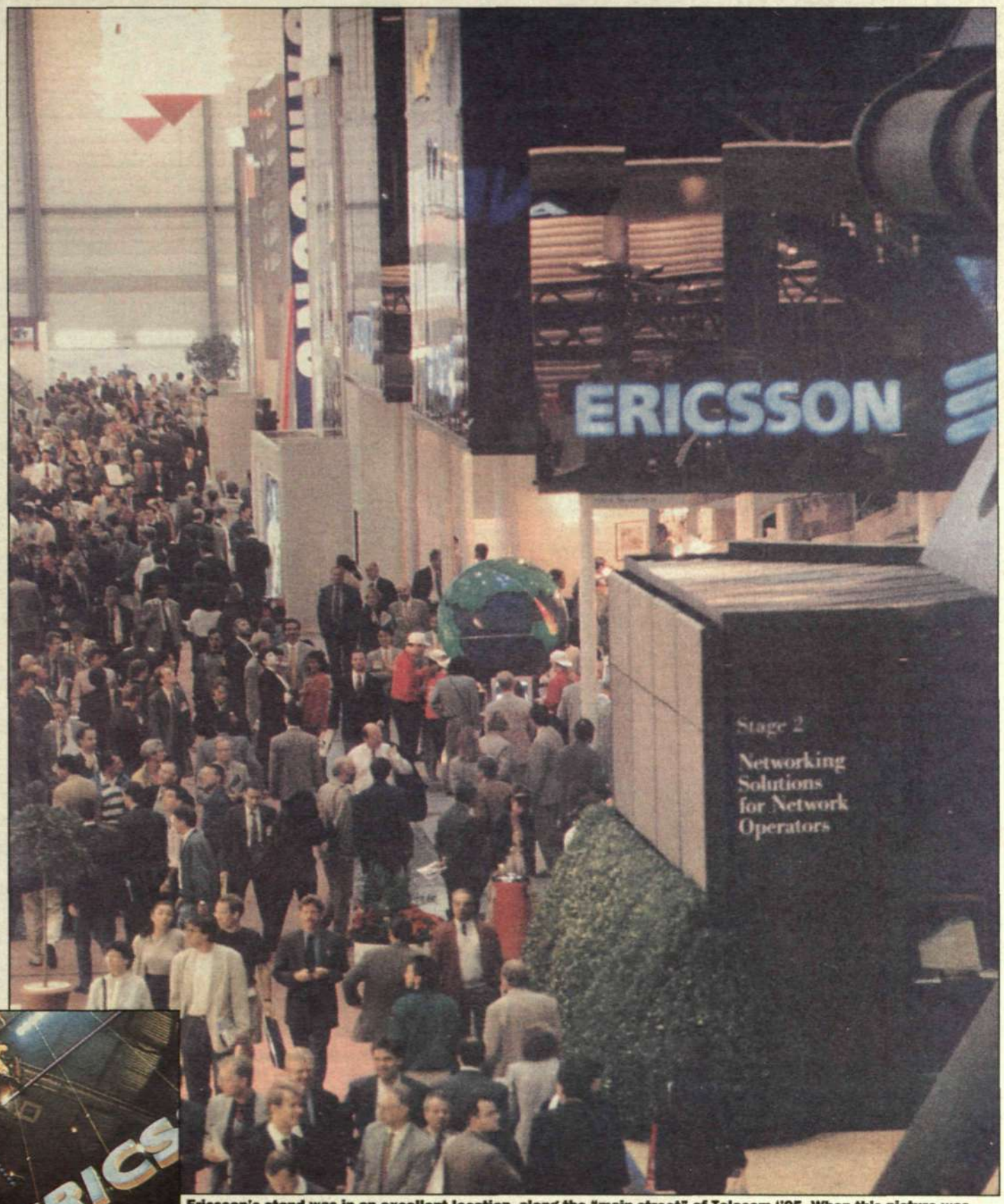
900 guests

Despite the fact that Ericsson's stand this year was its largest ever, there was less room for demonstrations of products, systems and services than had been the case earlier. This was not because Ericsson lacked things to demonstrate, but reflected a deliberate approach on the part of the managers of the display.

Only 20 percent of the total exhibit area was devoted to presentations; the rest was reserved for "taking care of people" – customers, the media, visiting Ericsson employees and, not least, the stand's personnel.

On the second floor – where Art McCabe, Ericsson's marketing manager in Canada, acted as host – customers were served light snacks and beverages. As many as 900 guests a day were entertained in "Art's bar." All were "qualified" visitors, since no one was allowed up the elegant steps to the bar without an Ericsson escort.

"In all, we had nearly 30,000 qualified visitors in our stand during the ten days of the show," Arne reports. "In addition, there was a very large number of Ericsson employees who traveled to Geneva, in many cases in order to take care of 'their' customers."



Ericsson's stand was in an excellent location, along the "main street" of Telecom "95. When this picture was taken, on the next-to-last day of the show, the crowds had thinned out. The two window-washers (left) attracted a great deal of attention.

High level

A number of prominent delegations were noted among the guests, including several communications ministers, a number of heads of large telecom operating companies, and others. This year, Ericsson's management assigned a higher priority than before to Telecom. Lars Ramqvist, for example, spent four full days at the show. This not only gave him time to meet many of the Company's most important business partners but also enabled him to become acquainted with a large number of customer representatives at lower levels.

"It was really stimulating and instructive to talk with people with whom I do not normally come in contact when I visit customers," Lars says.

"The four days in Geneva represented a very good investment on my part, just as the entire Telecom show was a very good investment for Ericsson," he adds. In addition to Lars Ramqvist, all of Ericsson's Business Area managers and nearly all of the company presidents were on hand one or more days.

Right approach

Lynn Howell Wiklander had the principal responsibility for Ericsson's exhibit personnel at Telecom. She says that the staffing this year was the most international ever. Swedes naturally continued to be the dominant group, but one third of the specially trained exhibit staff came from other countries. All parts of the world were represented, helping to illustrate what an international organization Ericsson really is.

"Our focus on training and taking good care of the employees really paid off," Lynn notes.

"Many visitors expressed their admiration for the professionalism shown by Ericsson when it came to taking care of guests."

"And many of the other companies prowled about our stand in an effort to learn from our good example," Arne Johnson adds.

Lynn returns to the subject of international diversity:" I have had many telephone calls since I returned from Geneva," she says. " In most cases, they have been from fellow-workers at the exhibit who call to chat. Many feel sad that the days in Geneva are over. And all of them say how glad they are that they were able to have been part of things there. And that they 'experienced' Ericsson as the organization it really is – a single large but very international company."

"I am proud to work at Ericsson and in this exhibit" was a comment heard many times during Telecom '95.

Telecom '95 report:
Lars-Göran Hedin

THE RECORD SHOW – TURN!

Industry VIPs Throng Telecom in Geneva

With "Connect!" as its theme, Telecom '95 attracted nearly 190,000 visitors to Geneva this year, more than ever before. Even more impressive was the "quality" of the participants in the telecommunications industry's great trade show. Hundreds of communications ministers and senior executives of operating companies were in attendance. And 2,143 journalists were on hand to cover the event.

Since the most recent Telecom show in 1991 the number of subscribers linked to mobile telephone networks has increased by more than 50 million. The 1995 trade fair reflected this trend to a high degree. Systems and terminals for all the different standards that are applied in mobile telephony today – and for some new ones – were on display.

The International Telecommunications Union (ITU), for example, demonstrated the new digital IMT 2000 standard that is now being developed under the organization's auspices with a view to establishing a global standard. And a number of Japanese companies exhibited systems and equipment for PHS, a new standard for personal communications. Base stations for broadband radio, new systems for data communications and, of course, satellite-based mobile systems were also being exhibited.

Alcatel displayed a small new GSM telephone and Matsushita of Japan offered a digital telephone that can handle both voice and data – including handwriting. Like a number of other Japanese manufacturers, the company now also offered GSM telephones. The competition is stiffening now that the Japanese, Koreans and others are closing in on the technological lead that Ericsson, Nokia and Motorola have enjoyed to date.

DECT technology is another area in which Ericsson is now facing many more competitors. Philips of Holland was one of the companies that displayed new products in this field.

Unisource's "laser man" was one of Telecom's most notable drawing cards.

Multimedia

The impression created by Telecom '95 is that more and more companies will be entering the industry. The great interest surrounding multimedia, where telecommunications and data are very closely related, is a contributing factor. As a result, many data companies participated in the fair. The three letters "ATM" (for Asynchronous Transfer Mode) recurred continuously on exhibitors' stands. Commercial ATM exchanges are today being offered primarily in the field of business communications – and in virtually hundreds of versions.

Stratacom, Alcatel, Ascom, Digital Link, RAD Data Communications and ITK were a few of the companies that also displayed ATM hardware with an eye on applications in public networks. And nearly every operator represented at the show attempted to promote interest in broadband by marketing new broadband services. Singapore Telecom, France Telecom, Teleglobe Canada, Telecom Finland and ITU were among those took this approach.

SDH and SONET were not the only systems in the transmission field that attracted interest. Much is now being done to extend the life of the traditional infrastructure where it connects with subscribers. The era of the copper wire is not a thing of the past.

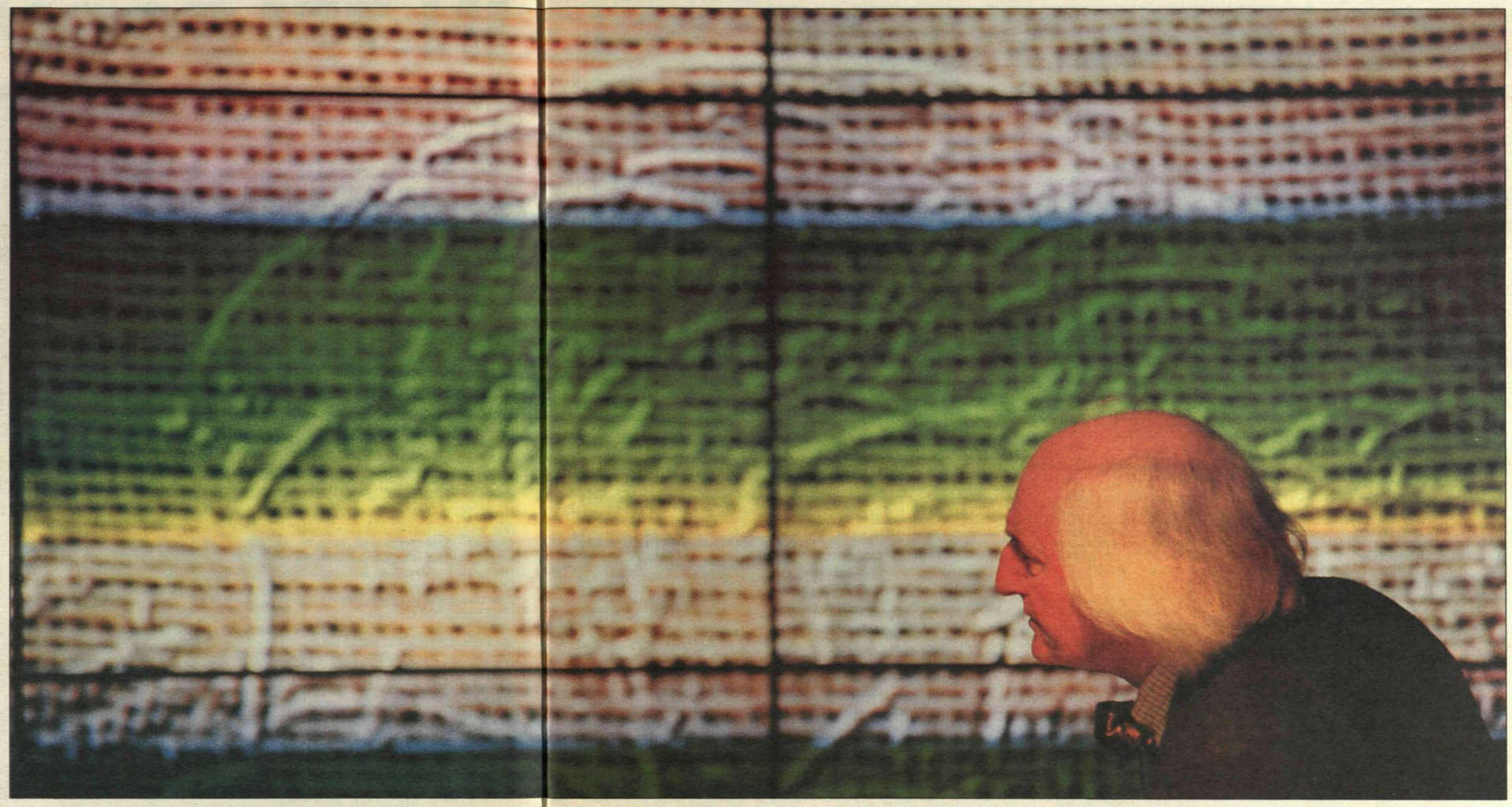
ADSL and HDSL are two technologies that make it possible to increase the capacity in existing networks to even handle video transmissions in one direction. Like Ericsson, many other companies had products to offer in this field. Many "niche" companies are focusing specifically on the new areas of technology and, despite limited resources, have thus been able to make as much progress as the large telecommunications giants. Castor Telecommunications, Datentechnik Intercom, Orbit Communications and Westell Europe are a few of these specialized companies.

Operating support systems

Along with mobile telephony, ATM and transmission technology, one other area dominated this year's show. Never before have so many systems and products for operating and maintaining telecommunications and data networks been on display. Ericsson's TMOS family of operating support systems has acquired many qualified competitors.

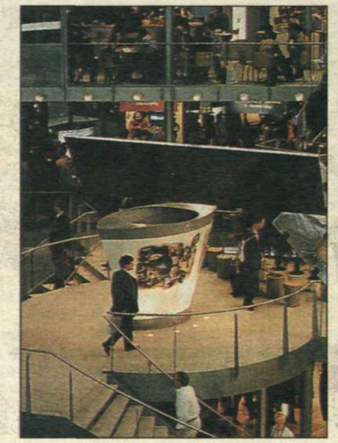
The general trend that characterized Telecom '95 was visible in this area as well. The large companies – Alcatel, AT&T, Ericsson, NEC, Northern Telecom and Siemens – have to compete with hundreds of niche companies. The lasting impression derived from the show is that the large companies' greatest advantage over the small ones is probably due more to factors other than the products they are offering. In the case of Ericsson and the other dominant firms, such concepts as "strength," "security" and "total competence" are most likely the critical elements.

Lars-Göran Hedin

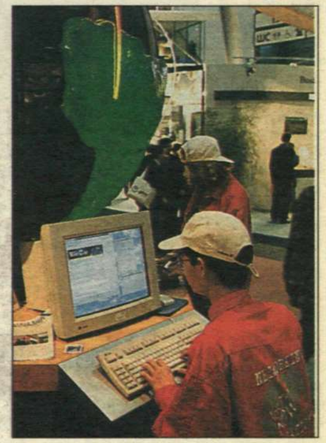


NTT, the Japanese operator, was one of the exhibitors that focused on entertainment to project its message — that it is not exclusively a Japanese company but one that is active internationally.

Celebrities presented a piece that was a demonstration in multimedia and live music. The show drew a full house in the company's "theater". Other exhibitors presented a range of entertainment from ballet to rock videos.



Telecom '95 was a show on many levels – figuratively as well as literally.



Ericsson's "Future Kids" surfed the Internet, arousing the curiosity of many visitors.

Bo Landin (middle), one of the corporate executives on hand in Ericsson's stand, welcomes a Chinese delegation,

Telecom is undeniably the most important meeting place for all involved with telecommunications.

Future access networks

New players from the data industry and the semiconductor field converged with traditional telecom companies at Telecom '95 in Geneva in October. Such new concepts as "the global village" and "a global college" were introduced. Multimedia demonstrations, video conferences, remote teaching technologies and "shows of the future" displayed on large, high-resolution screens projected the mammoth crowd well into the year 2000.

S. R. Jawarajkwa, a microelectronics customer based in India, shown together with Sarat Samanta, Johan Eriksson, Hassan Akhlaghi and Steffan Robertsson at the Warwick Hotel.

At the Warwick Hotel, half an hour by cab from Palexpo, the site of the trade show, Ericsson brought customers together for a special seminar on "Trends in the access network."

Krister Ljungquist of Ericsson Telecom, Åsa Zetterman of Ericsson Radio Access and Eva Hök of Ericsson Components arranged the jointly sponsored seminar dealing with subscriber access, radio communications and microelectronics. Håkan Jansson opened the meeting.

True convergence

"Telecom '95 is displaying new services and new systems, multimedia, use of the Internet, electronic highways and many expectations for the future," he said. "We are seeing a major change and can truly speak of convergence.

"This is illustrated by the large number of players from the data industry – Lotus, Hewlett-Packard, IBM and many other major companies – from the semiconductor industry, and of course from the telecommunications industry, which constitutes the base for this convergence.

New services

"Ericsson, too, is seeking to develop new services. We are really competing in the market now. The established operators are becoming more disposed to compete and want to make more money, and we have to adapt to this changing environment. We have to have a better understanding of the operators' customers – and understand which services can help operators move forward.

"I am convinced that there will not be any 'killer' application that will knock out all the others. Nor will there be a single type of network. The technologies will develop in different ways in order to find solutions to the operators' problems."

Digitalization

Digitalization that offers maintenance services is taking place in the television industry. The data industry is offering high-quality multimedia services. Traditional operators are focusing on business environments – but also increasingly on the home environment, which is becoming more important in commercial terms.

What does this trend involve for a company like Ericsson?

Different systems

"We have to have many different systems in order to connect users to the Internet, to multimedia and to electronic highways – and in order to install new lines quickly and at new, low costs."

And this is precisely what the Ericsson symposium dealt with.

An access network branches off into a "fine-meshed" system in the final kilometers leading to the subscriber.

As a result, it is expensive to build and expand. Thus, for economic reasons, it is attracting increasing interest.

"By using basic technology in the access network and finding such economic solutions as the use of radio and copper wire for ISDN, we can achieve a more efficient and less expensive network," Håkan Jansson pointed out.

Fiber to the bathroom

Today we are already using fiber in applications fairly close to the subscriber, but not all the way. How close to the customer can we come with fiber? We have reached the street corner, but when will it be economically feasible to extend fiber into the home? There are applications today – links to computers – that are ready for a fiber connection. And the products are beginning to appear.

Peter Brokmar of Ericsson Radio Access AB described Radio in the Local Loop (RLL) as an access application.

"The concept is to establish fixed-wire telephone connections with the aid of radio, rather than traditional copper wire. The radio-linked subscriber will have the same range of services as one who is 'wired.'"

German experience

When Germany was reunified there was an urgent need to expand the telephone network in the former East Germany. The solution to the problem was based on a combination of fixed cellular service and RLL in which mobile exchanges were connected to the local telephone exchanges. Within a year, 45,000 lines had been installed in the eastern sections of Germany.

"The experience in Germany gave rise to the RAS 1000 product concept," Peter Brokmar noted. "The RAS 1000 system is connected directly to the local telephone exchange and offers subscribers the same service provided by the exchange. The system can be connected to any type of local exchange."

Increased content

Johan Eriksson of Ericsson Components reported on research and development of access products involving opto and microelectronics technologies. Investments in Ericsson's new submicroelectronics plant are paving the way for development of access products of the future, he declared.

"The RLL system involves short distances between terminals where the line-circuit and radio functions are located.

Luu Hong Hanh of LM Ericsson International AB in Vietnam had customers from Vietnam Telecom as his guests at the seminar.

These short distances offer opportunities for increased integration in our SLICs – including call-signal generation – thereby reducing the size and cost of the terminals." This method is being used in the RAS system, Johan Eriksson said.

Turnkey systems

Magnus Odelius of Ericsson Business Networks discussed turnkey systems.

"We have attempted to reduce the costs in our DRA 1900 system, which is based on DECT technology," he said.

"Radio technology – employed for cost-effectiveness and mobility – serves as the base. The system can be used to cover large areas and it uses only a small amount of power."

Describing new systems that increase capacity, Hans Reiter defended retention of copper wire in the access network.

The 600 million telephone lines in the world today will increase to 900 million by the end of the century, he noted. Making a change is costly and the installation work involved is substantial.

Optic access

Per Andersson also dealt with the use of optics in the access network. Optics being used today range from the microscopic – optical integrated circuits – to global optical Gigabit networks.

While the last few meters in these networks still employ copper wire (and perhaps will continue to do so), the new services and the greater amount of information transmitted are based on the use of high-capacity fiber in an increasingly "fine-meshed" network ever closer to the end subscriber.

And, except for the final bit in the telephone instrument, wireless communication is actually transmitted via fiber.

Participants in the seminar were able to study an outstanding display of Ericsson products and systems for access networks.

Text and photos:
Inger Björklind Bengtsson

Straight up for Erlang

The popularity of Ericsson's own programming language, Erlang, is climbing steeply. The number of users and projects has doubled in the past year. While Erlang is becoming the favorite of a continually growing number of users inside Ericsson, it became apparent that colleges and other external users are showing increasing interest based on attendance at the second international Erlang Users Conference held in Stockholm (Kista) in mid-October.

Fast, easy-to-use, simple-to-learn, good tool for analyzing ideas, etc., are the most common accolades when talking about Erlang. And the user conference in Kista strengthened Erlang's position as a flexible tool, particularly in smaller, prototype projects.

During the conference, which drew about 180 participants, a number of successful Ericsson projects were presented, such as the Mobility Server (just-released product for subscriber exchanges, where personal telephone numbers provide maximum mobility for a subscriber with several telephones) and TeleTrain, developed in a very short time (for the Italian train network, in which you search functions instead of people).

Through a number of successful projects, Ericsson's own programming language, Erlang, has taken a giant step upward and in a year the umber of projects and users has doubled. The advantages with Erlang are normally described as being able to focus on what the system is intended to accomplish rather than how it has to be implemented. Erlang is at a high abstraction level and handle much of what a programmer was required to do when using conventional languages.
Illustration: Bim Ericsson

Spreading outside Ericsson

It was also interesting to note that Erlang is beginning to be used outside Ericsson, and even outside the telecom industry. "Computer Generated Forces in Erlang" was the title of a paper presented by Uppsala University, where several students had been assigned by CelsiusTech to develop a military combat simulator.

Other examples of newly started projects were presented by colleges in Beijing and Belgrade as well as the research department of the telecom administration in the Netherlands.

Erlang is being favored by the winds. In a year, the number of users and projects using Erlang has doubled, as well as the number of course attendees.

"We always receive very positive reactions internally," says Roy Bengtsson, head of Erlang Systems, a business unit within Ericsson Software Technology.

The main development is now within Ericsson Telecom, which increasingly is reinforcing its position as the largest user, particularly in the broadband field.

Doubling of users

But can the trend continue at the same pace? And, if so, how? Is Erlang to be retained as an Ericsson "weapon", a so-called "Key Technology," or is it time to spread Erlang globally, free-of-charge?

These questions were the issues addressed in a panel debate at the conference.

"There are many who are now interested in Erlang, but where do we go from here?" queried panel chairman Bernt Ericson, Ericsson's head of research.

Dr. Jerker Wilander, from Softlab in Linköping, Sweden, contended that it was not easy to introduce a new technology. "No one actually wants to try something new or change work methods. It's often much to risky. The only way to spread Erlang is through the users. A satisfied user breeds another, etc. Good results carry the technology along." Or, according to Philip Wadler, Glasgow University:

"We educate students who graduate and moved into industry."

"In this fashion, technology is spread naturally."

A number of requests regarding improvements in Erlang emerge during the panel discussion.

However, on this point Roy Bengtsson at Erlang noted that Erlang is better than most people think and that the issue is mostly one of information.

For example, a number of users sought better compatibility with other software, an area where Erlang is working intensively, but where there is already a good IG (Interface Generator).

"We probably need to distribute information about Erlang better and begin to focus on reaching the pure user instead of going through the technical manager," said Roy Bengtsson.

Generation shift

Erlang represents a generation shift, within Ericsson and in relation to the academic world and industry,

Erlang lies somewhere between the advanced academic functional languages and industry's "true" languages for applications (C++, etc.), which are all for experts and difficult to learn. In contrast to these, Erlang is exceptionally easy to grasp.

The debate panel (l-r): Ericsson's research director, Bernt Ericson, Jerker Wilander from Softlab, Linköping, Sweden, Professor Ignac Lovrek, Zagreb, Fergus O'Brien CITRI Software Center, Melbourne, and Philip Wadler, Glasgow University.
Photo: Bengt Sand

Internally, there is a major change under way from the customized AXE language Plex, which is heavily linked to the hardware and is very different from the new languages, such as Erlang.

"You have to learn to think differently," says Roy Bengtsson, "but we assist with training and consultants who follow-up, and it is working well."

Lars Cederquist

More info about Erlang available at Web address:
http/erlang.ericsson.se
(For Ericsson employees only)

Billion-krona contract in the U.K.

It takes a little over half an hour by train, south from London, to reach Guildford, Ericsson's mobile telephony stronghold in the UK. Operations there involve nothing less than an assignment in the billion-krona category with the Vodafone and Mercury One-2-One operators. Also involved are Ericsson mobile telephones, sales of which have shot up from zero to more than a billion in three years.

Just before the train arrives at Guildford station, it passes the modern Guildford Business Park, where the Ericsson sign with distinctive logo is clearly visible. Here, behind glass walls, are the Cellular Systems & Special Networks premises. That which was formed in 1989 is a division of Ericsson Ltd (ETL) and now represents the largest operation within ETL.

Expansion

"Our staff presently totals 430, and is expected to increase to 600 by the end of next year," related Jan Edhäll, who heads the division.

When the division moved from Brighton to Guildford Business Park six years ago, the operation obtained more than its fair share of space in the new buildings. However, this is no longer adequate, and expansion is taking place to an adjacent structure. Ericsson's expansion in the Guildford area accurately reflects the growth of the mobile market in the UK.

The UK has been a pacesetter in the liberalization of telecommunications and is Europe's most open telecom market. The speed with which mobile telephony has developed here is unprecedented, with Ericsson having been an established supplier from the beginning.

In the early 1980s, the British government set the goal that, by 1990, 90 percent of the population shall have the option of using mobile telephones. This goal was already attained in the summer of 1987.

Five-legged

There are presently six mobile telephone networks in the UK and Ericsson is delivering equipment to four of them. The number of subscriber totals 4.5 million, with 70 percent growth during 1994.

"Here in Guildford, we are working with all the public telecom customers in the country except the "BT family," i.e. British Telecom, Cellnet and four other customers, which are handled by ETL in Burgess Hill. We have five "legs" on which to stand," Jan explains. "Two of these work with our large system customers, Mercury and Vodafone. A third "leg", which we started three years ago is mobile telephones. Annual sales have doubled during the past two years and will reach the billion-kronor level this year."

Two years ago, the fourth "leg" came into being, New Public Networks, which works with new public networks. System Design is the fifth "leg," and consists of 100 technicians who work with development of software for GSM and are also responsible for maintenance of the analog TACS system.

An instructive market

"The liberalization of the telecom industry has made the UK a pace-setter among countries. It's not only an exciting market but we are also learning a great deal by being one of its major suppliers" Jan continues. "A good example is the major assignment awarded by Mercury One-2-One. Being in on building the world's first, and largest, personal telephone system is not only an important reference but also provides valuable know-how for the future."

Jan takes a favorable view of ETL's future in Guildford.

Great possibilities

"The trend of the UK economy is positive and, of course, affects the growth of mobile-telephone users. Our estimate is that, by the year 2000, there will be more than 12 million subscribers in the country," he relates and concludes:

"The market here offers great possibilities. We have excellent products as well as expert personnel. This bodes well for Ericsson, which, in the future, will also be one of the most important suppliers to mobile telephony operators in the UK."

Gunilla Tamm

The market in England is growing. Guildford, south of London, is the stronghold of Ericsson's mobile telephony operations in the UK. At the moment, efforts are focused on the billion krona contract with the Vodafone and Mercury One-2-One operators. Sales have shot up fromzero to more than a billion in three years.

Photo: Gunilla Tamm

Jan Edhäll heads the Cellular Systems & Special Networks division in Guildford.

Pioneer in field of personal telephony

"We will acquire, build and commission more than 1,200 base stations within two years – and thereby write a new page in history." This was a comment by Brian Barry who heads the assignment Ericsson landed this past summer to expand Mercury One-2-One personal telephone system in the UK.

In October 1991, Mercury One-2-One placed an order for a PCN (DCS 1800) personal telephone system from Ericsson. When it was placed in commercial operation in September two years ago, it was the world's first PCN system.

"It was already a success from the beginning, with Mercury One-2-One having acquired many subscribers due to having started its network six months prior to its competitor, Orange," says Brian. "For Ericsson, it was important to meet the schedule, and everything has proceeded well."

For the mass market

The system was unveiled from the beginning as a mobile telephone network for the general public, that is, the mass market. Unrestricted local calls during evenings and weekends would be an important inducement for subscribers, who otherwise would not have considered acquiring a mobile telephone. The concept was that this new type of subscriber would be so accustomed to using his/her mobile telephone that they would also begin using it during day prime-time and not just for local calls. The operator is now directing its attention, for example, to businessmen with an offer of a lower tariffs.

"Today, there are 350,000 subscribers and few other systems have, compared to the original mobile operators, enjoyed such rapid growth. The network covers the London and Birmingham metropolitan areas and the highway between" says Mark Richards, who is responsible for winning the order from Mercury One-2-One. He adds that by December '97 the network will cover 90 percent of England.

Roll out express

"While in the process of building out the system, we obtained an order this summer for an SEK 3.9-billion expansion. It is for a 100-percent turnkey project, which means that Ericsson handles everything, from acquiring sites for radio base stations through integration into the existing network," Brian explains. Ericsson landed the contract in tough competition with Northern Telecom.

The Mercury sector is presently establishing an organization of its own for this project, which is called "Rolex," and involves an acceleration of the expansion of the network.

Brian Barry heads the Mercury/ C&W segment which will carry through the billion assignment.

Ericsson has assigned overall responsibility for the major turnkey project to Björn Eisner.

"It was the customer who christened this assignment "Rolex," which means "Roll out express," explains Björn Eisner, who has overall responsibility for Ericsson's involvement in the project. The purpose for establishing a separate organization for Rolex was to prevent this assignment from interfering with the ongoing work under way to build the network.

Unique project

"This is Ericsson's first turnkey project of such a magnitude in an industrial country, says Mark Richards. To conduct the work efficiently, four temporary regional offices are being established in the UK.

"For us, many of the assignments are new and we will be working with several suppliers," says Björn. "One aspect which could present difficulties is to acquire land and building permits for the sites."

A half-time position will be required in each of the four regional offices to keep track of all the keys for the 1,200 radio-base sites, and to obtain access to them. This provides a hint as to the Rolex project's size. More than 1,000 persons will be involved in the project.

History was written already in 1993, when nearly 250 base stations were installed and placed into service in less than 12 weeks," recalls Richard Whittaker, operations manager within the sector. "Now we are facing an even greater task., as the equipment must be delivered within tight lead times, i.e. just before acceptance of a complete area by our customer."

Sleeps soundly

Just now, the emphasis is on planning and re-planning, with all aspects requiring an A to Z review to ensure that work at a later stage proceeds smoothly.

"Do I sleep soundly at night? Yes indeed," laughs Björn in response.

Rolex is not only a major UK Ericsson project but the name of a quality wristwatch. Is there any possible connection?

"Actually no, but for such and important project, the focus is both on time and quality," Brian points out.

Gunilla Tamm

From zero to a billion in three years

Ericsson's GH337 GSM telephone has become a real success in the UK. During a three-year period, sales of the company's various mobile telephone models have shot up from zero to more than SEK 1 billion. For two successive years, an Ericsson mobile telephone has been named "Phone of the year."

A great deal continues to happen with Ericsson mobile telephones in the UK. Activities center on unveiling a telephone for the PCN (Personal Communications Network) system, advertising campaigns and the sponsoring of a football team.

"Ericsson began selling mobile telephones in the UK in late 1992. This beginning was of rather long duration but laid the groundwork for the success with the GH337." This is a comment by Alex Rodriges, who is responsible for market communications for mobile telephones.

There are presently three major telephone suppliers which jointly account for half the UK market: Motorola with 20 percent, Nokia 16 percent and Ericsson 12-13 percent. There are also a number of "lesser brands," which account for the other half.

"Today, we sell two models for GSM and one model for the ETACS analog system. When the PCN telephone is unveiled later this autumn, Ericsson will have telephones available for all three mobile telephone standards in the UK," Alex explains.

Two "Ceasars"

"Ceasar" is the annual prize awarded by the UK mobile telephone operator Cellnet. For two successive years, Ericsson telephones have been named Mobile Phone of the Year. Last year, it was for the analog EH237 model and this year for the digital GH337.

"In UK telecom circles, Ericsson is a very well-known company but relatively unknown to the general public. We have placed advertisements for our mobile telephones in the national daily newspapers, business periodicals and consumer magazines, with more advertising campaigns to follow," says Alex. "Women appear to be a particularly attractive target group."

High quality is something of a byword for Ericsson mobile telephones. Can they be referred to as the "Rolls Royce" among mobile telephones?

"No," laughs Alex. "In the UK, we compare them with the BMW."

Ericsson on the roof

Ericsson in Guildford has recently signed a sponsoring agreement with Brentford Football Club. The primary consideration was to obtain access to the football club's roof! The football fans may not be able to see that "Ericsson Mobile Phones" is displayed there, but the more than 47 million passengers who fly to London annually certainly can. One of the routes to Heathrow is directly over Brentford. So the next time you travel to London, look out the left window on the approach to land at Heathrow. **GT**

Vodafone – a key customer

Ten years ago, the operator Vodafone placed its first mobile phone system in operation in the UK. Since then, a number of expansions have taken place, with a GSM system from Ericsson having also been placed in operation. Vodafone is one of Ericsson's most important customers.

It was 1983 when Ericsson obtained a major analog, mobile telephone system, TACS standard, for the UK. At that time, it was one of the first and largest mobile telephony assignments that Ericsson Radio Systems had landed in Europe. The system, which since then has become a very important reference, has grown over the years and today has about two million subscribers.

"It is a system that is "still going strong" and will remain in operation for some years to come," explains Mats Andersson, who heads the Cellular Networks sector at Ericsson Ltd, Guildford.

Vodafone was also at teh forefront with GSM, and Ericsson obtained the first equipment order for the Vodafone GSM network already in 1990. Since then, a succession of expansions have taken place. However, the GSM start-up proceeded sluggishly, with the number of analog system subscribers increasing instead. Today, the operator is attempting to attract users from TACS to GSM, which has the same coverage and quality as TACS.

Vodafone's subscriber core is businessmen, who often conduct lengthy conversations. The company is also striving to penetrate the private market segment.

Jan Lamb is responsible for Operations in the Cellular Networks sector. He is shown here with Simon Ball, head of the newly opened customer support centers for Vodafone.

More services in the system

"Our assignment is to assist Vodafone to utilize its network to the best advantage and to implement additional services into the system, while further expanding it. The competition between operators is become increasingly intense, and more is required of us," says Mats. "At the same time, he emphasizes that Vodafone is a customer with considerable technical expertise, who places exacting requirements on Ericsson."

An example of expanded services in the mobile telephone system is MXE, which is a platform for message services. Vodafone has purchased MXE equipment not only for the UK but also for the system the company operates in Australia and the Netherlands.

An expansion is continuously underway with Vodafone's GSM system. This applies both to increased capacity and improved coverage in rural districts. This will mean a doubling of sales for Ericsson Ltd's Vodafone sector in 1995.

"Since the system is under way, the job must be performed at night when traffic is at the lowest level," explains Ian Lamb, who is responsible for Operations in the Cellular Networks sector. At the same time he relates how, this autumn, new software will be installed with new functions in Vodafone's TACS system.

Ambition to be first

A customer support center for Vodafone was recently set up at Ericsson in Guildford. Ten technicians are at work there, one or more of whom are always on hand as duty staff to ensure that operators can obtain assistance when problems arise.

Audrey McCallum has market responsibility for Vodafone, whom she considers a highly technically advanced customer.

"In exactly the same way that the German operator Mannesman strives to be first with technical innovations," she continues. "We can develop new, interesting products jointly with Vodafone."

"However," she adds, "we must learn to think more like an operator. Vodafone provides us with valuable information, which we should make better use of, since it would assist us with other customers."

Mats Andersson is manager of the Cellular Networks sector at Ericsson Ltd in Guildford. "Vodafone is one of our most important customers."

"Vodafone aims to be the pace-setter in technical innovation," says Audrey McCallum who is market-responsible for Vodafone.

Much of how Vodafone views Ericsson as a supplier is also a result of the customer survey for which Mats Andersson provided the initiative.

"Jokingly, Ericsson's cooperation with Vodafone could be compared with a long marriage, in which parties know each other very well."

"Even in such a lengthy marriage, the partners continue to develop together, and this is what will transpire with our oldest UK customer," Mats concludes. **Gunilla Tamm**

Mass product assumes Ericsson identity

With sales of Ericsson's pocket telephones having now begun to really accelerate, with expansion throughout the world definitely under way, there is heavy pressure to deliver the design of the future.

"We are in the process of creating mobile telephones which will correspond to new market requirements that still possess unmistakable Ericsson characteristics," says Leif Dahl, responsible for the new Industrial Design function in Lund.

Rolls Royce commands recognition. There is a certain something which characterizes the product as a whole. It could be a certain detail that is common to all generations, such as the shape of the radiator or a logotype.

Similarly, the staff at Lund is striving diligently to devise exactly the right shape for Ericsson mobile telephones. The customer who goes into a shop to buy a mobile telephone shall intuitively recognize an Ericsson. Such aspects as form, color and graphics will be utilized. This recognition factor must remain undiminished despite the introduction of various models of the same telephone, which is becoming a matter of urgency, with the market being segmented into various groups.

Ericsson's face

"Our job is to assist in creating the Ericsson face," says Leif Dahl. The work consists in formulating basis material for the design board, which approves a product prior to it being released to the market.

The challenge is being able to maintain the Ericsson identity in the long term, so as to create a confidence-inspiring trademark while at the same time being responsive to new market requirements. This is an extremely difficult balance to maintain since the market is changing with breathtaking speed.

Several models

Since mobile telephones have now become sufficiently small-size, the task at hand is to differentiate them for various user groups. A comparison can be made with the camera industry where the professional requires a system camera with interchangeable parts, while amateurs content themselves with more or less advanced, compact cameras.

For telephones, this would be the equivalent of the "luxury model" in an elegant form and with advanced functions, as contrasted with telephones for daily use of simpler workmanship but with more appealing colors.

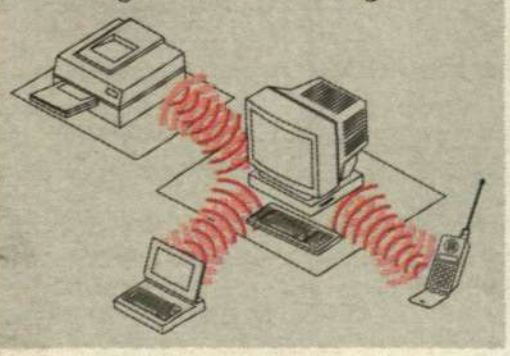
From a practical standpoint, an identity can be created by a couple product elements remaining unchanged from generation to generation. With mobile telephones, 12 such elements are identified, such as the key set, display, shape and microphone.

It is too early to determine how Ericsson's future pocket telephones will look. However, it can be assumed that the Design group will focus on the user-friendly concept, which encompasses a range of details. It can also be assumed that the profile will also cover accessories. **GT**

You can hack your way to wireless. Or simply trim a few parts.

The new TELEFUNKEN Semiconductors TFDS3000 miniaturized module integrates everything you need for a simple, elegant IrDA solution.

Maximum sensitivity in bright sun and office lights



There's no need to wander aimlessly searching for the perfect IrDA solution. You've found the most compact IrDA module available. It contains the receiver and emitter diodes as well as the analog circuitry in a single package measuring only 13mm x 5,3mm with a maximum height of 5,6mm.

By integrating the preamplifier of the receiver and the driver stage of the transmitter, the TFDS3000 needs only two discrete external components. Operating at an efficient 3-V and 5-V with low power consumption, this module has everything you need for optimal IrDA implementation. It's capable of sending data over a distance of one meter with data transferred up to 115,2 kbits per second yet provides an automatic gain control function and filter to ensure maximum sensitivity in both bright sunlight and office lights. The new TFDS3000 delivers convenient use of mobile phones, PDAs, modems, PCs, and other IR applications.

So search no further for IrDA solutions. For your IrDA Design Guide, call your local TEMIC sales office. Or call **08-733 0090**, for more information or use our Faxback system at **49 7131 993397, doc. 38009.**

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Positive culture clash for India

The telecom market is being liberalized – but patience is required

"The telephone market in India is being liberalized, but progress is slow, particularly with regard to the public wireline network. Much rides on the outcome of the elections next year and whether the present government has the vigor to carry out the existing ambitions," says Bo Almlöf, president of Ericsson Telecommunications Ltd, EIL, and Ericsson's corporate manager for operations in India.

After the first AXE order for local exchanges in the beginning of the 1990s, it was hoped that this would be followed by a stream of orders. But there was a prolonged delay. Today, there are 10 million subscribers in the wireline network for a population of 900 million. This is a telephone density of 1 percent.

Although many of the country's inhabitants are impoverished, there is a large and prosperous middle class and 200 million people could afford a telephone if it was possible to acquire one. Today, there is a long waiting period for a subscription. Comparing the economy of India with other countries, there should be about 25 million Indian subscribers. Accordingly, it is not the economy that is slowing development, but a combination of bureaucracy and democracy, which results in long decision times.

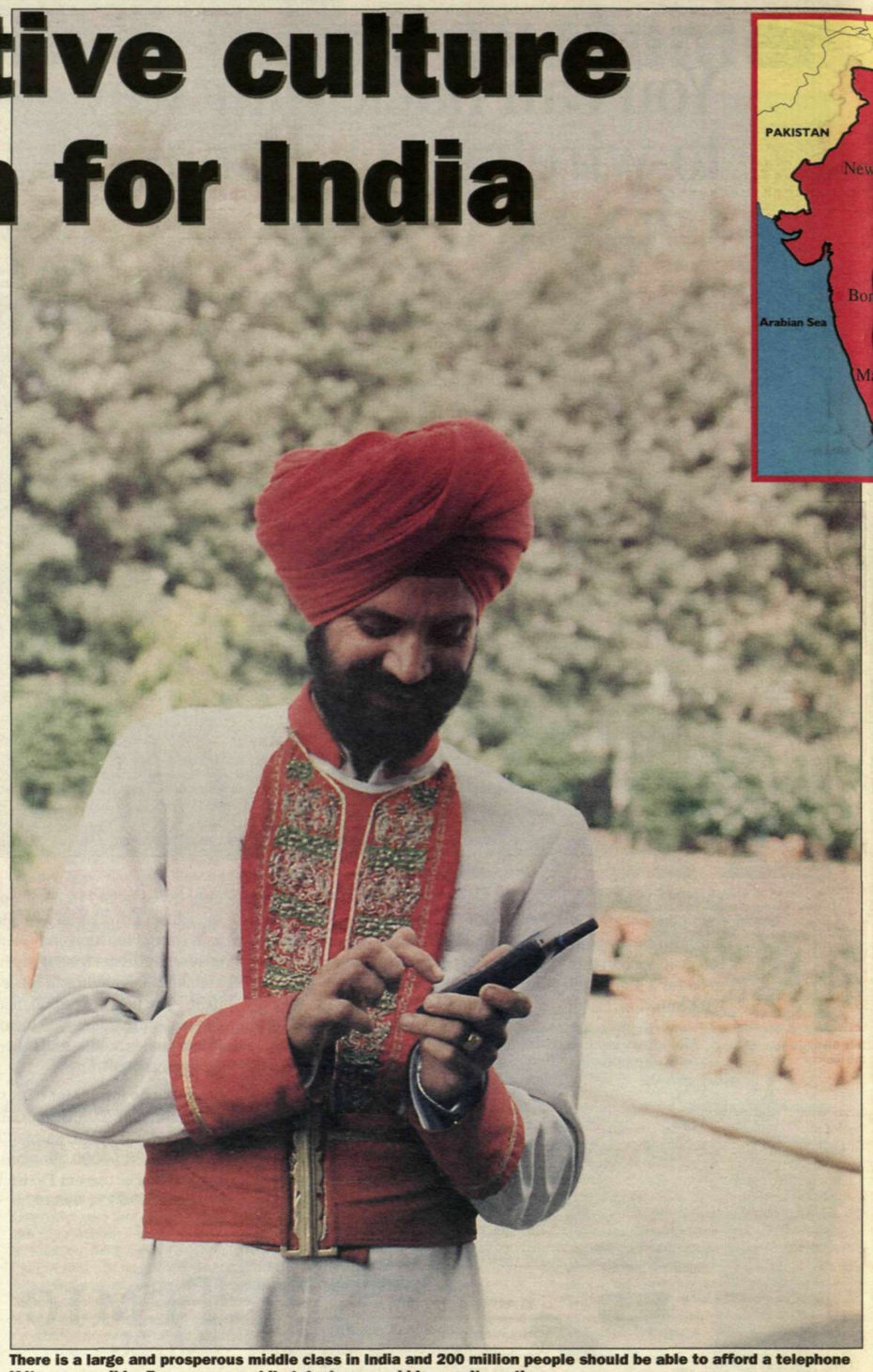
Bo Almlöf, president of Ericsson Telecommunications Ltd.

The authorities have a goal of 4 million new lines annually. Half of these are to be awarded to domestic suppliers and the other half to competing foreign companies. These include Ericsson and its major competitors Alcatel, Siemens, AT&T and Fujitsu. Alcatel is the company that entered the Indian market at an early stage.

One and half years ago an announcement for tenders involving 1.7 million lines was published.

"The bidding and award of the orders was to be completed in six months. Eighteen months have gone by and no decision has been made," Bo Almlöf relates.

Ericsson has received a letter of intent in this round of bidding for 205,000 lines, 50,000 of which to be installed in Delhi.



There is a large and prosperous middle class in India and 200 million people should be able to afford a telephone if it was possible. For many, a mobile telephone could be an alternative.

In the telecommunications sector, India is divided into so-called circles, where there is supposed to be a public and a private operator in each. Lobbying in parliament against privatization is slowing progress, particularly for wireline telephony. Liberalization has proceeded somewhat faster with respect to mobile telephony.

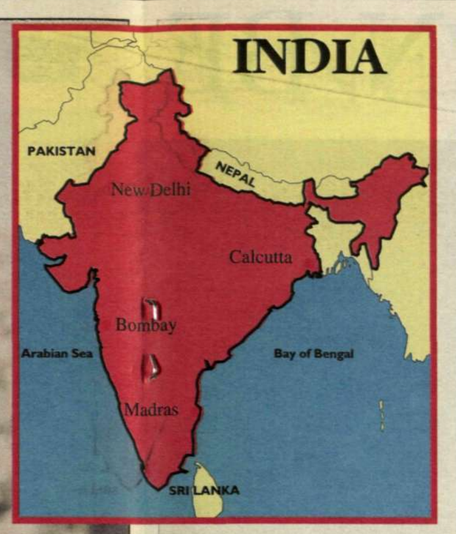
"There is business potential for Public Telecom in India, but we must be patient," emphasizes Bo Almlöf. The goal is to install a million lines annually in five years time.

Factory in Jaipur

Ericsson Telecommunications established a factory in Jaipur, about 25 kilometers south of Delhi, a year ago. The factory, manned by some 80 employees, is mainly intended for production of AXE products. At the moment production is slow and Bo Almlöf is hoping for a decision soon on the latest tenders in order to be able to achieve some continuity in the operations. There are also plans to move the AXE training center in Delhi to Jaipur. The possibility of Ericsson's mobile telephone operations in India being able to use the factory is also being studied.

Radio products

Notwithstanding that AXE is the most important product for Ericsson Telecommunications, it does handle certain products for the Radio Communications business area. This includes the RAS1000, that is, equipment for radio in the wireline network based on NMT and the so-called fixed cellular concept. This is a radio solution based on another mobile standard, AMPS/DAMPS.



This Sikh women in a bridal gown reflects the multifaceted culture in India.
Photo: Gunilla Tamm

The EDACS private radio system is another "radio product" in India.

The Business Networks business area is also interested in gaining a foothold in India, primarily with respect to network installation and the Freeset office phone based on the DECT standard.

DRX is another interesting product which, however, lies outside the company. It is a switch for public use which was based on the development of the MD110.

Bo Almlöf and the 180 employees at Ericsson Telecommunications are in the process of moving to a new office. The company has plans to eventually construct its own office building to house all of Ericsson's operations in Delhi.

This is a project which demonstrates that Ericsson foresees a bright future in India.

Gunilla Tamm

Digital from the start

When New Delhi's first mobile telephone system went into commercial operation a few weeks ago, Ericsson obtained its most important reference in one of the last pioneer markets for telecommunications.

"There are tremendous opportunities here, and our ambition is to take 40 percent of the Indian mobile telephony market," comments Tommy Eriksson, head of Ericsson Telephone Corp. India AB.

In India, telecom authorities have chosen to go directly for digital technology in the mobile telephone networks.
Photo: Gunilla Tamm

In December of last year, Ericsson secured an order to install a GSM system in Delhi. No analog mobile telephone system exists in India, since the telecommunications authority has decided to use digital technology from the start.

At the end of January this year, Ericsson Telephone Corp. India received formal authorization to commence operations. The first employees were recruited in March, and the company now has some 80 employees. The company was equipping its offices at the same time as it was employing personnel. Add to this the size and importance of the company's mobile telephony projects in India, and you can appreciate what a hectic year it has been. The situation is unlikely to be any calmer in 1996, given that the number of employees by the end of the year is expected to be almost 600. As well as installing mobile telephone systems (GSM), the company also supplies mobile telephones and the Minilink system.

Four major cities

Exactly one year ago, the Indian telecommunications authority awarded eight GSM licenses – one license to each of two operators in the four major cities of New Delhi, Bombay, Calcutta and Madras. Bharti Cellular Ltd, which secured the license for New Delhi and its suburbs, chose Ericsson as its supplier, as did RPG Cellular Services, one of the operators in Madras. Hutchison Max Ltd, one of the two operators in Bombay, chose Ericsson as its supplier of exchange equipment, while Motorola will be supplying the base stations. The other GSM systems in India will be supplied by Siemens, Motorola and Nokia, among other companies.

The systems expected to grow most rapidly are those in Bombay and Delhi.

"The eight licenses awarded to date have yielded two and a half supply contracts for Ericsson," notes Tommy Eriksson.

More licenses are to be auctioned, beginning with 19 so-called "circles," which in many cases correspond to one of the Indian states. Everyone in the sector is on tenterhooks waiting to find out which companies or consortiums have secured the licenses, and much politicking lies behind the decisions.

Tommy Eriksson, head of Ericsson Telephone Corp. India.

"In addition to expansions of systems for which we are already a supplier, we are trying to establish a bridgehead in places where we are not yet among the suppliers but where expansion is planned," explains Tommy .

"There is so much more to India than just the major cities like Delhi and Bombay," continues Eriksson. "Now we plan to broaden our presence to other parts of the country. There are many promising areas, such as the states of Haryana and Punjab in northern India, which both have relatively wealthy populations."

Businessmen and private entrepreneurs are expected to be the first to sign mobile telephone subscriber contracts. Many people regard a mobile telephone as an alternative to waiting in line for an ordinary telephone. As well as marketing pocket telephones, Tommy Eriksson believes there is potential for linking coin-operated telephones to the mobile telephone system.

When discussing the immense potential for mobile telephone systems in India, Tommy Eriksson nevertheless emphasizes the need to be patient and not give in to frustration – to focus on the overall picture and not to worry about details.

Having worked in India from 1987-1990, Eriksson knows what he is talking about. He was on the spot when the first AXE order was secured in 1989.

Exploit opportunities

From 1991 until the spring of 1994, Eriksson worked for Telia in Kalmar. He feels that it is an advantage to have experience of the operator side. But India beckoned, and now he is back with Ericsson in Delhi.

"I enjoy life here, and for a large family, with four small children, it is an advantage to be able to get help with the housework," he observes. "What little free time I have I like to devote to my family."

"The major challenge facing us now is to continue to expand our operations and recruit even more skilled employees, so that we can exploit the business opportunities that India provides."

In India since 1935

Ericsson has been in India a long time. In 1935, L M Ericsson of Sweden was awarded a contract to install a carrier frequency system linking Bombay with several other Indian cities.

When India gained independence in 1947, an agreement was signed granting Britain the exclusive right to supply telecommunications equipment to India until 1962. Ericsson had opened an office in Delhi a few years earlier, in order to be on the spot when the market was opened up.

In 1976, a crossbar switching station for 1,000 subscribers was inaugurated in Delhi. This project provided an excellent reference for the AXE order secured by Ericsson in the autumn of 1989 to install four international stations in the cities of Bombay, Delhi, Madras and Calcutta.

Ericsson in India

Ericsson Telecommunications, formed three years ago, is a joint venture between L M Ericsson, which has a 51-percent ownership share, and the family-owned Indian company Jiwarajka, which owns 49 percent.

Jiwarajka is also a partner in two other companies partly owned by L M Ericsson: Ericsson India and SAB Electronics.

Ericsson India, also a part-owner of SAB Electronics, now has only limited activities, since most of its operations have been taken over by Ericsson Telecommunications. **SAB Electronics** produces condensers and other components.

Birla Ericsson Optical Ltd is the fourth Indian company partly owned by L M Ericsson, which holds a 30-percent share. The company, which produces fiber-optical cables, moved into a new production plant one year ago.

Ericsson Telephone Corp. India AB (India Branch), formed six months ago, is 100-percent owned by L M Ericsson.

'EVERY DAY CAN BE A NEW ADVENTURE'

"It's a great and exciting adventure to live a few years down here."

"Now the children have the opportunity to learn about their roots." These are comments of several Ericsson families about the transfer to India. Contact's reporter met them in Madras and Delhi.

"Hi! Want to see the drawing I did in school today", asks Riti, five and a half, in a rich southern Swedish dialect. She and her brother Raoul just stepped off the school bus. They started at the American School in Delhi just a few weeks earlier.

The Joshi family, Raj, Renu and the children Raoul and Riti moved from Linköping. Sweden, to Delhi in April of this year.

"We lived in a hotel the first three months. It was difficult for the children. It was marvelous to move in here in mid-July," relates Renu. Here is a house with five bedrooms (toilet and shower for each room) in southern Delhi not far from Ericsson Telephone Corp India AB where Raj works. Several Ericsson families live on the same street.

New furniture

"The house feels terribly large compared with the apartment in Linköping," says Renu as she provides a tour. She relates that all the furniture is newly made. It is less expensive to have the furniture made in India than to ship your own furniture from Sweden.

"Our furniture at home is in storage until we return to Linköping," Renu says, adding that the family will probably stay two years.

We move into the kitchen, which is unusually large for India. Renu points at a large container of water on the counter.

"You can't use the water in the mains for drinking or preparing food," she explains. "It may seem a bit inconvenient, but bottled water and gas is delivered directly to the kitchen. It's really no problem."

Raj leads us out onto the rooftop terrace and points a gasoline-powered generator in a corner.

"There are often power outages in India, so we have use for it," he explains.

Raj and Renu were both born in Delhi, but are Swedish citizens and regard themselves as Swedes. The children were born in Linköping. Renu relates that they maintain Swedish traditions and celebrate *Christmas* and *Midsummer Eve*.

Job in Sweden

Raj came to Sweden in 1973 to study and later accepted a job and stayed on. He has been working at Ericsson since 1979 and his dialect reveals that he has been in Linköping, first at DataSaab and later at Ericsson Information Systems and Ericsson Radio Systems.

Renu married Raj seven years ago and moved to Sweden. Before moving to India, she worked fro Ericsson in Linköping.

How is Renu coping with suddenly being a "housewife"?

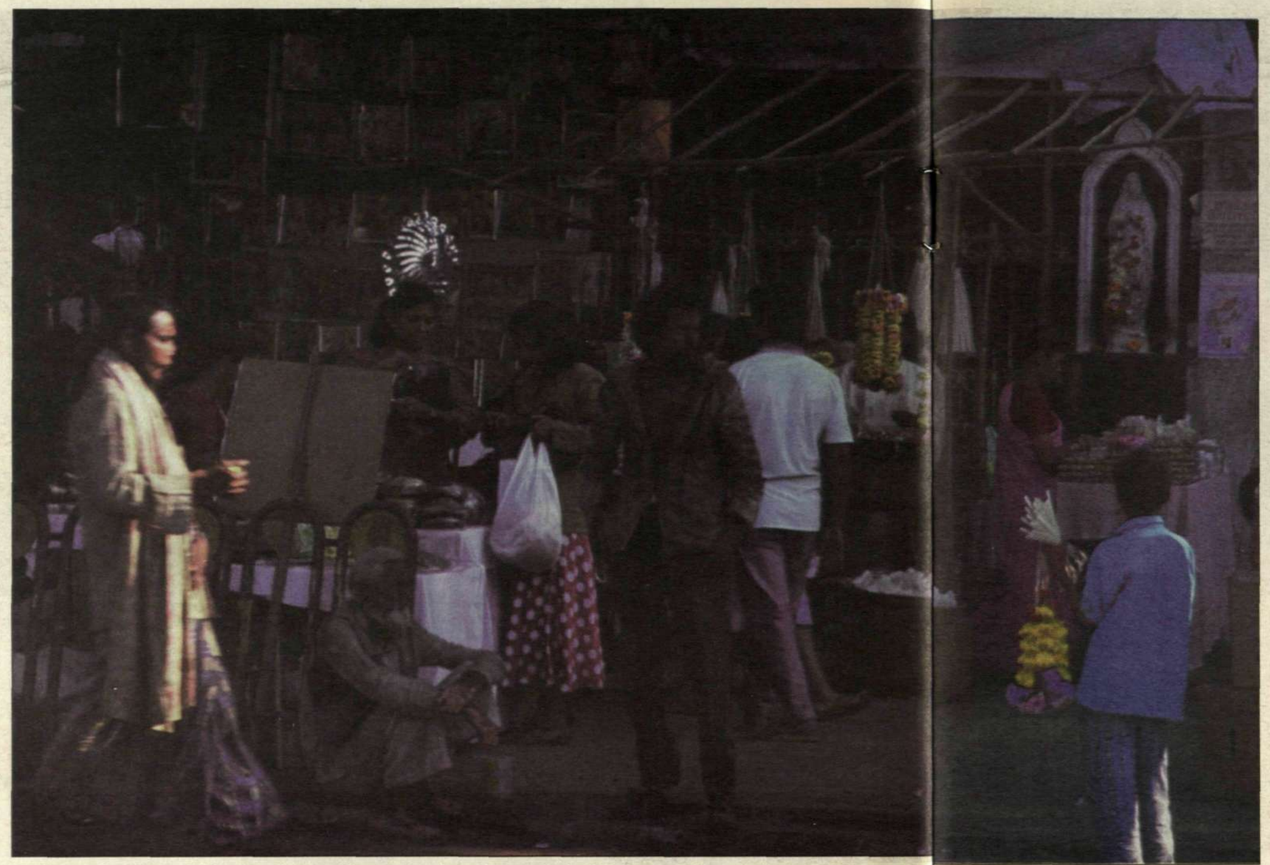
"It feels strange, but wonderful, and luxurious. We have domestic help and a chauffeur. They are an Indian couple who live in an adjacent house. It's common to have such an arrangement in India. The children attend the American School and are away from 8:30 a.m. to around three in the afternoon. So I have a lot of hours to myself. There are a number of Ericsson women who get together often and a few of us have joined the international women's club. Since I can speak Hindi, I can help the other women when needed."

Raoul shows us his alphabet book and tells us that today he had his first arithmetic lesson. When he started school he couldn't speak any English, but now after a few weeks he has learned quite a lot. "It's easy to speak English," he declares proudly.

Wonderful opportunity

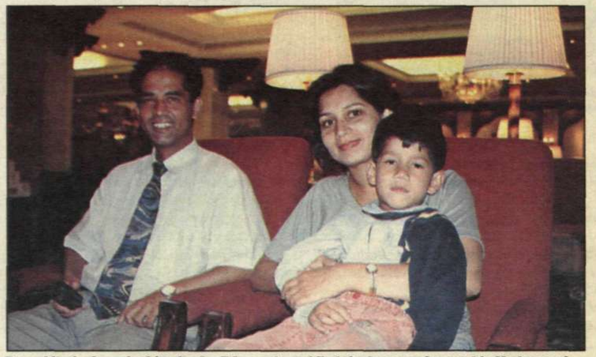
"This foreign assignment has provided us with a wonderful opportunity to live a couple of years in the country so that the children can learn about Indian culture and meet their relatives. But we'll be moving back home to Sweden in a couple of years. That's where we are permanently settled," say Raj and Renu convincingly.

Rezaul Karim is project leader for Ericsson's mobile telephony assignment in Madras and moved there with his family several months ago. He has worked within Ericsson for nine years, at Ericsson Telecom and Ericsson Radio Systems. Most recently, he was with Ascom in Switzerland.



India is seven times the area of Sweden and the world's second most populous country. In 1993, the population was estimated at 903 million and growing by 2,000 per hour!

The Joshi family, Raj, Renu and the children Raoul and Riti moved from Linköping, Sweden, to Delhi in April of this year. Raj has worked at Ericsson since 1979.



Rezaul Karim is project leader for Ericsson's mobile telephone assignment in Madras and transferred there with his family several months ago. Most recently, he was with Ascom in Switzerland. His wife Vinita, who holds a degree in economics from Stockholm University, has not worked since they moved from Sweden.

"The children just enrolled in a newly started American School and we are now all longing to find an apartment," relates Rezaul's wife Vinita, adding that it's difficult living in a hotel for several months with children. There is a shortage of housing in Madras so it has taken time to find something adequate. Rezaul is from Bangladesh and Vinita is Indian.

"But I was born in Burma. My father was a diplomat, so I moved about while I was growing up and have never lived in India. Now I want to become acquainted with my country, its people and culture, and I'll get that opportunity here in Madras," says Vinita.

"The children, Sharmin (7) and Fahad (5) will get to learn English. They already speak German, Hindi and Bangla," she adds. Both Rezaul and Vinita feel that Madras is a better city than they had expected, cleaner, less traffic and friendly people.

Formerly an artist

"After we get settled in an apartment, we are looking forward to a fine life here," they say. Vinita, who earned a degree in economics from Stockholm University, has not worked since they moved from Sweden. In Switzerland, she spent quite a lot of time painting and had an exhibit of her work. She hopes to continue with this while in India.

Gunilla Tamm

Pia and Mikael Kaufmann are used to living abroad. Most recently, they lived in Algeria. Mikael joined Ericsson Radio Systems two years ago and Pia has taken a leave of absence from her work as an economist to follow Mikael to India. Photo: Gunilla Tamm

Exciting to learn about a new country

"We have been give a fantastic opportunity to live here and experience the legendary India. Every day is a bit of an adventure." Pia Kaufmann is enthusiastic when she talks about her and Mikael's life in India.

Pia came to India in mid-August. Mikael, who works with access network planning for GSM, had already been in India for several months. They have just signed the contract for a new apartment with three bedrooms (each with shower and toilet) and the shipment from Sweden has arrived, so the move is just around the corner.

I must have been out with more than 50 agents looking at houses and apartments until I found the one we are moving into myself." Pia relates. "Decorating the apartment, selecting furniture and curtains, etc. has been great fun. Here, you can also afford to have things custom-made if you can't find what you want."

Pia and Mikael have experienced living abroad, for 18 months in Algeria. It was during the revolution and it was a difficult period there.

"When you say India at home, there are many who are doubtful and shake their heads. Therefore, the trip we made here before deciding to accept the assignment was very important" according to both Pia and Mikael. They found an impoverished and dirty country as well as a nice natural environment, friendly people with the Asian humility and a fascinating and exciting culture. Being able to cope language-wide using English was also a major advantage.

Opportunity

Pia, who is an economist, is on leave for a year, but she believes that she may be away a longer time.

"One year is probably too brief a period to become acquainted with a country like India. If I can't extend my leave. I won't hesitate to give notice, since we really want to take advantage of the opportunity to live here," she says

"It's also fun to be able to stand in a corner and watch how Ericsson's mobile telephone operations develop and see the office grow. Through Mikael, I also meet Ericsson employees from many different countries and that is interesting."

Mikael began at Ericsson Radio Systems two years ago. Previously he had worked at Ericsson Telecom and for Comviq, a Swedish mobile operator.

"It's good to have your own experience from the operations side," he contends.

The job in India means both long working hours and much travel around the country. Pia fully understands that normal working hours do not exist on a foreign-service assignment.

Pursue own interests

"It's important that the accompanying spouse takes the initiative and pursues his/her own interest. Now I can pursue interests for which I didn't have the time in Sweden," says Pia.

As with other Swedish Ericsson spouses, Pia has joined an international women's club. Since most of the Ericsson families live in the same area in Delhi, there is close contact between the "housewives."

"Together, we're sure to come up with a lot of fun ideas and perhaps venture out on a tour of the country. Every day can be a bit of an adventure here in India," concludes Pia. **GT**

Work in India – a challenge

Ericsson Telephone Corp India AB (India Branch). EFI, is in great need of personnel, particularly project leaders, technicians and marketers.

"For those seeking a foreign assignment and desiring to become acquainted with a different and exciting culture, this is a good opportunity. Work there is suited to those seeking a challenge, and want some extra spice in life.

"An assignment in India is worth considering for those who are interested in becoming acquainted with a millennial culture and being part of establishing an Ericsson company in this interesting environment," says Elisabeth Ramel, who coordinates manning at Ericsson Telephone Corp. India AB (India Branch). She will gladly provide information about the various positions available. Tel: +46 8 764 1571. Memo: ERA.ERA-ELRA.

Largest democracy

India, which became independent in 1947, is the world's largest democracy. In area, it is seven times larger than Sweden, and the world's second most populous nation after China.

In 1993, the population was estimated at 903 million and growing at the rate of 2,000 per hour!

The country comprises 25 states and about 27 percent of the population lives in cities. The capital city of New Delhi has more than 9 million inhabitants (information on this figure varies). Both Bombay and Calcutta have more inhabitants than the capital.

About 45 percent of the people speak Hindi, which is India's official language along with English. There are also 18 other languages, primarily the predominant languages in the states, and the classic cultural language Sanskrit, which have official status.

Two thirds of the labor force works in agriculture. India has bountiful natural resources, including iron ore, copper, lead, zinc, gold and titanium.

In addition to Ericsson, there are many Swedish companies in India, including SKF and Volvo.

Japanese mobile boom

Two recent earthquakes in Japan have proven that mobile telephone systems are reliable, and long commuting times to work are incentives for efficient people to "go cellular".

These factors combined are contributing to a boom for the cellular industry in Japan, where Ericsson has joined Toshiba in a project to implement the CMS 30 system.

The Japanese people, in both business and private life, strive for maximum efficiency. In a country where many people spend 4-5 hours every day commuting between home and work, digital cellular communication helps to improve their efficiency which has led to a tremendous boom for the industry.

Ericsson Toshiba Telecommunication Systems (ERJ) is one of many companies

Ericsson grows as the country goes cellular

benefiting from this boom. The joint venture between Ericsson and Toshiba started as a project, aiming to implement the CMS 30 system for the Digital Phone Group (DPG) in three major Japanese cities: Tokyo, Osaka and Nagoya.

Having successfully completed this contract well ahead of schedule, ERJ is now a well established company working on a new contract with Digital Tuka Kyushu (DTQ).

"Japanization"

Quality, efficiency and continuity are important aspects in customer relations. Continuity requires that Japanese staff are trained to fill key positions arising in the company.

The company has a "Japanization Plan" which describes the employment and training of local staff to make them experts in the AXE system, the radio base station system and sales and marketing.

A one-year education programme was introduced this year, involving "on the job training" with courses in both Japan and other countries.

Akiko Sakurai had been through basic training when ERJ started and is now specialized in orderhandling and accounting procedures. On the first of October the present manager for logistics left for new challenges within accounting and finance and Akiko Sakurai was appointed manager. Before she was Assistant Manager for the logistics department in ERJ.

The ERJ management feels that it is important to promote local employees to influential positions. Skilled employees who work very hard help promote good relations with ERJ:s customers through numerous informal contacts.

Uncommon

Akiko Sakurai has reached managerial level even though this is very uncommon for married women in Japan, especially if they have children.

Before she went on maternity leave, Akiko Sakurai was interviewed about her work situation.

How long have you been working for ERJ?

– I was employed in February 1993, and

Ericsson Toshiba Telecommunication Systems is one of many companies benefiting from the mobile boom in Japan.

I have been very busy working on the process of getting ERJ established. We are now working on improvements to our processes to shorten lead times.

Where did you work before joining ERJ?

– I have worked in several companies where my English skills have been useful. My main work tasks have involved import procedures, where speaking, reading and writing English is essential.

What made you apply for a job with ERJ?

– I have friends who have worked for Ericsson in Japan. Ericsson seemed to be an interesting company, so I applied when I saw an advertisement.

Is ERJ different to companies you have worked in?

– Yes, Ericsson is different. My previous positions were all in small companies where you were expected to do almost anything. Here, work is divided into functions in an organisation.

– Also, everybody gets a PC on the first day in Ericsson, which is not the case in Japanese companies, where you have to earn the PC by showing good results.

– And ERJ sends new employees to Sweden for training. In a Japanese company, you have to be a senior employee to be allowed to travel abroad.

What is your current position?

– I am Assistant Manager for the logistics section in the implementation department. We handle all orders for the Japanese market in close co-operation with the logistics organisation in the businessunit Mobil telephone systems PDC at Ericsson Radio Systems.

– I support the staff working with order handling, purchase, repair handling and customs clearance. Furthermore we concentrate on improving the current performance of the CMS 30 order and supply process, as it is extremely important that we minimize the lead time from order to service in.

– This issue has been more and more important through 1995 as the network in the regions are growing rapidly. As a comparison the market size of the Tokyo customer is as large as France or UK while smaller regions can be compared to e.g. Denmark.

How big is the logistics department?

– There are eleven employees working in Shin Yokohama and in the regional offices in Fukuoka, Osaka, Nagoya and Tokyo. And we are currently working to set up an office in Sapporo (Hokkaicho) in the newest region, for which Ericsson received Letter of Intent this summer.

What is your view on Ericsson Toshiba as an employer?

– It is very interesting to work here, because it's a joint venture. I like having the opportunity to work in a world-wide company.

What do you like most about your work?

– It's exciting when the shipping documents, the dispatch advise and the invoice arrive. This means that a shipment of goods is on its way and a project becomes more hands-on.

– Then, I immediately start planning for the clearance of the shipment through customs, getting it to the local distribution centre and to site.

Are there any difficulties in your work?

– When an organisation is divided into functions, and people concentrate on their own small areas, it is more difficult to work as a team.

– It also makes it difficult to know the whole business, which in turn limits the interaction needed between the various parts of the organisation for the solving of cross-functional problems.

How can Ericsson Toshiba recruit more employees?

– Here in Tokyo, it depends very much on the location of the company. If we can address people with the right profile who live near ERJ, we may attract them to us.

Akiko Sakurai is an assistant Manager for the logistics section in the implementation department, in Shin Yokohama.

– Knowledge of English is important, and we are constantly looking for Japanese people who have been studying abroad.

– We also offer good training programmes which make it easier for the employees to identify their career paths and makes it more interesting to work for us.

Why did you want to be a manager?

– I actually never thought of myself as a manager, and it was very much a coincident that I ended up where I am. We were discussing a position as expert for our accounting system, CHESS, which I know well. But then I was offered this job as Assistant Manager with the aim to take over as Logistics Manager when that position becomes vacant.

What will happen when you have had your baby?

– It came as a surprise to me and my husband that I was pregnant, but it's a challenge to have children and still be working. My husband, who is a freelance computer graphic designer, will be at home with our child.

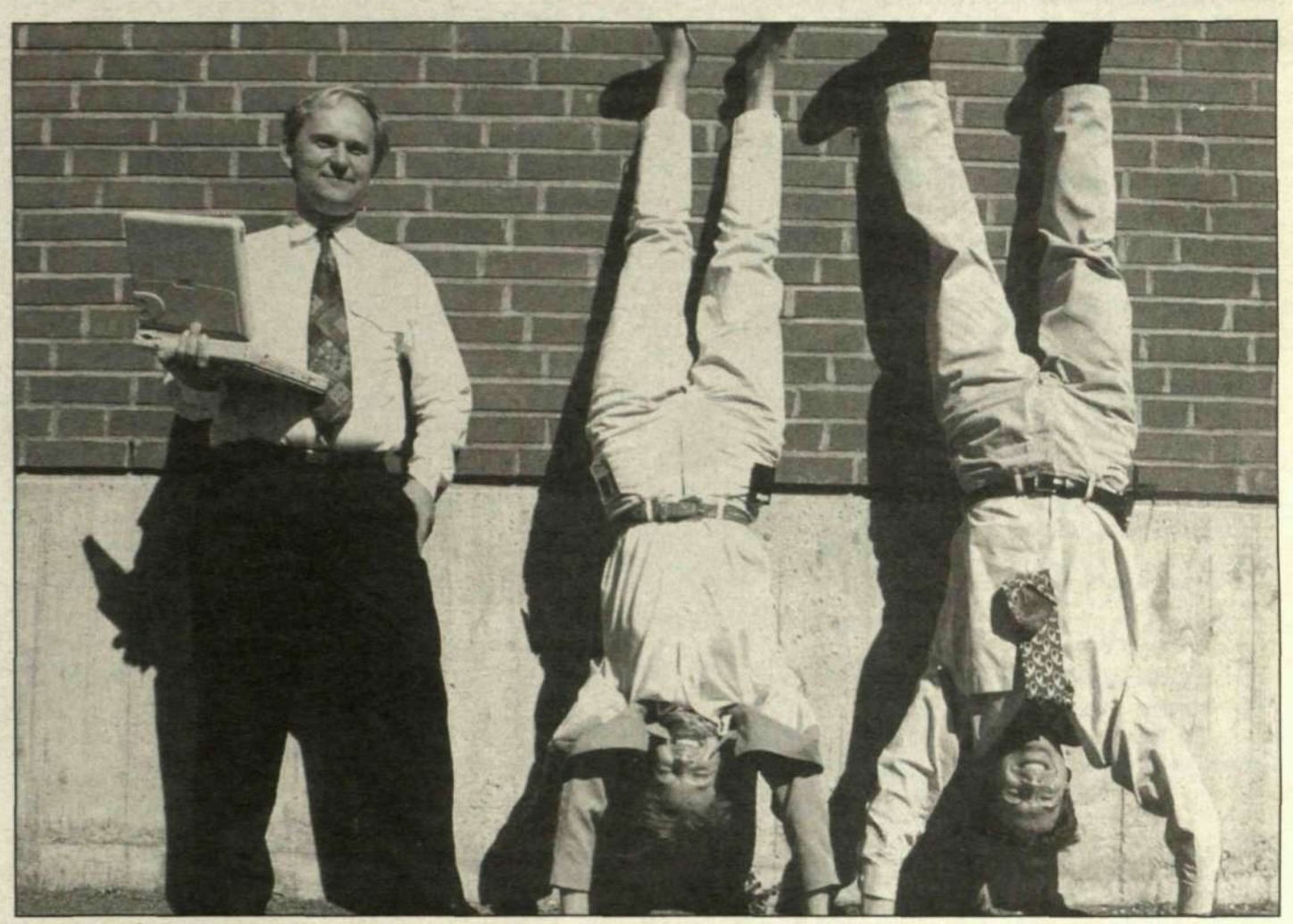
– Day-care is quite expensive, so we hope to manage without it, at least in the beginning.

Thomas Haagendal

Analyses that make the future stand on its head

In order to improve prospects to select new telecom products and services, Ericsson has created a "ConsumerLab" to conduct in-depth global analyses of human values and attitudes.

The analyses have already revealed many misconceptions. For example, in the U.S., personal safety is clearly the most important consideration when private individuals buy portable telephones.



(L-r): Henrik Pålsson, Sara Fortes and Erik Sebelius at Ericsson's new ConsumerLab are not only able to turn themselves upside down; they have also reversed a number of perceptions concerning services and products that customers of the future will value most highly.

New lab for consumer studies

How are mobile telephone services valued compared with the Internet? What would an American teenager give up if he/she had to choose between computer games, clothes and telephony?

These and similar questions are included in a comprehensive, in-depth study now being conducted by Ericsson's Consumer Lab in the U.S.

The results have been somewhat surprising and show that the telecom industry has been dealing with some misconceptions of what consumers really want. But ever-increasing competition is now forcing the emergence of improved adaptability and awareness, and future plans include greater segmentation of both services and products.

Serves all of Ericsson

The new ConsumerLab is a research unit based in Lund, in southern Sweden, at the business unit for mobile telephones. The new lab, however, will serve all of Ericsson.

"We are looking into correlations between people and behavior, and we are looking beyond traditional concepts of telecom and IT. We are trying to focus on the big picture and business opportunities," explains Henrik Pålsson, director of the lab.

ConsumerLab consists of four persons with highly diversified cultural backgrounds. Henrik is a technical engineer who has been employed by Ericsson for the past five years. Sara Fortes and Erik Sebelius are economics graduates who trace their roots to Spain and Germany/France, respectively. Ulla Nyberg is a human behavior expert with experience from working in Southeast Asia.

The cultural mix is highly suitable as ConsumerLab now embarks on detailed studies of values and attitudes in the U.S., France, Argentina, Malaysia and China (Guangdong Province). Each country serves as the representative for larger regions. For example, the U.S. will also represent Great Britain and Sweden as deregulated markets in the technical forefront, while France - with its more stringent regulations - represents other European countries.

Beyond the horizon

"We are concentrating on the 2-5 year perspective, which extends beyond today's product horizon," says Henrik Pålsson.

In order to look into the future, ConsumerLab is using a well-established model called RISC (International Research Institute on Social Change). The behavioral science model has been used successfully by the automotive industry, the consumer electronics sector and others.

According to the dominant theory, most human values are created during teen years and remain relatively stable throughout life. Values are defined as fundamental attitudes toward life. If a person is receptive to change or conservative, if greater emphasis is placed on recreation or work, etc.

2,000 Americans

The studies have already been started. The U.S. was the first testing ground, where 2,000 Americans in all parts of the country, ranging in age from 15 to 65, were requested to answer 350 questions. They were asked to complete questionnaires and answer other direct questions related to modern products concentrated on the utilization of telephony, both private and at work (two segments that are approaching each other at increasing speed).

The answers are now being analyzed and, although it is too early to reach any definitive conclusions, it may be mentioned that 10% of those surveyed do not know what mobile telephony is.

Furthermore, computer games are the only concept that have become less interesting during the past year, and that both adolescents and adults feel that mobile telephony and the Internet are equally important, that clothes and the telephone are more important than cable TV, etc.

Review and follow-up

Studies will be conducted annually in the U.S. and every other year in other countries. The objective is to identify similarities and differences between the U.S. and France, for example. The studies may show that different countries have more in common that one might think. Some differences in behavior may be attributable to external factors, such as prices for services, regulations, etc.

Studies have also been started in France, in cooperation with a French company. In the other areas, an initial survey will be started in Malaysia this autumn, and studies will begin in Argentina around year-end, with a somewhat later start planned in China.

All the studies will be supplemented later by other types of surveys.

The objective for ConsumerLab, as stated above, is to identify and chart human values to serve as the basis for future forecasts and to provide business units with assistance in creating more consumer-oriented products and more precise marketing procedures.

The ability to sell knowledge to customers is also becoming increasingly important in the rapidly changing world of telecommunications. Or perhaps to put it more accurately, Ericsson has knowledge about our customers' customers. New operators who lack experience and knowledge of technologies and markets have a much greater need to buy accurate and current information. The wishes and demands of end-consumers call for more customized solutions, and the ability to segment markets correctly and accurately is essential.

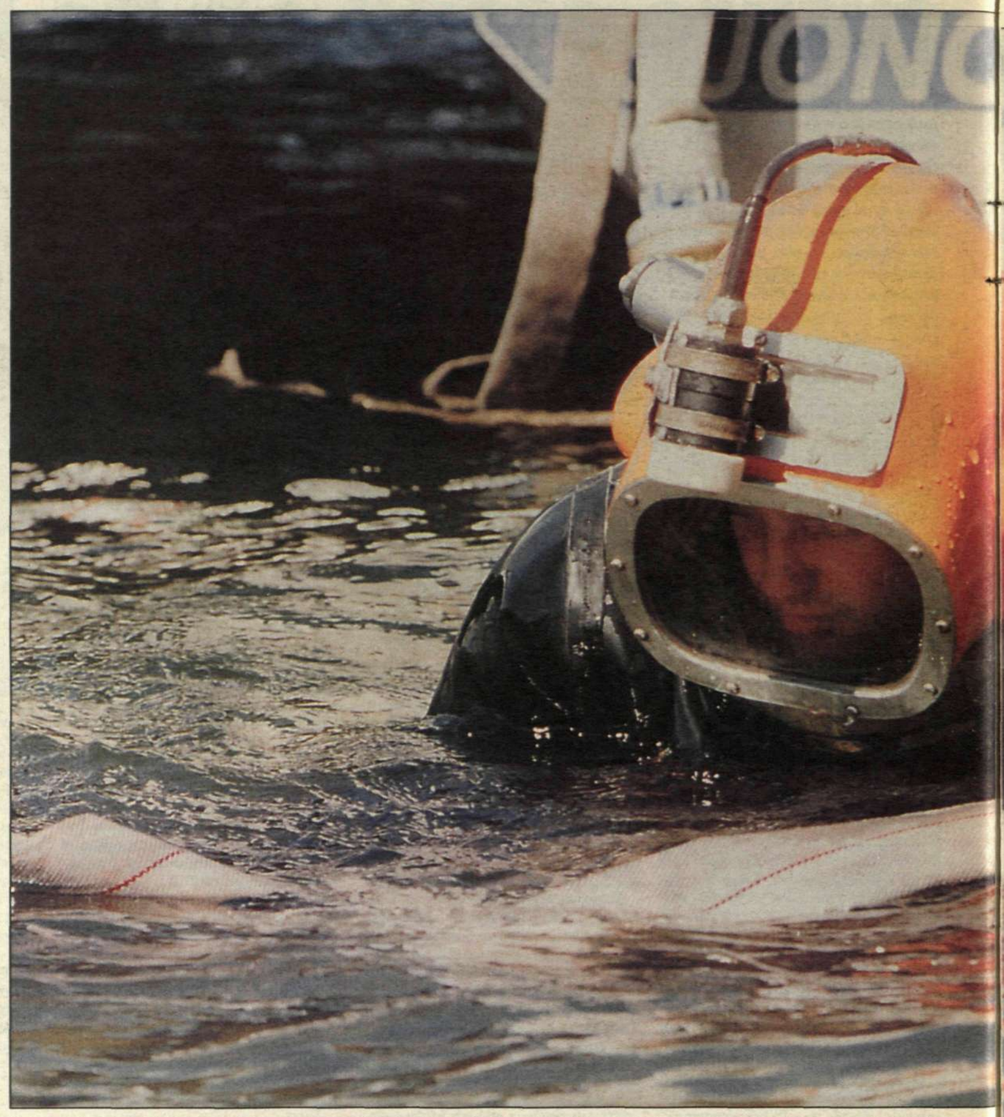
Lars Cederquist
Photo: Lars Åström

Mobile telephony functions like a parachute. In-depth analyses show that most consumers regard safety as the primary consideration in purchases of most portable telephones.

Swedish network renewed

The process of modernizing Sweden's telecommunications network is proceeding according to plan, and Ericsson is playing its part in cooperation with Telia.

By the end of 1997, everything will be ready. Then the network will be equipped to meet the information technology of the new age.



Mats Andersson, an expert diver and underwater consultant, in action out at Norbyskär, in the archipelago of Umeå. His work consists of laying fiber network cable and flushing away a trench in the seabed, in which to bury the cable.

The entire Swedish telecom network is renewed

As a result of Telia's decision to open its own contracting operations to external competition, Ericsson succeeded in gaining a foothold in the Swedish network market.

"We have finally found a domestic market in the civilian network segment too," says Lars Gartzell head of Telia projects at Ericsson Business Networks AB.

The work conducted by Business Networks and Telia involves joint efforts to construct a fiber network equipped with modern AXE switches and local remote subscriber stages (RSS) throughout Sweden.

The new fiber network will enable the transmission of images and data via the network and provide access to Telia's special Plus services, which include call forwarding and call-back functions.

"Gaining entry to this market was extremely important, even if we are only engaged in a small portion of the entire project," says Lars.

Many partners

Several of Ericsson's business areas are cooperating in the project. Bo Langemark, Ericsson Telecom Sweden who is responsible for marketing fixed networks to Telia welcomes this cooperation.

"By combining our strengths, we have been jointly able to generate these new business opportunities in the Swedish market," he says.

"The negotiations with Telia were handled by Kjell Lindqvist, from Ericson Telecom Sweden. Ericsson Business Networks had a decisive influence over the tendering process and is also responsible for the network activities conducted by the company Networks Construction.

"The first project was initiated last spring in the Sala region," Lars Gartzell explains. "The second project commenced with a helicopter take-off in Njurunda, Sundsvall, when a remote subscriber stage (RSS) was lifted in place."

Seventeen areas

Just before this year's summer vacation period, activities commenced in new areas. A total of 17 locations in the central northern Sweden will be affected, from Normaling in the southern part of the region to Älvsbyn in the north. During the summer, full-scale work was conducted in such areas as Bureå, Skellefteå and Hörnefors.

"Since new technology was installed, the older network hierarchy was also transformed radically," explains Börje Larsson, responsible for implementation of the Telia projects.

"The older network hierarchy with end stations, hub connection groups, routing number exchanges or transit exchanges has now been broken up and replaced by mother exchanges (AXE switches) and remote subscriber stages (RSS)," Börje explains.

When the project is completed in 1997, approximately 250 AXE switches will transmit telephony over 6,000 remote subscriber stages. In addition, miles of new fiber cable is being drawn between these units.

"Nowadays, it's possible to draw a full 100-kilometer section of cable without reinforcement," Börje Larsson explains. Underwater cable can be drawn even longer distances.

"Up to 300 kilometers," he says.

Umeå archipelago

During the late summer, an underwater cable to Norbyskär, in the northern Swedish archipelago of Umeå, was installed. Contact witnessed this operation and can confirm that this is a highly complex process. The head diver, Mats Andersson, and his men made sure that the cable was extended as straight as possible on the seabed and that it was submersed so deeply in a trench that it could not possibly be damaged.

Foreman Hans Holmberg's task was to ensure that the cable was drawn to the small box where the RSS was situated while one of his men checked that the RSS was whole and for any form of damage.

Anders Holmberg was responsible for the latter task and when this was completed, an Ericsson Telecom team led by Uno Engfors was waiting to connect the cable to the RSS.

Visions

"In two years, Sweden's entire telecommunications network will have been modernized. Sweden will then have a telephone network capable of efficiently satisfying the demands of the future," says Lars Gartzell.

Lars-Erik Wretblad

Anders Holmberg at the controls of the measuring equipment used to check that the fiber cable is in impeccable condition.

Hasse Rhem at work with the airborne cable.

Rideshare program cleans up L.A. air

Ana Hernandez with three of her Van pool comrades in the parking lot at Ericsson Business Systems in Cypress, California.

Every workday, Ana Hernandez leaves home at 6:30 in the morning and drives 20 minutes to the Diamond Bar park and ride, a large parking lot where she parks her car for the day. Here she meets four colleagues who also live in her area and together they ride to work in an Ericsson-leased van.

Ana works at Ericsson Business Systems in Cypress, California (30 minutes south of Los Angeles) and, like many others at this Ericsson office, she enjoys the benefits of ridesharing.

Participate or pay

In 1994, the air in the Los Angeles area was dirty enough to harm human health on 141 days, more than almost all the rest of the metropolitan areas in the United States combined, including such big cities as Houston, New York and Chicago. To combat this problem, the State of California created the Air Quality Management District (AQMD) in 1976 to achieve federal and state air quality health standards. AQMD monitors air quality 24 hours a day in order to forecast and report pollution levels, and it sponsors comprehensive cleanup plans and rules to reduce emissions from industries, business and consumer products. It also enforces Regulation XV, a California state law which requires that all companies with 100 or more employees reduce the number of vehicles arriving at their work sites between 06:00 and 10:00 or otherwise face a fine.

Survey

According to Human Resources Manager Sandy Johnson, the Cypress office, with 240 employees, complied with this rule by establishing its first rideshare program on May 1, 1991.

"First we conducted a survey of all employees to find out how many were interested in ridesharing," said Sandy, "and with this data were then able to unite people living in the same area."

The purpose of ridesharing is to relieve traffic congestion on the crowded freeways and clean up the air. Acceptable methods include carpooling, vanpooling, public transportation, walking, jogging or biking. Currently 58 employees participate in one of these ways.

Enticing employees

Because Californians are used to the convenience of driving their own car, companies must provide incentives to encourage ridesharing. At Ericsson, employees participating in the rideshare program become automatic members of the Rideshare Club and thus acquire all its benefits. These include a cash subsidy (how much depends on the method used), preferential parking and monthly and quarterly cash drawings. Ana Hernandez won the monthly drawing for $50 the same day she was interviewed for this article.

"This is actually the second time I have won the $50 drawing!" she said. "But vanpooling is advantageous for me for other reasons as well."

Discounted insurance

For one thing, Ericsson pays for the gas and all necessary maintenance of the van, and Ana reduces the wear and tear on her own car since she drives it much less. In addition, because she uses her car for personal use only and not for business, she gets a discounted insurance rate.

Other non-pocketbook-related incentives include the fact that she doesn't have to drive every day in rush hour traffic. "We have a perfect situation since we're five people," she said, "so each person in the group drives one day a week."

Special lane

The vanpoolers also get to drive in the special lane on the freeway reserved for carpoolers (two or more people to a car) which helps them to get to work faster. "I'll admit that I was skeptical at first," said Ana, "but I really have no complaints about vanpooling. It's a great option for me."

And none of this even mentions the benefit to the environment. Emissions from cars, trucks and buses cause more than half of the smog problem. Today's new cars are 90 percent cleaner than 1970's new cars, but the Los Angeles region has eight times more cars per capita than the world average. Ericsson's contribution may be small, but combined with the efforts of other businesses, it makes a difference.

Jami Nordenstam

Secure data transfer Eripax' strong suit

While integrated voice and data communication is currently the hottest trend, the need for reliable data communication separate from telephone functions has not diminished.

The Consono Eripax data switch may be the dark horse of the Consono product family, but it is a major factor in establishing Ericsson Business Networks AB as a comprehensive supplier of business communication products.

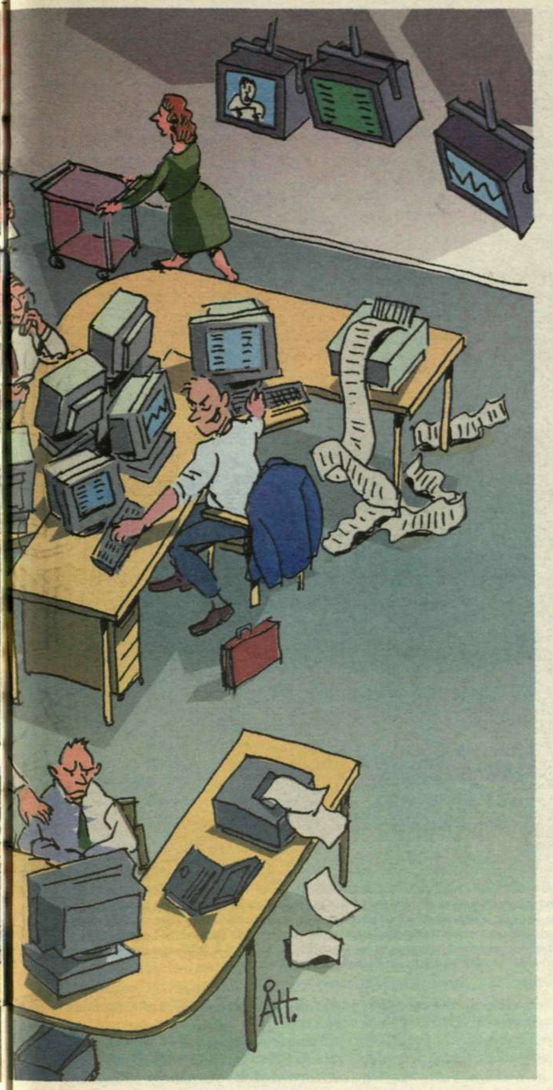
Stock exchanges and banks worldwide place their trust in Eripax. The Swedish Social Insurance Board is currently purchasing its second generation of Eripax to ensure that the social insurance offices throughout Sweden are linked by a reliable data communication network. And if you have been to the corner store in Sweden to place a bet on a horse during the past year, you can thank the Eripax on-line service for making it possible.

One of more than 2,000 ATG outlets that use Eripax to provide on-line services to gamblers throughout Sweden. Photo: Thord Andersson

Lennart Axelsson displays the materials used in customer presentations in Asia during the year.

"Eripax provides cost-effective and secure data communication," says Ragnar Erkander.

In the world of finance, the computers run non-stop. Day in, day out, stock exchanges and banks are bombarded with the latest information. Eripax guarantees that nothing goes astray.
Illustration: Åsa Harvard



Loyal servant with bright future prospects

Eripax first saw the light of day in the mid-1980s. At that time, it was based exclusively on the X25 standard, a data protocol standardized in the early 1980s.

According to this standard, the network is responsible for checking that the information transmitted corresponds with the information received. A number of control stations during the course of the transmission check and correct the information, ensuring that nothing is lost en route. Such rigorous safeguards were necessary, since many transmission lines at that time were analog and of poor quality.

X25 requires a high data capacity, which reduces transmission speeds. As the quality of public networks improves and the number of digital lines increases, the need for painstaking checking and fault correction has receded. A simpler protocol, Frame Relay, came into use in the early 1990s. With this protocol, both sender and receiver are responsible for ensuring that the data sent successfully reaches its destination. No fault correction occurs along the transport route in the network. If a fault arises, the data is discarded and the sender must request that it be retransmitted.

The new Consono Eripax system also handles Frame Relay traffic. Different ports in the exchange can be configured for different protocols. The new access products also incorporate, as an optional extra, Cisco router technology, which supports virtually all existing LAN protocols.

Consono Eripax also offers and ATM interface, which places it ahead of the competition as ATM is expected to become increasingly important, at least in the Western world. However, the existing X25 standard still remains a strong selling point in new markets.

Eripax organization restructured

Eripax operations are being made even more market-oriented through the amalgamation of product management and a small technical group with the other sales and marketing organization for data networks within Ericsson Business Networks.

In conjunction with the recent decision to transfer broadband development from Ericsson Business Networks AB (EBC) to Ericsson Radio Systems AB (ERA), the bulk of EBC's development resources for Eripax will also be formally transferred to ERA. However, parts of these new ERA resources will continue until 1997 to be earmarked for further development of Eripax.

At the same time, the buying-in of external technical resources will increase compared with today. Most of the further development and administration of Eripax in the future will utilize external services bought in from Plandata, a specially selected consulting firm, to which some personnel with the relevant expertise will be seconded from Ericsson Radio Systems.

Ericsson Telecom's project to develop a new operating network for terminal connections for AXE (IOG20) is partly based on recent progress in Eripax development. Eripax in turn stands to benefit in future from synergies in development work and from the efforts to upgrade the performance of IOG20.

The changes outlined above do not affect development of Eripax products at Camtec, Ericsson's U.K. subsidiary.

In more and more sectors of society, the computer is regarded as an indispensable tool, and an increasing amount of information is stored electronically. Remote workplaces, virtual organizations and other new working methods give rise to a continuous stream of ones and zeros that are transmitted this way and that over our communications networks.

Customized

Consono Eripax, from Ericsson Business Networks (EBC), makes it a simple matter to build the electronic superhighways that are needed.

"Our principal target groups are companies and organizations that need to link up a number of physical locations for reliable data communication," says Ragnar Erkander, who is responsible for remote network communications.

Business Network's combined product range enables the business unit to offer customized solutions. The customer can develop a private network infrastructure, or allow the Eripax nodes to utilize public network services as transport routes, or combine these two approaches.

Upswing

After last year's poor results, largely attributable to the decline in the Italian market, all the indicators are now pointing upwards. Business is booming as never before, both in Sweden, where Telia markets Eripax and other Ericsson products, and in other markets.

"The first six months of 1995 look like being the best ever, in terms of both profit and earnings," comments Lennart Axelsson, product manager for Eripax. "Operations are now clearly in the black."

There are several reasons for this success. The organization has been streamlined after the substantial expansion that occurred in the late 1980s. Local companies have rigorously cut their costs. And a number of major development projects have now been completed and have begun to generate revenues.

New concept

Today's Consono Eripax is essentially a new product offering based on a new, modular system concept. The actual exchange that forms the central node of an Eripax network now has substantially better performance than previous versions. There is also a new generation of access products, developed by Camtec, the U.K. development company acquired by Ericsson a few years ago. Consono Eripax is simple to adapt and upgrade, and offers a number of protocol options for communication with various types of equipment.

In the mid-1980s, the Swedish State Railways (SJ) became the first organization to purchase Eripax. When the order was received, the product was still not entirely complete.

"It was a great advantage to have a customer already while the concept was still at the development and refinement stage," observes Ragnar. "SJ's requirements pointed us in the right direction, resulting in a product closely tailored to the customer's needs.

The Swedish Social Insurance Board was another early customer that installed an Eripax network in order to establish secure links between its central computers in Sundsvall and the terminals in local branch offices.

"When the Swedish Social Insurance Board noted its increased need for communications between different social insurance offices, it called for tenders for a new system at the beginning of this year," relates Ragnar. "Ericsson was successful, through Telia, in winning the order. Between 300 and 350 offices will be linked up via Consono Eripax nodes."

"There is a general trend towards LAN-to-LAN communications solutions, whereby local networks can communicate with each other," continues Ragnar. "The day of the central computer, when a large number of local units communicated with a single, centrally located database, is now essentially history."

Disaster-proof

An Eripax network is well equipped to withstand disasters. Cross-connections provide alternative routes for traffic, which thus always finds its way to the recipient. In addition, the branch nodes can call on duplicated power sources, processors and line connections, minimizing the risk of a component failure putting a central node out of action.

"Our package also includes a sophisticated network supervision system, and the network can be upgraded while operating," adds Ragnar.

Within the financial sector, security is an absolute essential. We have a number of satisfied customers in this area – with 13 stock exchanges using Eripax, for example. The financial sector imposes stringent demands, which Eripax is well equipped to meet. Currency values and exchange rates change constantly, and the brokers and others involved in this field must be able to feel assured that crucial information does not reach one player before it reaches others. The packet broadcast function copies information and ensures that it is equitably forwarded to everyone in the network at exactly the same time.

Gamblers aided

At the beginning of last year, Ericsson received an order that turned virtually every Swede into an Eripax user, when AB Trav och Galopp (ATG) invested in a nationwide Eripax network. Some 2,200 ATG outlets will be linked via telecommunications networks and modems to several main nodes. At the time of writing, about 1,700 outlets have already been connected. The same network can be used not only for placing bets, but also for ordering train and theater tickets through Biljett Direkt (Tickets Direct).

The largest single Eripax customer to date is the Italian power generation company ENEL, which owns its own networks. As deregulation proceeds, major customers can acquire operator status and open their networks to third-party traffic, creating opportunities both for new Eripax sales and for upgrades to existing customers' networks.

New markets

The new Consono Eripax is holding its own in the market against competition from such industry giants as Northern Telecom, Siemens and Alcatel. Both similar and alternative technical solutions are available in the market. Telia's Datapak public service, or example, is based on the same technology as Eripax.

Most public operators offer similar services to Telia's. Among the countries that have chosen Eripax as the infrastructural solution for their data networks are Iceland, Croatia and Estonia.

"We are also promoting our product range in a number of eastern European and Asian countries," notes Lennart Axelsson. "These countries are still in a developmental phase, and generally have an inferior infrastructure and analog networks. As a tried and tested system, Eripax clearly has a role to play in these countries.

The next country to take a Consono Eripax system into service will be Ukraine. The Business Communications and Networks business area recently received, via Ericsson Schrack in Austria, a large order from Ukrainian national railways for an Eripax network. The network will comprise 77 nodes, covering all the major junctions in the Ukrainian railway network.

Kari Malmström

Testing sound in the Quiet Room

The phone rings, you lift the receiver and answer. From the other end you hear a familiar voice, in fact so familiar that it seems like you are sitting in the same room, despite possibly being hundreds of miles apart. Today, we regard the perfect reproduction of sound as something self-evident, but even in our flourishing IT society, room-like conditions and acoustic trials are required for the approval and, in particular, the development of telephone receivers and loudspeaker functions that measure up to current demands.

The Quiet Room measures 7.4 X 5.8 X 5.2 meters. It is made of concrete molded up to half of the height of the room, followed by concrete blocks up to the ceiling, which consists of plasterboard sheets. The room stands on springs that rest on a plate, which in turn stands on supports secured in bedrock. The Quiet Room, which represents an investment of SEK 1.7 million, was designed and built by G+H Montage, in Ludwigshafen, Germany.

No computer in the world can simulate the way a human sounds. In Ericsson Business Networks AB's (EBC) acoustic laboratory in Nacka Strand, outside Stockholm, the objective is to create as "human-like" conditions as possible for the testing of Ericsson's telephones.

The laboratory contains a variety of measurement equipment, in addition to various types of specially designed rooms. The world's various telecommunication administrations impose specific demands regarding the behavior of telephones. There are international standards for such items as speech softening, tone curves, distortion and crackling. Sune Gustafsson and his two colleagues, Tao Li and Åke Janzon, conduct ongoing measurements of equipment and components. Their work is an important feature of Ericsson's quality-assurance efforts.

Absolute silence

The echo-free "Quiet Room" is unique in the Ericsson world. The room is completely separated from the surrounding building. When it was built, a hole was made straight through a number of floors. The Quiet Room rests on concrete supports and its suspension plate is secured directly into bedrock. The interior is clad in mineral wool wedges both above and below the floor, which consists of wire mesh at approximately half the total height of the room.

"All other rooms emit echoes, but this one is completely quiet. People have a small muscle in their ears whose function is to tune in the sounds we hear and adapt our hearing to the surroundings," Sune Gustafsson explains. "After five minutes in this room, you can hear your own pulse, and after another ten minutes you can hear your muscles moving! You wouldn't be able to sleep in here, because you'd be disturbed by your own bodily sounds."

Testing the entire chain

But then, the room was not built for people. The equipment to be measured and tested placed in the room and remote-controlled from the outside. If a telephone receiver is to be tested, a dummy head is used together with an artificial voice and ear and an arm to hold the receiver. The International Telecommunications Union (ITU) has performed tests on more than 4,000 people to compile benchmarks for how people hold a telephone receiver.

"Outside the room, we have measurement equipment and test models of the MD110 and BusinessPhone subscriber switches. We test the entire chain, from the switchboard via the line to the telephone, and then back again," Sune explains.

In simple terms, a specific signal is transmitted down the line to the receiver. The signal is transformed into sound and analyzed with the help of a measuring microphone in the room. The change must be as small as possible – the smaller the change, the better the sound reproduction. In the other direction, a calibrated sound is transmitted from an artificial mouth via the receiver's microphone over the line and this is compared with a calibrated signal.

Everyone's welcome

The Quiet Room in Nacka Strand is carrying on an Ericsson tradition, since it is the successor to a similar room left behind following the relocation from Bollmora. Since corporate responsibility for cord-connected telephones has rested with Ericsson Business Networks for the past few years, it was natural to concentrate these resources in Nacka.

During the past few years, EBC has tested a multitude of telephones sent to Nacka by Ericsson companies worldwide. The laboratory has tested Brazilian, Mexican, Australian, Dutch, Norwegian and American models, to name but a few. The acoustics facility in Nacka Strand also assists other Ericsson units, including Ericsson Radio Systems and Ericsson.

"If any Ericsson unit wants to use our resources, all they have to do is send an order," says Sune Gustafsson. The current fee is SEK 670 per hour. Measuring all the requisite data in a loudspeaker system telephone takes approximately two hours.

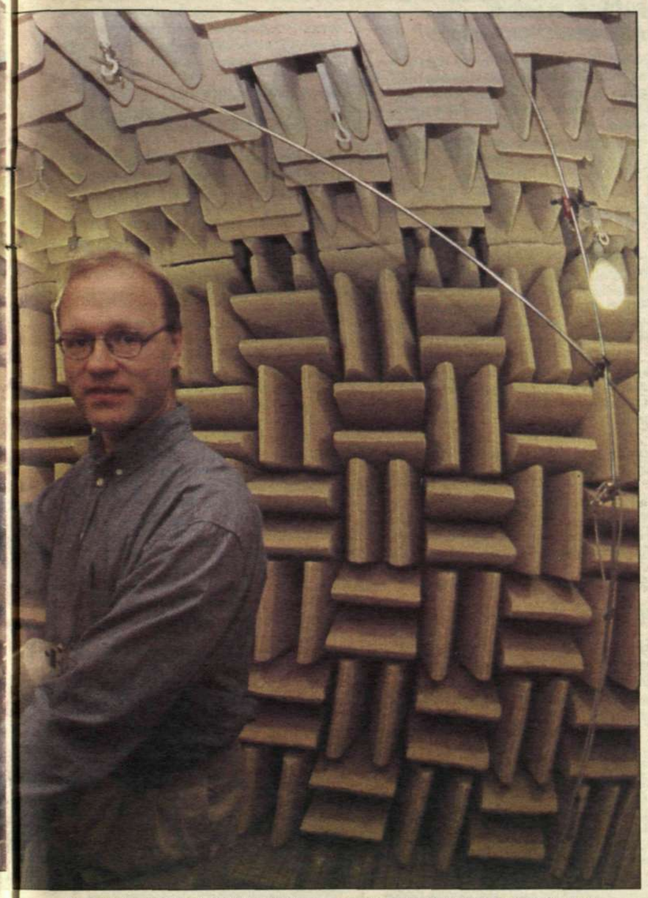
Important link

Products purchased from other suppliers, but which are to features of Ericsson solutions, are also tested here. These products are often designed and tested in accordance with other specifications, but if they are to be acceptable parts of an Ericsson offering, they must satisfy the same stringent demands as the organization's other products.

The acoustics laboratory played a key role in Ericsson Business Networks' development of the new Dialog 300 system telephone, which is used in both Consono MD110 and BusinessPhone and is now being manufactured in increasing volumes. To attain the best possible sound, several design adjustments had to be made.

"When the designers need to fine tune electronic filters, plastic components and small screws in a telephone, and have to continuously test, rationalize and adapt the telephone, ongoing measurements are required so that they know the results of their efforts. To a very large extent, designing a telephone is an interactive process. Our goal is that acoustics, mechanics and electronics function as an entity," Sune points out.

Most measurements are performed during the development of new products. During serial production, it is mainly controls that are conducted. When a telephone requires approval in a new market, the administrations request sample models for their own tests. Naturally, these models are first tested in Ericsson's own acoustic lab, to guarantee that no "Monday morning" items are dispatched.



Ericsson is a member of a very select number of organizations that have their own in-house quiet rooms. In Sweden, there are only a few such rooms, including those of SAAB, Volvo, the major institutes of technology and SP, the National Institute for Materials Testing. In the photo above, we see Tao Li, Åke Janzon and Sune Gustafsson in the process of preparing an "artificial person" for tests of a Dialog 3000 telephone.
Photo: Thord Andersson. Illustration: Bernard Zirn.

In addition to the Quiet Room, Sune Gustafsson's laboratory contains several other rooms for sound measurement. For tests under realistic conditions, there are rooms in which sound systems are used to provide background noise, sometimes recorded in an authentic customer environment.

Loudspeaker challenge

The laboratory also contains several smaller echo-free rooms. Although these are capable of accommodating most measurements, loudspeaker telephones must be tested in the large room. Developing good loudspeaker telephones is a real challenge. Ericsson is well advanced in the area, but demands are increasing all the time.

"A telephone is relatively small and made of plastic. These are not ideal conditions for a loudspeaker," Sune explains. Compared with the "hi-fi world," the difference is crystal clear.

For a company of Ericsson's magnitude, having its own measurement resources is a must. Although there are independent companies, so-called "test-houses," that conduct measurements on order, they only test finished products. A test-house is no real option during the product development stage. Moreover, having one's own resources also helps to generate invaluable expertise.

"All of our measurement programs are developed in-house and are usually about two and a half years ahead of those used by the test-houses, which wait for the definitive standards to be issued," says Sune Gustafsson.

Opportunity to influence

In a typical standardization process, operators place certain demands and the telephone manufacturers respond by informing them what is actually possible to accomplish. Then a compromise is reached. Ericsson plays a very active role in ETSI, the European Telecommunications Standards Institute.

To a certain extent, it is possible to foresee future developments when you know which way "the wind is blowing" and also have the opportunity to affect developments. Moreover, having an in-house acoustics laboratory makes it possible to conduct measurements against future specifications, and thus quickly be able to market products that comply with the new demands.

Kari Malmström

Harald Rach, President of SIS Certifiering AB, handing over the TTE certificate to Ragnar Bäck, President of the Business Networks business area. This award has an future obvious place on the wall in the Nacka Strand reception, beside Ericsson Business Networks' ISO 9001 certificate. Photo: Peter Nordahl

First in Sweden to receive new quality certificate

On Friday October 13, 1995, Ericsson Business Networks AB (EBC) was ceremoniously awarded the visible evidence of its newly won status as an independent quality guarantor for a number of its products, in accordance with EU's telecommunication terminal directive (TTE). EBC has thus passed an important milestone. The new certificate can be regarded as a complement to EBC's ISO 9001 certificate. As a result, the road to the European market for new products and new releases has been significantly shortened.

In order to guarantee sound product safety, government authorities stipulate demands for the connection and use of technical equipment. However, since different countries impose different demands, tests and approvals have been required in each individual country. In 1990, the EU Commission passed a resolution regarding the harmonization of the multitude of national standards. The objective is that common standards be implemented throughout the European Economic Area (EEA).

Suppliers assigned authority

The EU now regularly issues a number of directives and related technical requirements. The directives constitute a framework and can subsequently be expanded through the issue of additional requirements. The supplying company must fulfill these requirements and is itself responsible for ensuring the safety of its products.

"The directives can be satisfied in two ways," explains Lars Skedinger, quality manager within Business Network's F Division, Business Communications. "Either you arrange for the products to be tested by an accredited testing laboratory, whereby the protocol serves as the basis for approval of that specific product, or the company itself acquires the competence required for approving the products without any external assistance."

Quality system

A well-functioning quality system is the resource required for a supplier to attain such independence. From Ericsson Business Networks' viewpoint, its ISO 9001 quality efforts constitute the basis, and are sufficient to satisfy a number of the EU directives for conducting in-house quality approval work. However, the telecommunication terminal directive also involves other requirements not covered by ISO 9001. This is where the new certificate enters the frame. By satisfying a number of additional criteria, a supplier can become "its own authority."

The Swedish company, SIS Certifiering AB, is one of the world's few certified organs with the right to issue certificates in accordance with the TTE directive. Swedish authorities have acted swiftly, which facilitated the rapid progress made by Ericsson Business Networks.

During 1994, activity designed to accommodate and follow up visits and audits by SIS was intense, particularly in the F Division. The rewards of this hard work are now visible. The company can now proudly display the first TTE certificate awarded in Sweden.

Generates revenues

The certificate covers voice, data and multimedia products in corporate networks to be connected to the European ISDN network. The approval covers manufacturing in Karlskrona, Sweden, and Rijen in the Netherlands. Each product will be provided with proof that the company satisfies the TTE directive in the form of a number positioned by the product's CE mark (the approval mark used in the EU).

"This will also generate revenues, since it shortens the road to the European market! For Consono MD 110, the simplified procedure could yield time savings of up to three months, in connection with new releases. Above all, we can now plan our own work," underlines Lars Skedinger. "We are no longer dependent on the decisions of government authorities and external testing laboratories. This latter factor does not only save time, it also saves money."

A to Z follow-up

Lars Skedinger states that one of the keys to continued success is careful maintenance of the ISO certificate in particular, and also of the TTE certificate and the technical requirements that will be added later as additional national impediments are removed.

Ongoing quality and quality-assurance work, in which routines and flows are developed and evaluated on a continuous basis, is a key prerequisite to maintaining the number one position in future.

Kari Malmström

VACANCIES AT ERICSSON

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

For further information about advertising here, contact Anikka Karlsson-Parra at Ericsson Communications. Phone +46 871928 14.

IN SWEDEN:

Ericsson Radio Systems AB, Kista

MARKETING/MARKET SUPPORT FOR ITALY AND GREECE

Our customer in Italy operates one of the largest ETACS networks in the world, and a GSM network, in tough competition with a second operator. Our Customer in Greece is also thriving in competitive market.

Day-to-day business in both markets is managed by Local companies which in turn are supported by the Marketing organization at ERA/LF in Kista.

In order to meet the expectations of our customers and Local Companies we need to expand our marketing organizatio with marketing an marketing support personnel.

The work involves tender prepatation, negotiations an close cooperation with our Local Companies. Hence, we are looking for individuals with a knowledge of Ericsson AXE and cellular systems.

Fluency in English is a must, Italian and/or Greek is an advantage. The candidate must have the ability to work in teams to communicate clearly in writing and speech and possess the necessary initiative and drive.

Contact: Tommy Lindhe, 08-7571745, memo: ERATLE or Mats Segerström, 08-7575517, ERAMASG.

Ericsson Telecom AB, Operations

MANAGER OF RMU SUPPORT

We are looking for a manager to a newly formed unit within ETX/X Operations. The unit is responsible for following tasks:

- HW-forecasting – Resource management of operations – Priorities of HW and resources – Invoicing of services to Major Market Units (MMU) – Pricelists – Ordering support to Major Market Units (MMU) – Transfer of documents to companies abroad – Handling of implementation offers towards Regional Market Units (RMU) – Influence Regional Market Units (RMU) so that the Time To Customer(TTC) flow becomes more efficient.

The unit will consist of approximatly 18 persons.

Good ability of handling people is required, knowledgement in tendering, forecasting and/or resource management is preferred. Language used is english but knowledgement in spanish is an advantage.

Contact: Rolf Ekblad, 08-7193142, memo: ETXROLK eller Eva Carin Eva Carin Svensson, 08-7191616, ETXECSV (Human Resources).

Ericsson Radio Systems AB, System Support Services RMOG, Kista

PRODUCT MANAGEMENT

Within Customer Services, the unit System Support has the responsibility to develop and maintain the service portfolio for Customer Services for Mobile Telephone Systems NMT,TACS,GSM and PCS.

As Product Manager you will work with service development and processes, strategies, business Case, product lifecycle management, pricing and technical salessupport.

We are now seeking for personnel in the following areas: CORE SERVICES, VALUE ADDED SERVICES and COMPLEMENTARY PRODUCTS.

The succesful candidate have a trackrecord in Product Management and a background /experience of AXE and/or radiotechnics.

Contact: Katarina Svensson, 08-7572246, memo: ERAKASV, Kent Johansson, 08-7572281, ERAKEJO or Robert Melkersson, 08-7641405, ERAROME. Appl. to: Lena A. Hellberg, Human Resources, 08-4045421, ERALEAX.

Ericsson Business Networks AB, Nacka Strand

PRODUCT/PROGRAM MANAGER IDNX/NET

IDNX, Intelligent multiplexors ("bandwidth managers") supplied by NET (Network Equipment Technologies), California, have since 1989 been a part of EBC soffering. The responsibilities for these activities and the NET relation is now being transfered to the MD110 product within EBC. We are therefore looking for a prodct/program manager for this area.

The main responsibilities are: Business planning with usual profitability analysis for the product/program area. Further development of the IDNX marketing-wise as part of Consono Networking to further strenghten our offering and also promotion of product and business opportunities in major markets/local Companies.

We are looking for a person with wide area communications experince preferably from similar voice/data products (areas).This should be commercial eg. sales, product managemnt or customer project management. This job offers exciting and demanding contacts with Local Companies and our partner. Persons applying should be prepared to travel frequently.

Contact: Trygve Zetterqvist, mgr product management MD110, 46 8 4220508, memo: EBC.EBCTZ. Appl. to: Malin Bolin, Human Resources department, NA/EBC/FH, EBC.EBCMNB. (EBC:EBCMNB), NA/EBC/FH.

Ericsson Business Networks AB, Sundbyberg

ELECTRONICS DESIGN ENGINEER

System Development at Network Engineering Division is a department responsible for bringing new network concepts from business concepts into real life working solutions. Our network solutions incorporate equipment from a large number of suppliers, both within Ericsson and externally.

For development of equipment mainly for CATV (Pay-TV) solutions we are now seeking an experienced electronics engineer. The work focus is on HW design of high speed circuits but we appreciate if you also have knowledge of real time SW development and integration.

We beleive a suitable background for this job is a B.Sc or M.Sc. degree in electrical engineering or equivalent with at least five years experience in electronics design. Good co-operation skills, methodical work approach and fluent English are desired personal qualities.

Contact: Peter Berg, +46 8 764 0877, memo: EBC.EBCGREB, Gert-Eric Lindqvist, +46 8 764 3252, EBC.EBCGRLI or Kurt Trogen, +46 8 764 0811, EBC.EBCKUTR.

Ericsson Telecom AB, Marketing Asia & Pacific, Telefonplan

ASSISTANT MARKET MANAGER

We at department Marketing Middle East are looking for a commercially minded and ambitious person. You will be part of a team whose role is to identify and create business opportunities, working alongside Market Managers and Local Companies. Some travelling to the region is expected.

You will be educated to MSc/MBA or equivalent. You must have a strong commercial and technical knowledge and also have good communication, team work and presentation skills. Above all we look for motivation and initiative!

Contact: Camilla Schmidt, +46 8 719 0139, memo: ETX.ETXCASC or Ann Jingklev, +46 8 7193404, ETX.ETXANN.

Ericsson Hewlett-Packard Telecommunications AB, Västberga

Management Systems are seen by telecom operators as s top growth area for their future investments. Ericsson Hewlett-Packard Telecommunications AB (EHPT) was formed in 1993 to exploit this market opportunity in a fast moving market. EHPT s offering builds on our TMOS and the TIMS product families. We are looking for:

AREA MANAGER

Responsible for the Mexican market, based in Stockholm. This Area Manager will be marketing and selling our solutions through the Ericsson MLC.

In this job you will work from business opportunity to order, by identifying the business, formulate proposals and deals and negotiate contracts. You must be result-oriented, think in in commercial terms and showa strong determination to succeed in this job. A BS or MS degreein Computer Science or Telecom gives you an adequate technicalbackground, while formal business education or work experiencein a similar environment is a must.

Contact: Elisabeth Karlow, +46 8 7193641, memo: EHS.EHSEEK. Appl. with CV to: VK/EHS/FP, Inger Agdahl, Human Resources.

Ericsson Telecom AB, Global Product Line Management, Network Intelligence

BUSINESS PLANNING AND AGREEMENTS MANAGER

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 allband 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 today of IN?

You will drive business planning, business analysis, negotiations, maintain agreements, support our business interests, formulate business and agreements strategies. You will work with the Ericsson Strategic Planning, the GPLM NI Business plan, agremments 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.

We are looking for persons, who can contribute based on broad business experience, or expertise in an area.

Contact: Anders Hultgren, 08-7197090, memo ETXT.ETXANHU, Manager, Business Strategy and Market Communication or Ewa Brandt, Human Resources, 08-7198289, ETXT.ETXEWAB.

Ericsson Telecom AB, GPLM Network Intelligence

BUSINESS MANAGER

More than 50 operators of fixed and mobile networks have choosen the Ericsson Intelligent Network products today. The business opportunities for our expanding Network Intelligence product portfolio are growing very fast.

Our unit acts as the primary interface towards our sales channels, the RMUs and MMUs, for IN platform product marketing , offering and sales. We are responsible for pricing issues and the profitability of our products.

As a Business Manager your main responsibility will be to support and initiate sales and marketing activities for a selected number of markets via our RMUs and MMUs. You will have a great opportunity to broaden your competence in one of the most interesting and expanding areas within telecom, Network Intelligence!

You should have experience in marketing/sales and/or product knowledge. However, most of all we expect you to be an assertive individual, ready to take a pro-active and service minded approach toward our customers, internal as well as external. You should have good oral and written skills in English and be prepared to travel.

Contact: Anneli Sjögren, 08-7198987, memo: ETXT.ETXANNE, Cynthia Heyn, 08-7192179, ETXT.ETXCYHE eller Ewa Brandt, Personnel, 08-7198289, ETXT.ETXEWAB.

Ericsson Telecom AB Business Unit Switching and Network Systems, GPLM-Switching

PRODUCT AREA MANAGEMENT CTM (Cordless Terminal Mobility)

The product area management has the overall and global product responsibility for the total CTM application. We need to strengthen the team and are looking for a key player.

We are offering you the challenging role as product manager, where you will have a leading role in the introduction of the CTM functionality and application. You will work in a dynamic and stimulating environment with excellent opportunities to gain competence and extend your contact network. You will be responsible for product specification i.e.translation of customer needs and commercial requirements into techical requirements (functionality and characteristics).You will be working close to the market and have daily contact with other product managers, the Telecom area manager and the systems management department. The work also includes technical product marketing and standardisation related activities.

We believe that you have good AXE knowledge, a few years in design, systems management or product management.Knowledge in mobile applications, network signalling/protocols, or IN is considered as a merit. You are result-oriented, used to take responsibility and have the ability to work in a team environment.

Contact: Göran Stendahl, 08-7192421, memo: ETXT.ETXAGST or Kerstin Halén, 08-7192054, ETXT.ETXKER.

Ericsson Radio Systems, Kista

STRATEGIC PRODUCT MANAGEMENT

Within Business Area Radio, BR, a unit has been established to adress the Business Operation Services area. The unit has the responsibility to spearhead the Business Operation Services area, develop a portfolio of professional services and systems, provide marketing support, establish and manage alliances, evaluate, select and certify systems, develop BRs requirements on systems in this area, provide business project management support services, and other associated tasks. By adressing this area, BR will offer services and products to Operators launching new or enhanced services, that will strengthen competitivity and reduce Time To Market, making BRs total offering more competitive.

We are now seeking Strategic Product Managers for third party Products covering different Operator process areas, and our Professional Services in this area. These Positions will focus on building our strategic portfolios of third party products and services in the respective process areas, and marketing these portfolios internally and externally.

The succesful candidates have a track record in Product Management or Marketing & Sales, or Project Management, acquired either in the Telecommunications Industry or in the IT Industry.

This area offers very good future opportunities, and you will be working in an informal organisation consisting of highly motivated people, with excellent opportunities for personal development.

Contact: Gunnar Borg, Manager Business Operation Services, 08-4044400 or Lena A Hellberg, Human Resources, 08-4045421. Appl. to: Lena A Hellberg KI/ERA/LYH Ericsson RadioSystemsAB, 164 80 Sthlm.

Ericsson Telecom AB Core Unit Basic Systems, Stockholm

PRODUCT MANAGEMENT AXE 10 PLATFORM

Basic Systems Product Managemnet Unit (ETX/TX/X) is responsible for the product managemnet of the AXE 10 platform, i.e. processorstelecom operating systems and switching fabrics in world class.

To satisfy the continous increased demands from mobile as well as fixed network applications, the AXE 10 platform is currently undergoing an intensive modernization program. This requires considerable more resources in the provisioning area but also in the product management area. The product management responsibility is to secure an optimal, business driven, control of the development and to establish strategic plans to meet future needs.

We have now several vacant product management positions. In general these can be characterized as product or process specialists positions aimed as support to the business responsible product managers.

A number of specialist areas are defined. A flexibility exists with respect to how these areas are manned, i.e. one person can act within one or several ares etc. Examples on specialist areas: Industrialization, Patents, Platform Network Management, Product substitution,Control Systems, Open Systems technology, Switching, I O Systems, Business intelligence, Price strategies.

Contact: Jan Svennerholm, +46 8 71911369, memo: ETXT.ETXSVM, Agne Jönsson, +46 8 7195089, ETXT.ETXAJN eller Mats Bjerlöv, Hum. res. +46 8 7199675, ETXT.ETXBJEL.

Ericsson Telecom AB, GPL, Customer Services

NETWORK OPERATION MANAGER

Consultancy Services Provisioning will expand and build up a new unit for Network Operation services. To be able to handle new business opportunities we need to expand our capacity to operate networks on customer's behalf.

We are looking for motivated, open minded persons, who are looking for new challenges including hard work and travelling, with operational experience

in one or more of following areas:

AXE 10 Operation and Maintenance Network Operation of AXE 10, MD110 or BMX NMC/OMC Operational activities Management

The network Operation unit will offer Operational Services towards Operators world-wide. This means that we will operate a customer AXE network or parts of the Network. The Network Operation Managers will work in our Network Management projects and be placed in our Network Management Centres we have or will have in Operation e.g. in Italy,Sweden or Germany during 1-2 years.

We think you have a MSc/BSc in engineering or equivalent. Good leadership and communications skills in English are needed.

Contact: Thomas Soneson, 9 8398, memo: ETXT.ETXSOON, Ewa Lundberg, 9 8991, ETXT.ETX-EWLU or Gabriella Gerdin, Human Resourses, 9 7930, ETXT. ETXGAB.

Ericsson Software Technology AB

CONSULTANTS FOR QUALITY, PROJECT MANAGEMENT AND TEST

Ericsson Software Technology AB in Sweden is made up of consultants in the field of telecommunication and information technology. We work primarily with development and handling of complex software systems, methods for design of generic and reusable IT-systems and customer adapted training. Ericsson Software Technology AB has approximately 550 employees. Right now we need to hire a number of new employees. Our headquarter is located in Karlskrona but we also have offices in Stockholm, Ronneby, Hässleholm and a subsidiary in Lund.

Ericsson Software Technology AB is wholly owned by Telefonaktiebolaget LM Ericsson.

Frameworks in Ronneby is a unit within Ericsson Software Technology AB. We work with methods for shortening leadtimes and improving quality in projects developing complex software systems. We work with project management, methodology for software reuse, test and we use e.g. CMM and ISO 9000. We are around ten consultants today and we need to expand. If you area Master of Engineering or a System Analyst in computer science, haveexperience from project management, working with quality or test and wantto improve the methods used today. Then contact us immediately.We can offer you an interesting *job in a very successful company. We workboth in* Sweden and abroad and the job will include include travelling. Our businesschanges continuously and therefore you need to be able to cope with changes.

Get in touch with us and discuss your future with us!

Send your resume to: Ericsson Software Technology AB, Frameworks Att: Magnus Nilsson, Soft Center, S-372 25 Ronneby Sweden, + 46 457 775 00 e-mail: Magnus.Nilsson\ryepk.ericsson.se.

INTERNATIONAL

Ericsson GMBH, Germany

ACCOUNT MANAGER

The newly formed department Network Operators are urgently looking for an account manager for EDD/B in Duesseldorf, Germany.

We offer you an interesting and ambitious position. The main authorities and tasks are: Cconception of network management and accounting questions within large projects, preparation of offers, customer presentations, project related co-operation with business partners and also know-how of german requirements, ability to present it within Ericsson or to external partners and to transfer the know-how into network solutions.

As a suitable candidate you have the following experiences and qualifications: – university degree in telecommunications engineering or MIS – sales to key account customers – public networks (SSP, SCP, IN/VPN) and private networks (PBX, Protocols, Voice Networks) – data communications (WAN, LAN) – transport networks (ATM, SDH)

This position requires also initiative, good communication skills, ability to work in a team and organisational talent.

Contact: Ericsson GmbH, Business Networks, Duesseldorf, Germany Dr. Gerd Neumann, Manager Network Operators, phone +49 211 534 4180.

Ericsson Components AB, BU Energy Systems, Kuala Lumpur, Malaysia

OPERATIONS MANAGER

BU Energy Systems provides a full range of power systems and products, as well as cooling and energy management systems. We are looking for an Operations Manager to support our expanding business in Malaysia. The successful applicants will be based in Kuala Lumpur, Malaysia and report to our local Energy organization.

The Operations Manager will be responsible to implement and follow up BU Energys contracts in Malaysia. This includes customer interface for operational questions, participate and support Ericsson projects, coordinating shipments from Sweden as well as sourcing local components. The applicants shall also be responsible to transfer the competence to the local organization through training of local personnel.

We are looking for a selfmotivated business-oriented person with experience in the operational field. You shall have good knowledge about the BU Energy products and knowledge in both fixed and mobile network systems. You shall also have a flexible personality with the capability to adjust yourself to new cultures and you must have good command in English, written as well as spoken.

Contact: Staffan Hasselrot, +46 8721 63 58, memo: EKA.EKAHAS. Appl. to: B Söderberg KK/EKA/K/P, fax +46 8 72166 99 or memo: EKA.EKABUS.

Ericsson Schrack AG, Vienna

PRODUCT MANAGER TERMINALS BUSINESSPHONE SYSTEMS

Business Unit BusinessPhone is responsible for the worldwide sales, marketing and development of PBXs and key systems for small and medium sized companies within the business area Business Networks. Our products are successfully sold in more than 50 countries worldwide.

To the Product Management department we are looking for a Product Manager responsible for the product area Terminals. The product area consits of DECT based solutions for BusinessPhone systems and the associated system telephones to our BusinessPhone systems.

As Product Manager you will work with product strategies, consolidation of market requirements, business cases, product lifecycle management, prod*uct presentations and discussions with customers.*

You have an academic degree and a general telecom background. Experience from business communications environment and DECT technology is an advantage. The work entails international contacts and travel.

Contact: Stefan Lindwall, +43 1 81100 6084, memo: SEA.SEALIND or Gerhard Gindel, + 43 1 81100 4046, SEA.SEAGI.

Ericsson Pakistan (Private) Limited, ECP

GENERAL MANAGER, MARKETING

Ericsson Pakistan is growing. We have recently landed new orders with the two AMPS mobile operators in Pakistan as well as with both operators on the public side. The Public market will undergo a major change in the near future; Pakistan Telecommunication Corporation has been incorporated and a foreign strategic investor will come in and take management responsibility. This will put new demands on our marketing. Our present General Manager, Marketing is moving on to a new position within the company. We are therefor in search for his replacement.

You should have a good knowledge of Ericssons products, preferably both fixed and mobile products, a solid marketing background and international experience. One of the most important missions for this position will be to strengthen the local competence within the marketing department. The position requires good managerial skills, especially communication, cooperation skills and initiative drive. This is a key position within a growing organization. A two years expatriate contract is offered.

Contact: Lars-Åke Andersson, ECP, +92 51 213 541, Magnus Karnsund, ETX.ETXMGKA, 08-681 1228, or Mikael Kruhsberg, ETX.ETXMKRU, 08- 719 4171.

Ericsson Inc. – U.S.A

CMS88 is the number one selling cellular system in the U.S.A, with a significant global presence in over 35 coun-

tries. CMS88 design is carried out in Canada, Mexico, Ireland, Sweden and U.S.A.

EUS/RD/B is a newly established CMS88 design department. We are looking for a few good people who are looking for a challenge and for an opportunity to grow.

The following positions are currently available. Both contract and loacl-hire opportunities exist.

SIMULATED FUNCTION TEST LEADER

This is a job for an individual with high initiative and self-motivation. You will be pioneering the use of the emulator as part of the software testing process. This is a leadership position and you will have to coordinate with different organizations.

Prerequisites are Ericsson Function Test experience or Emulator experience. CMS88 experience and/or UNIX experience is a plus. Limited trael is expected.

AXE FUNCTION TESTERS

We need testers of all levels. Work will be challenging and you will be expected to travel to Canada once in a while.

Prerequisite is Function Test experience. Experience with mobile products is a plus. Good written and verbal communication skills are expected.

AXE DESIGNERS

Experienced designers are needed to add competence to CMS88 Design department. We work in a team environment with opportunities for FSD, BSD and Function Test.

Prerequisite is AXE design experience. Good written and verbal communication skills are expected. Limited travel my be needed. Experience with mobile products is a plus.

Contact: Cindi Fitzgerald, Group Mgr., Phone: 1 (214) 997-1246, MEMO: EUS.EUSFITZ.

LM Ericsson Data Services Nederland B.V., Rijen

CUSTOMER REPRESENTATIVE

Ericsson Data Netherlands B.V. in Rijen is looking for a Customer Representative to handle customer relations for existing customers and services within the Ericsson group in Europe.

In this position you will be responsible for all agreements for specified customers within the areas of mainframe, network, mail and other services as well as assisting in the sales of new services. You will manage the customer relation, establish agreements, follow-up on customer satisfaction as well as develop and organize the area responsible for.

You should have experience from one or more of Ericsson Data's operational service offerings as well as some experience from developing or maintaining agreements. You should also have some experience from working with international contacts. You must be fluent in English and should have knowledge of another language beside your mother tongue.

Contact: Lars Landen, +31 161 246499, memo. DSN.DSNLALA or Monica Westberg, +31 161 246300, DSN.DSNMOWE. Appl. to: Ericsson Data Netherlands BV, Monica Westberg,Postbus 209, 5120AE Rijen, Netherlands.

Saudi Ericsson Communications Co. Ltd

SERVICE ENGINEER

One of Saudi Ericsson's most important customers has a 12 node MD110 network covering a large part of Saudi Arabia. The network has a variety of connections of both digital and analogue types.

There is ample scope for future expansion and upgrade of this network and Saudi Ericsson are looking for a service engineer to liase closely between customer and Ericsson departments.

Applicants should have a good understanding of MD110 at BC6 release level and above, with 2 - 3 years experience in a field service environment. A knowledge of analogue and digital trunk signalling systems (CEPT L1 and DPNSS) would be an advantage.

Good written och spoken English is essential and a knowledge of Arabic would be an advantage.

Contact: Jawad Saadi, phone +9661 478 5800 ext 280 or by fax, +9661 4793622.

Ericsson Eurolab Deutschland Gmbh – EED

DEPARTMENT MANAGER AXE 10 DESIGN or DEPARTMENT MANAGER PA-SWITCHING DESIGN

Your occupational competence should consist of at least 8 years of experience in AXE-10 development and good skills in Mobile Telephony (CME20),(knowledge of CMS 30 and,or CMS 40 is an additional advantage), excellent knowledge of the Product Provisioning Process and connected methods (e.g. MEDAX), good experience in project and, or line management and a solid base in ISO, TQM and CMM.

Your social and general competence includes proven successful leadership performance, integration skills, international mindness, good language abilities (it's English we talk) and an easy going but organized & structured personality.

You will find a lot of highly motivated young engineers (our average age is 31) who look forward to welcome you.

Contact: Jarl-Eric Nylund, memo: EED.EEDJEN, +49 2407 575 100, Harri Pietilä, EED.EEDHAPI, + 49 2407 575 214 or Hans-Georg Lilge, EED.EEDHGL, + 49 2407 575 300.

Ericsson Eurolab Deutschland GMBH

ERICSSON EUROLAB DEUTSCHLAND GMBH is our young international research and development centre located in Herzogenrath near Aachen, Germany. We focus our innovative and advanced activities on mobile and public communication in order to secure and extend our leading market position. In January 1991 young engineers started their work in the field of research and software development and testing. Today we are 570. And further expansion will take place in phases.

AXE10 SYSTEM DESIGNER (OMS)

The AXE Mobile Core System Group is responsible for the system development of the core products used commonly by all Ericsson's digital mobile systems ie. CME20 (GSM), CMS30 (PDC), CMS40 (PCS) and CMS88 (D-AMPS). In the coming project we will adopt the core to AM concepts and develop the IN-AM. Running PC-AXE 106 Mobile, PC-APT 210 15 as well as overall technical coordination of the Projects in the AXE Mobile Core (AMC) are responsibility areas of the system group.

Traffic observation, supervision and statistics are a very important area to the mobile operators. In the Mobile and AM environment we want to enhance our competence on these areas to better satisfy our customers needs and future expectations.

We are looking for an experienced system designer with more than 5 years of Ericsson experience and broad competence on the OMS area.

An expatriate contract is offered for this position.

Contact: Hartmut Boehmer, Core Dept., +49 2407 575 231, memo: EED.EEDHBO or Ralf Mohr, Human Resources, +49 2407 575 163, EED.EEDMOR. Appl. before 951130.

TMOS DESIGNER SENIOR TMOS DESIGNER

The TMOS department at EED participates in SW-development and product maintenance of OSS applications for the CME20/CMS30/CMS40 mobile systems.

Our current project is mainly focusing on the development of base station management applications, nevertheless we are active in other OSS areas, too.

Currently, we are looking for experienced staff to reinforce our development group. Together with a team of young, skilled and open-minded colleagues you will be working in several project phases of SW-design, namely pre& feasibility study, design & implementation.

Experience with object-oriented design and implementation in C++ on a UNIX platform is a prerequisite, a background in the TMOS world would be ideal. Nevertheless, experience gathered in the area of BTS development, BTS O & M or network management systems in general would be of great value.

Contact: Stefan Spaar, Group Mgr., +49 2407 575 154, memo: EED.EESTS, Johan Orö, Dep. Mgr., +49 2407 575 133, EED.EEDJOR or Ralf Mohr, Human Res., +49 2407 575 163, EED.EEDMOR.

Ericsson Radio Systems AB, Kista

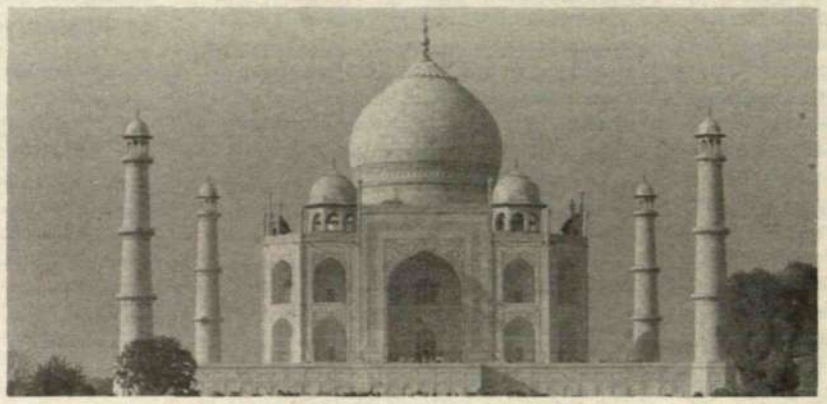
CMS 40 TOTAL PROJECT MANAGER, USA

Exciting opportunities await you in North America when Ericsson introduces its Personal Communication Services (PCS).

CMS 40, the GSM based PCS 1900 system for North America, will be deployed in both US and Canada.

We are transferring the CMS 40 Total Project Management (TPM) function to the MLC in Dallas, Texas. We are therefore looking for qualified Project Managers with GSM experience for long term assignments in US.

The position as Total Project Manager is a senior



Work for Ericsson in India!

INDIA THE GREAT CHALLENGE!

In line with India's aggressive telecom expansion plans, the market is being deregulated. We estimate that 20 to 30 new operators cellular as well as basic telephony will soon appear on the scene. All will quickly roll out their networks and provide statewide coverage within three years.

This means more potential customers for Ericsson, requiring us to address the market with increased customer focus.

Key account Managers for India
One face towards the customer

You will represent the Ericsson Group as a Key Account Manager for major customers. You will be responsible for identifying the customer's needs for telecommunications solutions, from supplying equipment to complete turnkey networks. In other words, the whole range of products and services offered by the Ericsson Group.

You will be based in India and your work will encompass the whole country.

You have a broad knowledge of Ericsson and our products and more than 5 years of international experience as Marketing Manager or equivalent.

For further information, please contact:

Robert Linnarsson, phone: +46 8 7570821, memo ERA.ERAOLI,
Olle Haag, phone: +46 8 7193727, memo ETX.ETXOHG
Göran Nordqvist, phone: +46 8 7640849, memo EBC.EBCGNNT.

Send your application to:
Ericsson Radio Systems AB
KI/ERA/LNB Elisabeth Ramel
S-164 80 Stockholm
SWEDEN

ERICSSON

position and the applicants should have several years of well documented experience of Project Management and solid GSM experience. If you have creative power and the power of initiative then you are the right person for this assignment. In addition, you should possess clear-cut skills in communications and problem solving, as well as a good command of the English language.

Contact: Roland Jensen, 08-7573475, memo: ERA.ERARPJ or Solveig Vallentin, 08-4045619, EX-TR.QRASOVA. Appl. and CV before 951031 to: KI/ERA/LJH Solveig Vallentin.

Ericsson LTD, Guildford, Surrey, United Kingdom

TEAM LEADER IVA EX752

To take full responsibility for all IVA activities assigned to the team and secure the successful completion of these tasks to the satisfaction of the customer and all Ericsson organisation.

You should have a minumum of 3 years experience working in the telecommunications/computing industry with at least one year's experience for Ericsson with cellular applications.

Contact: Rachel Gray Sector Personnel Manager, +44 1483 305776.

SENIOR TEST ENGINEER EX754

To take full responsibility for the execution IVA in accordance with given instructions and the contracted customer obligation . Collaborating with the customer in particular acceptance tests.

You should have a minimum of 3 years experience working in the telecommunications/computing industry with a least one year's experience for Ericsson with cellular applications.

Contact: Rachel Gray, Sector Personnel Manager, +44 1483 305776.

TEST ENGINEER EX753

To take full responsibility for the execution of IVA in accordance with given instructions and the contrated customer onligation. Collaborating with the customer in particular when performing acceptance tests.

You should have a minimum of one years experience working in the telecommunications/computing industry. The tester should be experienced in the running of the AXE and be familiar with operations and maintenance procedures.

Contact: Rachel Gray, Sector Personnel Manager, +44 1483 305776.

Ericsson LTD, United Kingdom

SSF-AM I.N. MOBILE PLATFORM

Location: Guildford, UK Half an hour from London by train.

ETL/RU/H are involved in developing an IN platform (Service Switching Function) for the four mobile applications CME20, CMS30, CMS40 & CMS88.

The development is from feasibility through to function test. The system is to conform with ETSI & CS1 + standards. The platform uses the AM (application modularity) concept.

ETL/RU/H is expanding to 36 designers and testers to take on this existing IN project.

You should have relevant software experience/ test experience, AXE and IN 2.1 or 2.2 experience would also be of great inteest.

Contact: Steve Foster, memo: ETL.ETLSJFR, ECN 832 5383 or Personnel Helen Bennett, ETLHNS, ECN 832 5118.

SUPPORT ENGINEERS FOR LONG TERM CONTRACT IN INDIA

We are looking for support engineers for long term contract in India. The Indian market is expanding rapidly with the GSM system and you will be a member of the system support team at Ericsson in New Delhi. We are currently looking for support engineers with CME20 trouble shooting experience in the following areas:

CME 20 SS and BSS SUPPORT ENGINEERS

The basic qualifications for these open postions are at least three years system experience in AXE 10 and must be competent with AXE10 trouble shooting technologies in live switches. He/She must have in depth knowledge on system level and a good product knowledge on CME 20 SS and BSS , preferably with a support bias.

The candidates must demonstrate the ability to take initiative and find creative solutions to emerging problems and the commitment and ability to train and develop local staff. You should have a thorough and methodical approach to work,good analytical abilities and be able to work unsupervised. Working O&M(CME20) experience would be an advantage but not essential.

CME 20 OSS SUPPORT ENGINEER

The support engineer ideally should be experienced in the adminstration of UNIX systems and be familiar with AXE 10 operation and maintenance procedures.

You should have a thorough and methodical approach to work, good analytical abilities and be able to work unsupervised. The person should have at least two years working experience in technical supportive/customer facing activities. The successful candidate must have good communication skills both verbal/written. An interest and ability to understand customer requirements is essential, as major part of the duties will be to transfer knowledge and train customers in handling the adminstration of OSS. Working experience in customer support environment is desirable but not essential.

O & M ENGINEERS

With the rapid expansion of the GSM market in India, we urgently require Operation and Maintenance engineers working together with our new customers in India.

Operation and maintenance engineers will be primarily working together with the customers and will be responsible in setting up all maintenance routines for AXE10 and routines for monitoring the network performance. You will also help, assist and guide the customer in their day to day operational activities and help to establish proper reporting routines for In service Performance.

Suitable candidates must be able to work in all aspects/issues of system performance, operational reliability and at least 3 years of working experience in AXE10(CME 20) operational environment is desirable. The candidates should have good verbal and written command of English and be skilled in handling communication with the customers.

Contact: Finn Sorenson, memo: ETXS.ETXFNSN or NalinTaylor, ETC.ETCNALT, +86 10 505 1190x 650.

Ericsson Telecommunications PTE LTD, Singapore

SENIOR MARKETING MANAGER VIETNAM

Vietnam is currently one of the fastest growing economies in Asian Region. Vietnam Posts and Telecommunications (VNPT) has aggressive expansion plans. Global operators such as Telstra, Cable & Wireless and France Telecom are seeking Operators' Licences in the country.

This is why we, ENO Singapore, need to place a SENIOR MARKETING MANAGER in Vietnam, with a broad telecommunications background. The position requires the ability to commercially market and conceptually motivate different complete network solutions.

We expect the successful applicant to have good commercial sense, a broad technical understanding and good commununications skills. Good cooperation with existing account managers is key to good achievements.

The position reports directly to the Managing Director of TKV Vietnam and ENO/ZC Singapore.

Ericsson Telefommunications PTE LTD, Singapore (ENO), has the regional marketing and sales responsibility for complete network solutions, primarily targeting at customers with a clear demand for total telecommunications solutions, systemsintegration and turnkey procurement. We strongly emphasize on Access Networks and in particular such based DECT and Cable TV/Multiservice Applications. We cover South-Asian and Southeast Asian markets. We report to Business Unit ZNEP wtihin EBC and cooperate closely with ETX and regional local companies when we create network solutions.

Contact: Petri Markkanen, +65 3501 593, memo: ENO.ENOPM or Chua C L, +65 3501 560, ENO.ENOCCL.

L M Ericsson

TRAINING ENGINEER IN BRUSSELS

The main responsibility is to support the Ericsson training centrein its ongoing process of building up the technical competence of its customers and internal staff.

The main tasks are: Preparation & presentation of tecknical training on existing andnew telecom applications for our tecknicians, sales and marketing personnel, dealers and customers. Development & updating of training products. Promotion of Ericsson image and its products.

As a suitable candicate you have 3-4 years experience of MD 110, excellent communication skills, flexibility, ready to travel locally and internationally, team and result oriented, initiative and selfmotivation as well as fluent english and german language. (Other languages will be considered as an advantage). Your location will be based in Brussels.

Contact: Ulf Lundgren, +32 2 745 14 69 or fax +32 2 745 14 33.

Ericsson LTD, United Kingdom

TACS (CMS8810) TECHNICAL SPECIALISTS & SOFTWARE DESIGNERS

The newly formed TACS System & Development group at ETL/R Guildford, England is worldwide responsible for the TACS Mobile System. We are looking for AXE design professionals with the skills to contribute to this new group.

CMS88 TECHNICAL EXPERTS

Working within our TACS system Team you will be working with quick study technical reports, prestudies & feasibility studies. You will have regular contact with TACS product management and world wide local product Management.

You will have significant AXE design experience, with a solid understanding of the CMS88 mobile system and particularly the MTS subsystem. Technical expertise and commercial awareness will be highly valued for this key role in supportig TACS customers worldwide.

AXE SOFTWARE DESIGNERS

Working within our MSC design team, you will be working with 'fast cycle time' projects, offering you exposure to the complete software design lifecycle: from prestudy to FOA. Should have all round AXE design & test knowledge, with good teambuilding abilities.

Contact: Clive Oates, +44 1483 305294, memo: ETL.ETLCLOA fax : +44 1483 305364 or Helen Bennett, +44 1483 305118, ETL.ETLHNES, fax +44 1483 305090.

Ericsson Inc Radio Systems EUS/RG

STAFF ENGINEER, TECHNICAL SALES SUPPORT PCS 1900

The United States' explosive telecommunications field has created a tremendous market for Ericsson's CMS 40 product line for Personal Communications Services, in turn producing excellent career opportunities.

Ericsson's high-energy and fast-paced PCS Group is looking for key players in supporting customers through the PCS Sales & Marketing Departments with internal and external customer presentations, answering technical questions and issues, and providing technical solutions to requests for proposals.

The Staff Engineer, Technical Sales Support PCS 1900, will be responsible for important decisions regarding present and future technical and commercial issues of radio, switching, and networking of CMS 40 , in addition to periodically contributing technical competitive market analysis.

This position will serve as a communication link between Ericsson departments involved with new product development and pricing strategies. They will also translate technical data into information usable by the Marketing Comunications department while keeping the Sales & Marketing Department informed of new and advanced products.

Ideally, the Staff Engineer, Technical Sales Support PCS 1900, will come from a switching, RF or networking background with at least six years in telecommunications and/or sales engineering. Four years experience with Ericsson's products is preferred, in addition to above average oral and written communication skills. This position requires extensive customer interface experience and excellent interpersonal skills in relating to technical and sales staff, and customers.

The Staff Engineer, Technical Sales Support PCS 1900, must possess the ability to make comprehensive presentations and respond to technical/commercial issues regarding radio, switching, and networking aspects of the CMS 40 system. Knowledge of competitor's products in relation to comparison of price architecture, features, and system performance is vital.

Domestic travel is frequent with some international travel.

Contact: Jeff Hooper, TechnicalSales Support Manager PCS 1900, on (country code for USA) + 214 952-8648.

Ericsson Mobile Communications Company BMC

PRODUCTION SHOP MANAGER TERMINALS

BMC is a newly formed Joint Venture Company between Ericsson and a local Chinese partner. The company is located in Beijing and will be responsible for marketing/sales and production of Mobile Systems, Terminals and Power Equipment.

You will responsible for the production of GSM-terminals (Sofie Jane) in accordance with the process (Master concept) established in Kumla. Your productionarea consist of surface mounting, final assembling and package. You will have the personnel responsibility for about 50 employees. Your main task will be, together with the production management, to assure quality and delivery from the plant and furtheron develop modern methods to organize the production.

You shall have minimum engineer/technical college education, with proven experience from production management on this level. You shall have a flexible and patient personality with the capability to adjust yourself to new cultures. You shall have good command in English, written as well as spoken.

The successful candidate will be offered minimum one year assignment in Beijing, China.

Contact: Lars Jälefors, Memo ECS.ECSLAJA, +46 19 584662, Magnus Ask, LME.LMEMASK,+46 8 719 7481, Bernt Hult in China, ETC.ETCBEH.

Ericsson Mobile Communications Company BMC

PRODUCTION SHOP MANAGER RBS SYSTEMS

BMC is a newly formed Joint Venture Company between Ericsson and a local Chinese partner. The company is located in Beijing and will be responsible for marketing/sales and production of Mobile Systems, Terminals and Power Equipment.

You will responsible for the production of GSM/RBS systems from Gävle and Power from EKA, in accordance with the process (Master concept) established in Gävle and Söderhamn.

Your productionarea consist of surface mounting, final assembling and package. You will have the personnel responsibilityfor about 50 employees. Your maintask will be, together with the production management, toassure quality and delivery from the plant and furtheron develop modern methods to organize the production.

You shall have minimum engineer/technical college education, with proven experience from production management on this level. You shall have a flexible and patient personality with the capability to adjust yourself to new cultures. You shall have good command in English, written as well as spoken.

The successful candidate will be offered minimum one year assignment in Beijing, China.

Contact: Magnus Ask, Memo LME.LMEMASK,+46 8 719 7481, Bernt Hult in China, Memo ETC.ETCBEH.

ETC-Ericsson (China) Company Limited

MARKET & PRICING SUPPORT

The mayor responsibility in the position of Market & Pricing Support is to support and co-ordinate pricing of TACS & GSM products within ETC and give recommendations for price policies.

Some of the key activities are as follows:

Price comparisons and co-ordination between different contracts products and customers. Tactically and strategical pricing support at offer and contract. Support the marketing organisation in regions with experience previos offers by collecting and distributing latest contract information. Profitability calculations. Pricing of new products, commercial product launch informations.

Applicants should be experienced from Marketing and/or pricing of cellular products, prefferably with good product knowledge of TACS and/or GSM products. Very good English verbal and written.

The successfull candidate will be offered minimum one year assignment and will be based in Beijing.

Contact: Bo-Erik Dahlström, +86 10 505 1190, memo: ETC.ETCBEDA, Christer Ahlner, + 86 10 505 1190, ETC.ETCBCA. Appl. to: KI/ERA/LDH Hans Falk + 46 8 757 1402 or memoid: ERA.ERAHFA

CONTACT

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

The Ericsson stand at Telecom 95 was staffed by 180 persons. Gathering all of them together was out of the question, but the happy faces of many members of the Telecom 95 staff are pictured above.

Real stand professionals

Shift workers at Ericsson's stand during Telecom 95 were a group of real professionals. Of all the tens of thousands of people from other companies in attendance at the world's largest telecom exhibition, it was the Ericsson crew that was talked about the most.

Ericsson's stand at Telecom 95 was virtually aglow with professionalism, compassion and patience.

Taking care of 3,000 guests during 10 hectic days in an atmosphere that can only be described, without any exaggeration, as "topsy-turvy" was certainly not an easy job. For this reason, personnel who worked the Ericsson stand had been prepared for the task at hand through several days of courses and practical training. And the actual stand was designed and structured to accommodate guests. Technology was allocated only one-fifth of the surface area, the rest was reserved for catering to the human element.

Hundreds of journalists

The second and third floors contained dining and entertainment areas for guests and Ericsson personnel. Space was also reserved areas where stand personnel could take a well-earned rest. A large reception area was situated on the ground floor, as well as a special room the press and media representatives. A complete staff of press officers took good care of the hundreds of journalists who found their way to Ericsson.

Stand personnel also included four communications specialists from Ericsson Data, who managed to bring off the seemingly impossible task of supplying thousands of Ericsson guests and visitors with functional memo and telecommunications.

What was it like working at the Ericsson stand? Contact spoke with two of the 180 fellow employees who spent two weeks at Telecom 95. **LGH**

OVERHEARD AT TELECOM 95

Johan Frändfors, Market Communications, Ericsson Components:

"This was my first Telecom. What impressed me the most was the team spirit of the people who worked the stand. The mood was at a peak level constantly. The five-day training program prior to Telecom 95 was extremely valuable, forging 180 people into one big team. It was an extremely enjoyable experience working with so many different nationalities at the stand."

"I was the team leader for a group of three persons who presented Energy Systems – a total energy solution. To help us, we had a poster with our theme, a separate display stand with interactive presentations and some literature. But most of our time was spent just talking to interested visitors."

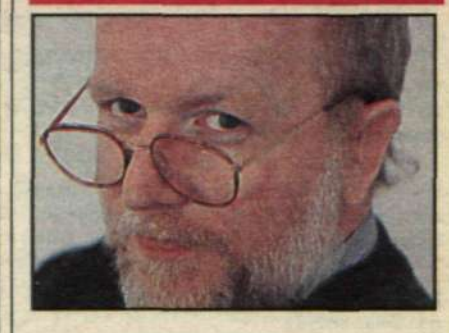
Eugenia Kapsall, Project Leader, Ericsson Radio Systems:

"This was my second Telecom, I also took part in 1991. The training program for stand personnel was much better this time, we were better prepared. The best part was that we all really worked together like members of a team, helping each other provide the best possible reception and service for customers. I think our excellent cooperation was also noticed by outsiders. Although we were extremely busy all the time, we were always smiling and happy."

"I will always remember the team I worked with during Telecom 95 at the Visitors Service Point, and all my other colleagues, as we encouraged and helped each other to do a good job."

END LINE

LARS-GÖRAN HEDIN



How do they do it?

It will take several weeks for me to recover from last week's experiences in Geneva. For a period of three days, my photographer friend Lasse Åström and I "did" Telecom 95. We got three days of sweat, sore feet and dulled senses. An exhibition like Telecom is truly a staggering experience.

With a little more distance to the event, the one question that dominates above all others is: "How do they do it?"

Where do the people at Ericsson's stand find the strength to withstand nearly two weeks in the "Telecosmic Chaos?"

It was lucky for them that the people in charge of the exhibition had really thought things through very carefully and made arrangements to accommodate stand personnel. The second and third floors of the stand were air-conditioned, so the torrid temperatures in the exhibition halls did not affect them too much. And the camaraderie and team spirit that prevailed among stand personnel contributed to a continuous positive atmosphere. I was actually envious of the people who were part of the varsity team at the stand.

And where did the hundreds of "industrial espionage agents" that roved throughout the exhibition area find the strength to persevere? Working with business intelligence, as it is called in finer circles, involves spying on competitors to see what they have up their sleeves. I can only assume that people who work in business intelligence must be haunted by constant nightmares about Telecom and similar events. After all, how do they keep up with what's going on in so many companies working in so many market niches in telecommunications today?

And finally, getting back to Telecom, how can all these companies afford to invest so many billions to outdo each other in the battle for attention?

There seems to be no limit to the imagination and creativity – and no apparent end to the financial resources. As an ordinary end-user and telephone subscriber, I ask myself how much lower my telephone bill would be if the industry was not forced to cope with Telecom every fourth year.