ERICSSON ≡

CONTACT

Strategy for managers

It seems to be the season for hunting Ericsson managers to fill top positions in Swedish industry. A well-developed strategy for replacing senior management losses is therefore essential. Ericsson Management Planning is the name of the game.

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Completely new language

At the Datalogics laboratory at Ellemtel a completely new and extremely powerful programming language has been developed.

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New start in Africa

With conditions now stabilizing following the triumph of democracy in South Africa, the economy of the entire region is expected to develop more strongly. Ericsson is monitoring events in southern Africa through its office in Harare, Zimbabwe.

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A paradise for Ericsson

Ericsson Distribution European Network – EDEN – is truly a paradise for the company, at least in economical terms. Through EDEN, millions have been saved on lower freight costs and by exploiting the new V.A.T taxation rules in the E.U.

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Members of the winning teams in the improvements competition shown here with Anders Igel (left).

Winners of close fought competition

The competition to find the best improvements project within Ericsson in 1993 has now been decided.

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Sweden's leading management supplier

There is a price to be paid for being famous and successful. Ericsson has learned this lesson during recent months as several key members of executive management were recruited by other Swedish companies. Ericsson seems to have become a prime target for "headhunters."

"The loss of a key executive of course always creates a vacuum, but we have a very well developed strategy for replacing these losses as efficiently as possible," relates Britt Reigo at Corporate function Human Resources and Organization.

Ericsson Senior Vice President, Corporate Financial Control Åke Stavling, Executive Vice President Jan Stenberg and Senior Vice President, Business Networks Lars Berg are three key persons who recently left Ericsson. Many persons may wonder what these losses will mean for Ericsson. And who will be the headhunters' next target at Sweden's leading management supplier.

Britt Reigo, who has the ultimate responsibility for management recruitment and thus also must fill the vacancies created by the managers who have left Ericsson, is not particularly concerned about the situation that has arisen. She views it as a logical consequence of how Ericsson and its management have changed in recent years.

"Both Ericsson and its managers are more out-going. At the same time, Ericsson has been portrayed very positively in both Swedish and international media in recent years. Given such publicity, it is logical that Ericsson managers are in demand."

"Apart from the general publicity created by Ericsson, we have also earned a good reputation in the industry for producing qualified managers. Ericsson's programs for identifying and training management candidates are regarded as a model by many other companies."

Systematic

Ericsson's management planning over the past six years has been conducted in a very systematic and goal-oriented manner. This has helped Britt and her colleagues to compile comprehensive assessments of candidates at various levels of the organization.

"For the top 300 positions within the organization, we have identified a nearly equal number of candidates with whom we are working actively. They participate in various central and local management development pro-

grams in which the emphasis is placed on qualified management training and in providing as broad experience in the organization as possible," Britt relates.

Job rotation is one of the most important instruments for broadening the competence of Ericsson's managers. Anyone watching the unending flow of memoranda regarding organizational changes realizes that this is a system that actually functions in practice. Employees who wish to pursue a career within Ericsson should not hesitate to seek a different job from time to time, perhaps even a job at an Ericsson company in another country.

Swedes in the majority

"It has long been a tradition at Ericsson to send skilled employees to foreign countries, but to date, Swedes have dominated among those taking advantage of these opportunities. For some reason, Swedish employees seem to be the ones who find it easiest to relocate, but we are making every effort to encourage managers in other countries to avail themselves of this opportunity."

In Britt's view, the lack of international experience is the reason why so few top Ericsson executives are recruited from outside the core group of Swedes with long experience at Ericsson. But she has the feeling that this is changing.

"The new president of Ericsson Telecommunicatie in the Netherlands is a good example," she notes. "Haijo Pietersmaa is Dutch and worked four years in Sweden to learn about Ericsson from the Swedish perspective. I believe that he will be a very worthy successor to Ragnar Bäck," states Britt.

Successors identified

Ragnar Bäck left the Netherlands to take over after Lars Berg as Senior Vice President, Business Networks. This came as a surprise for many people, but not for Britt.

IN FULL CONTROL. Although Ericsson has lost so many top managers in recent months, Britt Reigo is not worried. There is a comprehensive program for identifying successors to all the 300 top managers.

"For all key positions down to the level of Business Unit managers and Local Company presidents, possible successors are identified at an early stage. This is done on the basis of information compiled about our managers and the demands that various positions place upon them. Therefore, the vacancy left by Lars Berg could be filled immediately.

"Ericsson managers are exceptionally well prepared for changes, and they have the ability both to make quick decisions concerning their own careers and to move between different countries and places," Britt explains.

Not enough women

Ericsson Management Planning (EMP) is the official name for the corporate management deve-

lopment program. At the highest level, it currently includes 182 Swedish and 92 non-Swedish management candidates. Britt considers that the number of Swedish candidates corresponds to current requirements but she emphasizes once again that the number of non-Swedes should increase.

"It has taken some time for this program to begin to function in all locations, but today we have activities planned in all business areas and Major Local Companies," Britt reveals.

A more serious problem than the overrepresentation for Swedes is the distribution by sex within EMP.

"We have 12 women among 274 candidates. This is obviously far too few. Like any other company, Ericsson needs to recruit

more women for top positions in order to broaden competence and experience at the management level," Britt observes.

Britt Reigo sees no other solution to this problem than a long-term effort to identify potential management candidates among women at an early stage and to support them in their career development. She welcomes such new forms of organized activity as leadership development programs, mentorship programs, networks and similar efforts being made in many parts of the organization.

"They will provide a solid base on which to establish a stronger female presence at Ericsson's management meetings," says Britt hopefully.

Text: Lars-Göran Hedin

Knowledge for survival. "In the increasingly competitive world of the future, the development of competence is a necessity," underlined Lars Ramqvist in a presentation in Stockholm recently. Also taking part in the seminar were Bo Alerfeldt (JICC), left, and Per Westerberg, Sweden's Minister for Industry and Commerce.

Concentrate on knowledge!

"Concentrate attention on knowledge and the development of competence. This is the major prerequisite for survival in the increasingly competitive world of the future".

This was the main thrust of a presentation by Ericsson's CEO Lars Ramqvist at a well-attended seminar at the research institute Electrum in Stockholm recently.

"Sweden as an industrial nation in the year 2000 – can the IT industry show the way?" This was the theme for a recent seminar in Sweden, arranged jointly by the research institute, Electrum, and the Swedish National Board for Industrial and Technical Development (NUTEK).

One of the principal speakers at the seminar was Lars Ramqvist, Ericsson's CEO. His participation in such a debate was natural, considering that Ericsson is without doubt, the largest Swedish company active in the information technology field. Lars opened his address by describing Sweden's current financial situation.

A shaky position
"Sweden currently finds itself in a shaky position. With a national debt of SEK 1,000 billion, the country has become one of the world's most debt-laden economies. The amortization and interest payments on the debt will characterize Sweden's national budgets for many years to come," said Lars Ramqvist.

"Despite this, there is still hope for Sweden. There are signs that the way out of the Sweden's financial crisis is strongly linked with the country's traditions as a nation with a high level of technological and industrial expertise. At present, it is particularly in the area of information technology that Sweden has the chance to win new ground.

Here, Ericsson is one of the companies currently manning the barricades."

Common sense
"What is now needed in Sweden – and in most other industrialized nations for the matter – is a lot of common sense. We need to concentrate our efforts on knowledge, competence, motivation and a willingness to change.

In the present industrial-political arena, there is very little left of the former national safety net and regulatory controls. What remains is the fact that all forms of enterprise must be prepared to compete in a completely open market and on equal terms with a large number of international competitors.

Given this scenario, only the strong will survive. And those who do survive will be those companies, organizations or nations who dare to accept the challenge. Who are prepared to take on the competition. This is something that Ericsson has never shirked.

Recognizing knowledge
"An important prerequisite for creating a culture – within a company, an organization, or a nation – that is capable of withstanding such challenges, is to recognize the individual development of employees, colleagues or citizens.

This includes making sure that there really are opportunities to engage in a career and that personnel are properly compensated for pursuing a career.

"Today, when we live in a society subject to rapid and constant development, it is no longer possible for people who want to develop within their professional roles to consider themselves fully trained. Instead, they must accept that a lifetime of learning is needed if they are to keep up with the changes and not be left behind by new developments.

Lifetime of learning
"Within the Swedish Academy of Engineering Sciences, of which I am a member, we have discussed the concept of a lifetime of learning in great depth in recent meetings.

We believe that it is quite natural for career-oriented people to either switch their training, or develop the training they have already received, on several occasions during their professional lives. However, we are also very conscious of the fact that incentives are needed if this is to occur – in the form of promotional opportunities or higher salaries, etc.

"I would maintain that within Ericsson we are very aware of all this and are prepared to support developments in this direction. But it is not enough that we within corporate management believe in a lifetime of learning. Society must also lend its support. Improved schooling and new legislation are needed to prepare the way for a more powerful focus on the development of personal competence.

Competence assurance
"One idea developed within the Academy was that people should

be able to receive some form of competence assurance. What we have in mind is a system whereby people are provided able to allocate a tax-free portion of their salaries to 'funds,' which can be utilized when the employee wishes to learn something new.

Socially, and from a socioeconomic viewpoint, this would be preferable to society having to lend its support each time an individual wants to receive training in a new area.

Transfer of knowledge
"One good example of practical skill development and the focus on knowledge is the new plant for advanced microelectronics that Ericsson is building in Kista, outside Stockholm. This will soon be the world's most modern plant for the production of silicon chips.

It is the embodiment of everything that I believe Swedish industry as a whole should be doing at the moment – investing in staying at the forefront of the international hunt for knowledge!"

Doctors in the plant
"The plant is so advanced that all members of the production units must have degrees or be doctors of engineering.

To develop the necessary expertise, we have also sent a large number of employees to undergo training with Texas Instruments in the U.S., Ericsson's strategic partner in the field of microelectronics.

Texas Instruments trains our people in a very systematic manner. They then return to Sweden, with the aim of developing a national skills center that is unparalleled in the field of microelectronics.

"This is what I call focusing on knowledge. Eventually, thousands of people will be trainied in the latest design technology for microcircuits via the new plant. It will be a key resource; not only for Ericsson specifically, but for Sweden as a whole.

For this reason, we have invited Swedish universities, institutions and even the Swedish government to participate and utilize this new Swedish research instrument!

Our agreement with Texas Instruments is formulated in such a manner that we are entitled to transfer knowledge within this exciting area of technology to Sweden!"

High level of expertise
"Regardless of whether it is used in telecommunications, in trucks or for medical technology, microelectronics is of key importance to future industrial development throughout Sweden.

For this reason, the fact that our company has its own access to the latest expertise and leading-edge product resources in this area makes me, as Chief Executive Officer of Ericsson, feel secure."

Strong stimulus
"At the same time, it is naturally gratifying to be able to provide our employees with the best possible resources in the field of microelectronics.

This will be a strong stimulus to them in their daily work, and I am convinced that, in cooperation with Texas Instruments and with the help of the new plant, Ericsson will make substantial progress."

Text: Lars-Göran Hedin
Photo: Anders Anjou

Berlin - Hamburg live via broadband

There was great excitement as people milled about the large conference hall. Now it was about to happen. Would it work? The subject was a broadband transmission – live – from Siemens' ATM exchange in Berlin, via the Interop Fair there, to the "Broadcast Islands" Conference in Hamburg where Ericsson's ATM exchange was located. And it certainly worked.

There was true cause for champagne toasts in Hamburg. Happy representatives of Deutsche Bundespost mingled with equally happy Ericsson people following the successful demonstration.

Deutsche Bundespost Telekom, the German operator, was the first to ask for bids from suppliers to establish a pilot network employing broadband technology. With the successful demonstration, the German operator also became the first in Europe to demonstrate that a broadband network really works in practice.

Following the initial bids, most of Europe's other telecom operators have begun preparations for field tests and most of these trials will be under way during the latter part of this year.

Day for "entrepreneurs"
In his remarks from Interop in Berlin, which was also transmitted live to Hamburg, Dr. Hultzsch, a member of Deutsche Bundespost Telekom's management, noted that the day was one for "entrepreneurs," and that his organization truly felt like one.

He also said that studies show

Dr. Hultzsch, a member of Deutsche Bundespost Telekom's management, spoke live from Berlin via Siemen's broadband switch in Berlin and Ericsson's switch in Hamburg at the opening of the Broadband Islands Conference in Hamburg.

that the development time for new products – a new Volkswagen model, for example – can be reduced by 50 percent if the developers can work in teams, close to each other. The new broadband technology can contribute in this area and thus represents a very good investment for Europe.

Over the same fiber
Due to the capacity of broadband, which can transmit 155 million bits per second rather than the 64,000 that can be carried over conventional lines, it is possible to transmit video with very high quality, to transmit large quantities of data rapidly, and to transmit voice, data and moving images over the same fiber.

A number of research projects within the framework of the European Union's RACE program have been under way since 1985. Ericsson is involved in a number of them. The "Broadband Islands" seminar in Hamburg was arranged by one of the RACE projects – Eurobridge – that is being managed by Ericsson's Eurolab in Aachen.

From "Exotic" to "hot"
The first "Broadband Islands" conference was held in Dublin in 1990.

"At that time we had no idea that developments would proceed so rapidly," says Fiona Williams of Ericsson's Eurolab, who is a member of the organizing committee for Broadband Islands meetings.

"Broadband was then regarded as somewhat exotic, while today it is one of the absolutely hottest topics in telecommunications."

More open climate
The RACE projects have contributed to the current much more

"At the first 'Broadband Islands' conference in 1990, broadband was regarded as somewhat exotic; today it is one of the hottest topics in telecommunications," says Fiona Willams (left), of Ericsson's Eurolab in Aachen, and arranger of the Broadband Island meetings.

open research climate in telecommunications in Europe. Researchers and engineers are meeting at conferences similar to the one in Hamburg in order to discuss problems, technical approaches and standards, as well as how the technology should be used. The latter aspect was especially evident at this conference, where two series of lectures were presented simultaneously, one dealing with technical matters and the other focused on marketing. Services and applications constitute a major area of discussion in the broadband field. No one really knows which services will develop most rapidly.

In addition to the broadband field trial in Germany, which is said to be the most advanced in Europe, Ericsson is participating in similar tests in Sweden, Spain, Italy and France.

Helena Lidén

Ericsson first with D-AMPS in China

Ericsson has received a contract to deliver an analog/digital AMPS system in the Nanking region o China.

The contract is Ericsson's first for a system of this type in China. The system will initially handle approximately 3,000 subscribers but can be expanded to handle 12,000 with the same exchange.

AMPS is the abbreviation for "Advanced Mobile Phone System."

This is a standard that was developed in 1984 for analog mobile telephony in the North American market. Today, it also includes the D-AMPS digital system.

A number of countries outside North America have introduced the system, which is the largest system standard in the world, with more than 15 million connected subscribers.

Ericsson has delivered AMPS/D-AMPS systems serving more than five million subscribers in more than 20 countries. Outside North America, Ericsson is the world leader in this type of system, with 56 percent of the market.

In the next issue of Contact:
- A strong organization in Germany – Ericsson GmbH has a key role to play in an exciting market.
- Ericsson "Down Under" – a close look at Ericsson Australia, strategic partner to Telecom Australia.
- Rebuilding Lebanon – after years of civil war, telecommunications are now being built up again.

Sri Lanka new AXE-market

Sri Lanka Telecom has placed an order valued at approximately SEK 120 m. for Ericsson AXE equipment and services. The turnkey contract makes Ericsson one of the largest suppliers of telecommunications equipment in Sri Lanka.

"This is a breakthrough for the AXE system in Sri Lanka," says Roland Wik, the project leader at Ericsson Telecom. "Now there is a little volume to talk about."

As a result of the order it will be possible to digitize Sri Lanka's telecommunications network rapidly. An operating system and a total of nine local telephone exchanges, mainly in southeast Sri Lanka, are being installed. The equipment is being delivered from Sweden during the latter part of 1994 and up to mid-1995.

This is a turnkey project and Ericsson is also responsible for the installation of power supplies, air-conditioning systems and other equipment related to AXE exchanges.
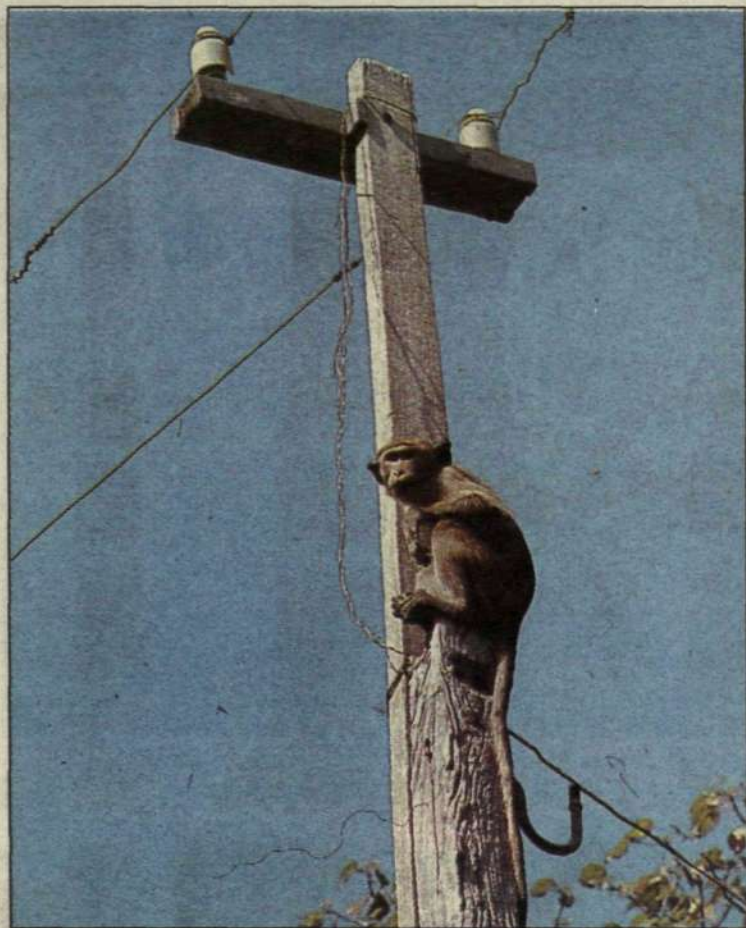
Thanks to the new order from Sri Lanka, Ericsson is becoming one of the country's largest suppliers of telecommunications equipment.

The Employee Shop catalog contains a broad range of leisure wear, from T shirts to raincoats.

Employee shop focuses on quality

Now the Employee Shop is focusing on quality clothing. The success achieved with the sailing jackets a few years ago has whetted the Shop's appetite to broaden its line. There is now a broad range of attractive quality clothing to choose from – all at very favorable prices.

Ericsson Telecom's Employee Shop in Karlstad recently mailed its 1994/95 catalog to all Ericsson employees in Sweden. In preparing the catalog, the Shop worked primarily with two suppliers, the Stadium and Terinit Sportswear.

Major emphasis has been placed on offering a broader assortment of clothing – and on maintaining the highest quality.

As before, in addition to clothing, the catalog displays a variety of "hard" goods that should appeal to most people. This is a catalog to take home to the family, to leaf through together, and to use in placing orders.

The catalog will be valid for one year. Some of the products displayed are available in limited quantities so, if you don't want to wait for next catalog in May 1995, now is the time to act.

The operations of the Employee Shop are based entirely on the willingness of the various Ericsson units to publicize the range of products, assist in distribution and provide product displays.

Employees who may not have received a catalog may order one as follows:

Address: KS/ETX/FK/SD
MEMO: ETX.ETXSHOP
Tel: 054-19 34 07
ECN no. 863 34 07
Fax: 054-19 34 70
ECN no. 863 34 70

Well-attended EU meeting in Visby

The first in a series of information meetings on the European Union (EU) to be arranged in Ericsson's major factories in Sweden was held on June 8. The approximately 700 employees in the Visby plant had an opportunity to learn more about Ericsson and the EU. Nearly 500 attended!

There is no doubt that there is a great need for information on all the issues related to Sweden's possible membership in the European Union. There was thus substantial interest on the part of employees in the Visby plant when the first meeting on "Ericsson, Europe and Jobs" took place in the beginning of June.

The consequences
Two morning meetings were arranged so that all interested employees could have an opportunity to share information. In a packed lunchroom, during the course of an hour-and-a-half, Ericsson's management –represented by Bo Landin and Lars A Stålberg – described the consequences for Swedish industry as

a whole, and for Ericsson in particular, of a Yes or No vote in the referendum on Swedish EU membership to be held in November.

Claes-Göran Andersson, representing the local metalworkers union completed the presentation with a report on the views of the union organizations within Ericsson.

While attitudes within the union movement are divided with respect to membership in the EU, the union organizations within Ericsson favor membership, Claes-Göran declared.

One important reason is that the Swedish unions do not want to be left out when the EU issues its directives on "European councils" in multinational companies that operates in the EU countries.

Most important market
Bo Landin described the significance of the EU to Ericsson as its most important market and as an area where the company has very substantial production and technical development operations. His message was the same as the one delivered by CEO Lars

Ramqvist at the recent Annual General Meeting.

"It will be difficult to preserve Ericsson's strong concentration on Sweden if the country is not a member of the EU," Bo Landin said. "Without Swedish membership, Ericsson will not be able to participate in and influence decisions on telecommunications, and we will not have a chance to compete on equal terms with such companies as Siemens and Alcatel."

Newly produced video
Following Landin's report, a newly produced video on "Ericsson and Europe" was shown.

Lars A Stålberg completed the presentation by describing the analyses that have been made showing how Ericsson would be affected by Sweden's membership in the EU, compared with the benefits already offered by the European Economic Sphere Agreement.

The meetings ended with question-and-answer periods. Some of the questions had been submitted in advance and others were raised spontaneously.

LGH

Värmskog is located 50 kilometers west of Karlstad.

Summer vacation tip

Here's a last-minute vacation tip for these summer days: Travel to Värmskog in Värmland. That is the place where Lars Magnus Ericsson, the founder of our Company first saw the light of day on May 6, 1846.

Lars Magnus Ericsson was one of nine children, five of whom survived to adulthood. Their father, Erik Ericsson, was a farmer. When he died in 1856, Lars Magnus left the farm to help support his family by working in the Värmeskog mines. He was also apprenticed to forges in the dis-

trict before he moved to Stockholm in 1867.

Details of these events and much more about Lars Magnus Ericsson's life can be learned during a visit to the Lars Magnus Ericsson Commemorative Farm in the hamlet of Vegerbols, outside Värmskog. There is also a fine exhibition of some of the Company's other earliest products.

The Farm is open to visitors between the hours of 1:00 p.m. and 5:00 p.m. daily during the period from June 15 through August 15.

Financial brokers attend Oslo seminar

Brokers worldwide use Ericsson's special communication system for the finance world. The system handles communication with stock exchanges, other brokers, banks, and similar contacts. Ericsson Telecom A.S. in Norway is responsible for the development, production and marketing of systems, which to date have been sold in some 25 countries.

"In performing brokerage operations, it makes no difference in what part of the world you are located," said Lars Boman of Ericsson Business Networks, at an international seminar for brokers from different countries, held recently in Olslo.

"Global networks make it possible to trade in securities and currencies 24-hours a day, regardless of where you are in the world. The systems' possibilities are limitless. The user, not the technician, sets the limits.

Some 70 to 80 brokers and traders participated in the seminar and, among other subjects, discussed industry trends and more closely scrutinized Ericsson's systems. The participants were unanimous that it has become increasingly common for large brokers offices to monitor the key markets around the clock.

Special requirements

"Otherwise, our new multi-media working day is moving toward the setting up of increasingly rapid global networks. These are now based on ATM technology, enabling the transmission

Participating at Ericsson Business Network's international seminar in Oslo were 70 to 80 brokers and traders. Demonstrating Ericsson's broker system is Sören Bruun from Unibank in Denmark.

of live images," Boman continued.

Brokers place special requirements on their data and communications systems. They can sit long periods more or less passively following developments in the market. When things suddenly "explode," then everything has to happen immediately. Buying, selling and maintaining ongoing contact with a number of clients must tale place simultaneously.

Rapid and reliable

Rapid and reliable communication thus are wholly decisive for the broker's ability to make good deals.

Magne Jåtog, from the business unit Ericsson Private Networks, within Ericsson Telecom A.S. in Norway, relates for Contact that broker systems have been sold in some 25 countries.

Attractive markets

"Recently, we have also penetrated the Swiss and Austrian markets. Latin America, mainly Mexico and Brazil, are also growing, attractive markets," says Jåtog.

Among the seminar participants was Amilton Nieto from Brazil's largest bank, Bradesco. As a broker in Brazilian major bank, he is confronted with communications problems that colle-

agues in other countries do not worry about:

"In Brazil, the waiting time from when you order a telephone line until it is installed is usually two years. Accordingly, the bank has attempted to solve its communications problems by buying capacity in a satellite, but it's expensive since the government, who owns the satellites, can set prices for unsubscribed lines without concerning itself about competition. Thus, it is not unusual for the bank's telephone costs to amount to more than USD 10 million per month," Amilton relates.

Text: Paul Falk

New components company

Recently, Ericsson has invested strongly in expanding its Nordic standard-components distribution operations. An additional step has now been taken – combining all operations in a single joint company. The company will be called Ericsson Electronic Distribution AB.

By combining operations in a single joint company, cost-effectiveness is improved while, at the same time, Ericsson can thereby offer the markets in Denmark, Norway, Finland and Sweden a broader product assortment, within the Components Business Area.

Mobile system for Hebei

The analog mobile-telephone network in China's Hebei province shall now be expanded. The network, a TACS-standard, shall be expanded to accommodate more than 100,000 subscribers.

The equipment will be delivered by Ericsson, which is the exclusive system supplier in Hebei province. The order is valued at SEK 240 million. The mobile-telephone system in Hebei covers the entire province. The subscribers are also offered fully automatic "roaming" capability in the cities of Tianjin and Beijing.

"It is highly gratifying that Hebei province has chosen us to expand its network, thus satisfying the rapidly growing need on the part of their customers," says John Gilbertson, president of Ericsson Communications (HK) Ltd in Hong Kong.

GSM system for Shantou

Guandong Machinery Import and Export Corporation, China, has ordered a complete GSM system from Ericsson. The system is to be installed in the city of Shantou in Guandong province in south China.

The network which is now on order will be Ericsson's second in Guandong province. The system will be installed this summer and serve 10,000 subscribers.

Expansion underway in Shanghai

Ericsson has obtained the contract to expand one of Shanghai's two mobile-telephone networks. The contract is valued at SEK 200 million and covers delivery and installation of an analog ETACS system.

The first part of the expansion will provide the network with 50,000 subscriber capacity. The contract for two additional expansion phases is expected to be signed later this year. By virtue of the contract recently signed, Ericsson becomes the leading mobile telephony supplier in Shanghai.

U.S. operations coordinated

Ericsson's U.S. operations will now be coordinated even further. This will transpire through Bo Hedfors, formerly president of Ericsson Network Systems Inc., also becoming president of Ericsson GE Mobile Communications Inc. and Ericsson North America Inc., while the corporate structure is simultaneously reshaped.

The restructuring of Ericsson's companies in the U.S means that Ericsson Network Systems Inc. and other subsidiaries will be included in a common organization. As head of this organization, Bo Hedfors has total responsibility for the Group's continued emphasis on the strategically important U.S. market. At the same time, he will be Coun-

try coordinator for the U.S.

The current president of Ericsson GE Mobile Communications, Ronny Lejdemalm, is resigning from the Group, effective October 1. Until then, he will support Bosse Hedfors in the efforts to build up the U.S. organization.

Leif Källén, formerly president of Ericsson North America Inc., becomes Chairman of The Ericsson Corporation Inc., in Washington D.C. There, he will have special responsibility for matters related to economic integration in North and Latin America, within NAFTA, Mercosur and G3.

Bo Hedfors

Moscow focuses on AMPS system

Ericsson Radio Systems shall deliver an AMPS-standard, mobile-telephone network to the operator, VimpelCom, in Moscow.
VimpelCom installed an AMPS-standard pilot system in Moscow in 1992. Ericsson has now placed a full-scale, commercial system in operation.

The installation took place during the first quarter this year and began operation in May. It is dimensioned for 10,000 subscribers but can be rapidly expanded. In parallel with analog

AMPS, the exchange and radio base stations can also offer digital communication (D-AMPS). According to VimpelCom's projections, the network is to be expanded to encompass more than 100,000 subscribers.

This order is strategically important since numerous AMPS licenses have been issued in Russia, with more applications being processed. Earlier, the Group delivered an NMT450i system to Moscow Cellular Communications, another operator in the Russian capital.

SECOND SYSTEM IN OPERATION IN JAPAN Ericsson's second digital mobile-telephone system has been placed in operation in Japan, almost two months prior to the agreed completion date. Kansai Digital Phone, KDP, has now opened its network in Osaka, Kyoto, Kobe and Nara for commercial operation. In april, Ericsson placed the first digital mobile-telephone system in Japan in operation. This was the mobile network for the Tokyo area.

All are winners in improvement contest

The contest to find the "Best Improvement Project for 1993" has now been decided. After intense competition among the ten finalists, a Dutch and a Spanish project emerged as the winners.

But it's true to say that all the finalists in this contest were winners, since the various projects all brought substantial improvements to the operations to which they related.

The atmosphere at the Star Hotel in Sollentuna outside Stockholm was charged with the desire for improvements that is now the order of the day at Ericsson. It was Tuesday, June 7, when a coouple of hundred participants gathered to attend the final of the Group's annual contest to select the best improvement projects of the past year.

Of the 33 improvement projects originally entered for the contest, ten had been selected as finalists. These were divided into two classes: four large-scale and six smaller-scale improvement projects. Finals Day was devoted to presentations on the various projects. Each improvement team was allocated 25 minutes to report on how its project had been executed, how the area for improvement had been selected, what results the work had produced, and so on.

Five final judges

The five final judges – Britt Reigo, Anders Igel, Kaj Juul Pedersen, Bert Jeppsson and Raimo Lindgren – allotted points for the different phases in the improvement process.

The different projects selected for the final covered a broad spectrum of Ericsson's operations. They included not only projects extending over broad areas such as software development and customer relations, but also projects with more concrete aims, such as improved soldering techniques and improved packa-

The judges had a hard time deciding among the many outstanding improvement projects. From left: Britt Reigo, Kaj Juul Pedersen, Anders Igel, Bert Jeppsson and Raimo Lindgren. They were supported by Sture Ögren, the Group's quality supervisor.

ging for AXE cabinets.

Those who had set aside the time to attend Finals Day and listen to the presentations were amply rewarded. The different project teams passed on masses of ideas, including many pointers on how to implement successful improvement projects.

Saved market

The two winners were eventually chosen. In the large-scale project category, the winner was a project from Ericsson Telecommunicatie in the Netherlands. Their project, "AXE In Service Performance Improvement," was presented by project leaders Hans Sprangers and Tom Vos. In selecting this project as the winner, the judges explained their decision by pointing out that the project had shown "total commitment to the task, a comprehensive procedural approach and a scope of execution that transcended the company's functional boundaries." The jury concluded

their evaluation by stating: "The project had very clearly defined goals, and measurement data were collected that showed convincing evidence of improvements over a long period. The project has stimulated strong customer orientation within the organization, which has earned the customer's approval in return."

It is a fact that this project made a material contribution to the selection of Ericsson as one of two system suppliers of switching equipment for the next few years. Only a couple of years ago, there was a substantial risk that the Group's long tradition as one of the main suppliers to PTT Telecom Nederlands would be interrupted.

New triumph for Spain

In the category for smaller-scale improvement projects, Ericsson S.A. of Madrid was once again able to celebrate victory. The preceding year, one of the company's projects won the category

Jan Holm from EDT presented an improvement project involving a substantial reduction in the lead time for a new connection to Ericsson's Cooperate network.
Photos: Kurt Johansson

for large-scale improvement projects. The company's wining project for 1993 was its "Improvement Project for the Quality of ISFEs," which is concerned with the quality of corrections to faults (ISFEs) discovered in the AXE software which Ericsson supplies to its Spanish customer Telefonica.

Customer cooperation

The project was presented by project leaders Angel Hernandez, Juan Herrera, Ramon Herras and Antonia Gimenez, the last-named being from Telefonica. This was one of the projects that were executed in close cooperation with the customer, and the jury explained its selection of the project as the winner in its category by praising the project's

"consistently competent execution of all phases of the improvement process, the way the customer was encouraged to be involved in the project, and the fact that the improvements could be documented and verified by Telefonica."

The jury underscored that all the finalists had achieved a very high standard. The difficulty of selecting the winners meant that all the participants had every right to be proud of their accomplishments.

The contest for "Best Improvement within Ericsson" is to continue as an annual event. Now it is just a matter of focusing all efforts towards the 1995 final, when the best projects for 1994 will be selected.

Lars-Göran Hedin

Winners boast impressive statistics:

Coming issues of Contact will contain detailed presentations of the winning projects. A few key figures from the results illustrate the strength of the winning projects:

■ The Dutch project reported that

– The average time an AXE switch was out of operation each month was reduced

from more than 5 minutes in 1992 to less than 1.4 minutes in 1993.

– The number of customer complaints per 1,000 subscribers was reduced from more than 9 to fewer than 3.

– The proportion of fault-free corrections was improved from less than 75 percent to 100 percent!

■ The Spanish project also produced a dramatic improvement in the quality of corrections performed for Telefonica:

– This figure improved from 38 percent of corrections failing to gain approval in 1992 to only 9 percent the following year!

The new programminglanguage

The Erlang Design Team: (from left) Joe Armstrong, Robert Virding and Mike Williams created Erlang and are the authors of the book "Concurrent Programming in Erlang."
Photo: Bengt Sand

In the pursuit of effective programming languages that meet the special requirements of the telecommunications industry, Ericsson has developed Erlang, a language that has proven to be very easy to learn and use. Erlang, which can be described as a "wide-open" language for mixed computing environments, was originally used primarily for prototypes and experimental projects, but it is now being used increasingly in product development projects and is sold commercially.

Time is money, and in the telecom industry, time is to a large extent a matter of software development. Worldwide, more than 10,000 Ericsson employees work with software development, and a simple programming language that makes their job easier is worth more a fortune.

By all accounts, the Datalogics laboratory at Ellemtel was successful in designing an ideal language.

One of the strengths of Erlang is that is build on established, well functioning technology from which the best components have been selected and recast on a higher level.

It should also be pointed out that Erlang is not only a programming language but rather a complete technology including development tools for writing programs based on a very high-level language.

Up to the task

Erlang was developed for the telecom industry but can even be used to advantage in engineering, defense and other industri-

Writing programs for networks that contain several types of computers is usually difficult, but with Erlang this capability is part of the language. Special interface languages are not necessary. In a network with n local exchanges, it is possible to have n different standard computers and n different standard operating systems that all utilize the same Erlang code to control the exchanges.

es with similar requirements.

The telecom industry is characterized by very large systems, distributed among many computers, which are in continuous operation, year in and year out. Telecommunications also means real-time communication, meaning that delays in calls handled by the telephone network are non-existent or unnoticeable.

This system must be maintained, reconfigured, etc. without interrupting operations. The system must also be robust and able to withstand both hardware and software faults. Furthermore, it must handle many simultaneous activities, such as telephone calls, in parallel.

Erlang is up to the task. With Erlang, robust, fault-tolerant real-time systems can be created.

Systems can also be updated under operation. This is possible because the software is has a modular structure, allowing it to be installed in the system module by module.

Next generation

"With Erlang, we have created the next-generation language for real-time programming," says Bjarne Däcker, manager of the Datalogics Laboratory at Ellemtel Utvecklings AB, Ericsson and Telia's joint research company in .

The first generation was assembly languages which were usually created for a specific processor. These were followed by high-level languages, such as Ada, C and Pascal, which can be used on different hardware platforms and are the current standard within the industry.

The next stage of development was declarative languages, such as Lisp and Prolog, which are characterized by short and concise program code. However, these languages were mostly used at universities and in research. Applying declarative languages in industry, particularly in the telecom industry, was a challenge.

Technical breakthrough

It was therefore considered a major technical breakthrough when the Erlang

"Interest for Erlang in the market is increasing rapidly," say Per Erik Witasp, sales manager and Marcus Arendt, consultant at Erlang Systems AB in Kista.

Design Team, which consisted of Joe Armstrong, Mike Williams and Robert Wirding, were able to demonstrate that this was possible with acceptable performance.

Erlang was first used (and developed in the context of the project itself) for a large prototype system for business exchange applications. The results were surprising. Programs could be reduced to one tenth of their former size. Since then, Erlang has been used in a number of experimental projects, and the technology has been successively refined.

Making the job easier

"Erlang's most important advantage is that you can concentrate on what the system should do, instead of how it should be implemented," says Mike Davis, who is now technical manager at the Erlang Systems Division and the author of the book "Concurrent Programming in Erlang." This book, which is co-authored by Joe Armstrong and Robert Virding, is now in use throughout the world.

How then is it possible to radically reduce program size?

The secret lies in the fact that Erlang provides a higher level of abstraction than conventional programming languages and hides many of the details that the pro-

grammer would otherwise have to handle. For example, the complexities of memory management are handled by intelligent algorithms (rules specifying how an operation is performed) that operate in the background.

This in turn is possible because the processors in today's computers are more powerful than ever. Thus Erlang leverages advances in technology and makes the job easier for the user.

One positive effect is that the risk of errors, which increases with each manual operation, is significantly decreased.

Compact language

Another consequence of the high level of abstraction is that Erlang can be implemented as a compact and simple language that a user can learn in a four-day course. All unnecessary functions have been eliminated, as have all language constructs that would have been difficult to implement.

Erlang can also be described as glue logic between disparate environments. In the future, heterogeneous (mixed) environments will be a fact of life. One of Erlang's strength's is that the language can provide a bridge across different types of hardware and software and enable them to work together. Erlang can communicate with programs written in other langua-

ges and is easily adapted to distributed networks with different types of computers.

Narrowing the gap between the specification and the implementation, between what the customer wants and what he gets, is always a challenge in developing software systems.

Erlang can close this gap by lifting the implementation level. Programs written in Erlang often have the appearance of formal specifications, yet in fact they are identical with the software that the system executes.

TECHNOLOGY

LARS CEDERQUIST

Erlang approaches the critical mass

"Reports about how Erlang can shorten time to market are spreading rapidly," says Per-Erik Witasp, sales manager at Erlang Systems AB. "Demand is growing, and we are now approaching the critical mass that will create a ketchup effect so that sales will be driven by demand."

The development of Erlang started at the Datalogics Laboratory at Ellemtel in the 1980s. In 1990, the language was presented to an international audience at ISS 90 in Stockholm, and by 1993, development had reached the point where Erlang was ready to leave the laboratory and become the foundation for a new product and sales division.

Today the Erlang Systems Division in Kista employs nine persons and is a business area within Ericsson Infocom Consultants (formerly Programatic). Erlang Systems is responsible for its own product development for the various target environments supported, and the division offers the complete range of Erlang tools for a fixed annual fee.

Support, qualified consultants and training are available to users.

Open systems

Today there are more than 100 Erlang installations around the world. Most of these are at Ericsson and Telia, but a number of universities and institutes of technology have also installed Erlang.

"We continue to develop tools in order to be able to offer the customer a complete development environment," says Per-Erik Witasp.

"It may seem strange that Ericsson makes its own 'killer technology' available on the open market, but this is a consequence of the open systems philosophy.

Today, customers expect suppliers to follow the standards, and they are very wary of proprietary systems. So if we want to sell systems written in Erlang, we must also be able to make the language available commercially."

A number of tools have been developed around Erlang for program development, as well as providing easy links to databases, computer graphics, etc.

Erlang runs on most common platforms and is currently available for DEC Alpha, HP 9000, PCs, Sun workstations and Sparc platforms, as well as a number of embedded systems. Operating systems available are Windows NT, OS/2, Vx Works, QNX, Solaris and Sun OS.

Fully booked courses

Erlang Systems has made great efforts to promote training. Internal courses during the spring were very quickly filled, and there is already a waiting list for autumn courses.

"This is a result of customers having heard about Erlang when development projects are being started and technology must be selected," Per-Erik Witasp explains.

Two successful test projects using Erlang have been completed in TMOS, the monitoring system for AXE. At the Supercom exhibit in New Orleans, the ATM switch of the future, with software written in Erlang, was demonstrated.

Over the long term, universities are also an important target group. Students who learn a high-level language like Erlang will not want to work with a low-level language when they enter industry.

Erlang has also attracted attention among researchers, because they see in it a language that is close to the cutting edge of research which evidently is useful in industrial applications.

Erlang users exchange ideas

In the beginning of May, more than 100 Erlang users from 10 different countries gathered at a two-day conference hosted by Ellemtel. Users described current projects, learned from each other's experience and demonstrated various systems.

The experience presented at the conference confirms that it Erlang programs are easy to write and that small teams can quickly achieve results.

Demonstrations during the conference included the ATM switch that Ericsson presented at Supercom in New Orleans. An Erlang program executing on several computers from various manufacturers was shown controlling a distributed telecom system.

IsoENET, which provides multimedia communications between local and global networks, as well as the Mobility Server, which allows forwarding of calls to a receiver regardless of location, were also demonstrated. Both of these products were developed in record time using Erlang.

Another example was NETsim, a test tool for Ericsson's TMOS system, which was described by Bengt Tillman from Linköping. In addition to the reduction in
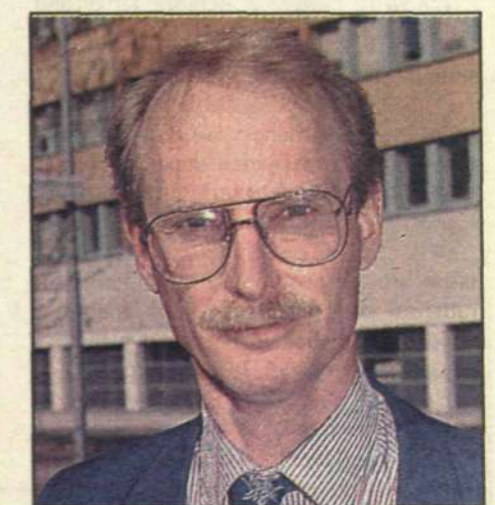
Bjarne Däcker, manager of the Datalogics Laboratory at Ellemtel.
Photo: Bengt Sand

code, Bengt emphasized the short lead times from program modifications to testing, which means that programs can be tested as they are written.

"The conference was a much greater success than we had dared to hope," says Bjarne Däcker, who also notes in closing that most experimental work on future technology, such as multimedia and the Mobility Server, appear to be based on Erlang.

Victory in the quest for quality

Ericsson's emphasis on quality has resulted in the company receiving the highest quality commendation the British telecommunications industry can award. . .

Ericsson was the winner in the "switching" category in the BT Network Product Quality Awards, in addition to bring home the sought-after, overall winner's trophy. And on the first try!

The star of the event was the AXE 10. There are no fewer than 1,300 exchanges in operation in the BT network – 4.3 million subscribers at year-end 1993.

However, quantity is not the only consideration . . .

Tough competition

Competition within "switching" was extremely tough – with AXE 10 neck-and-neck with GPT's System X and AT&T's 5ESS.

The judges were hard pressed to choose a winner among these internationally well-known, well-regarded, high-quality products.

In BT's estimation, however, Ericsson ran away with the event through it's focus on providing customers with superior service and eliminating software faults.

It was this – apart from the indisputable quality demonstrated by the AXE 10 – which overwhelmed all resistance, enabling Ericsson to bring home the overall winner's award. The AXE 10 beat out 40 other products in switching, cable, testing equipment, transmission network and computer technology.

The news was highly gratifying for Ericsson personnel at all levels.

Nils Grimsmo, who is head of Ericsson Ltd, was aware that Ericsson had won in the "switching" category when he arrived at the ceremony held at the top of the BT tower in central London.

Joyous news

What he did not know was that Ericsson was also the overall winner – he responded to the news with a broad smile as he accepted the plaque of genuine silver and the certificate of award.
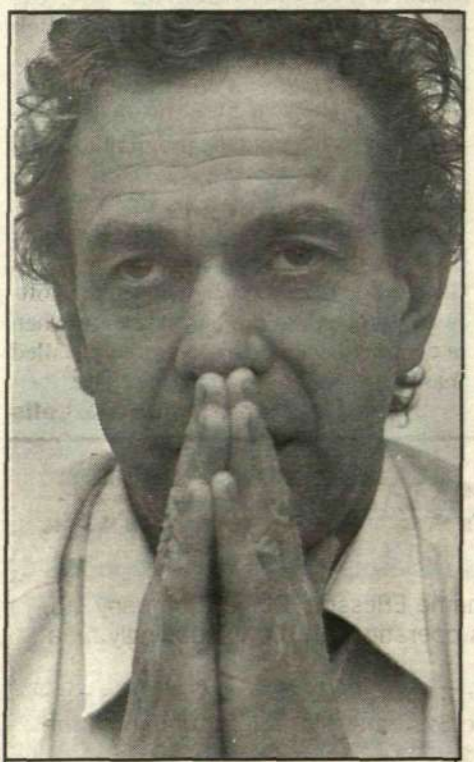
"This was an acknowledgement of our attention to quality at all levels, as an integral part of our business operations," said Nils Grimsmo, head of Ericsson Ltd.

Ericsson awarded prestigious English telecom prize

"It was so cleverly arranged that we knew nothing ahead of time," Nils Grimsmo commented later. "And it was highly gratifying for the organizers, who had gone to great lengths to keep the outcome a secret."

"This was an acknowledgement of our attention to quality at all levels, as an integral part of our business operations."

Nils asserted that it is not a matter of quality for its own sake. It is much more than that, and is an important aspect of the message the company attempts to convey to employees and customers.

Observing the "Total Quality Management" principles is both a long-term concern and a daily challenge," he continued.

Overcoming difficulties

Despite, in the first instance, being awarded the prize for the AXE 10, he regarded it as a commendation for the telecom network in its entirety.

"It is of course true that success breeds success, but our success depends more on overcoming difficulties. To attain success in the long term requires facing problems head-on and solving them, and learning by one's mistakes," Nils stated in conclusion.

Bob Martin-Royle, a BT prize committee member, believes that the prize is of great importance in terms of quality-awareness on the part of private telecom operators.

"We were quick to criticize people for non-performance of various things stipulated in the contract, but were slow to assign praise for work well-done."

Problem must be solved

"Although Ericsson had certain software problems, the thing that was of decisive benefit was the manner in which such problems were handled."

"When certain companies are awarded a contract, they begin arguing about what they are required to do, or not do. Ericsson's attitude is that if the customer has a problem, it must be solved. It may well be that, occasionally, they do more than is strictly required," said Martin-Royle.

"But that is not to say that Ericsson has totally escaped criticism," he continued. "All suppliers have been subject to criticism by our personnel in the field. In early 1993, there was a problem with program loading. However, Ericsson handled this in the right way, and that, presumably, is why they won, since it impressed the judges. Ericsson is considered to be a good company to deal with. They care about customers, causing them to feel highly regarded. They deliver what they have promised and make good on anything that may have gone wrong."

Three criteria

The statutes stipulate that the prize be awarded to a company that has distinguis-

hed itself in three aspects. The first criterion is included in a "system for assessing suppliers," in which the overall impression of the participating companies' performance is judged. Number two consists of a questionnaire the suppliers must complete and, finally, there is a "field evaluation."

The last criterion – what the people in the field think about the products nominated – is heavily weighted and represents 50 percent of the points assigned. As Martin-Royle expressed it:

"The users' opinions concerning the products are the most decisive. The judges approved in particular of Ericsson's personal contact with customers in the area of user support. With Ericsson, you don't get referred here and then there."

Nils Grimsmo received the silver plaque and certificate from Dr. Alan Rudge. He is head of BT's Development and Procurement.

World class

"The telecom network is the core of our operations," said Alan Rudge. To provide our customers with world-class service, the networks, equipment, and operating support purchased from our suppliers must be of world class."

"These awards are important. They provide us with the opportunity to reward companies that deliver products of consummate high quality. In this way, we can be assured that our customers are receiving first-class service and value for their money," he continued.

Not enough that they won in the "switching" category, the Group also took home the Gold Medal as the overall winner in BT's quality competition, the Network Product Quality Awards. The competition was extremely tough – the AXE 10 won in the face of the challenges by GPT's System X and AT&T's 5ESS.

Unfortunately, Chris Pratt was away on the day of the ceremony. He is head of "switching systems," and must, of course, have his opportunity to see the silver plaque.

Chris Pratt commented the award afterwards:

"I was not all surprised that we won. We are the best."

Drastic improvements

He conceded that things looked much darker for the AXE 10 three years ago, when per-line downtime for telecom equipment was 44 minutes per year. This figure has been cut by half each year since 1991, and is now 5.96 minutes per line.

The total, annualized downtime (for all possible causes, including power failure)

has declined from 149 minutes in 1989 to 14 minutes in 1994.

"This is ongoing improvement and not a one-time success," Chris Pratt relates. "We have worked hard to achieve it."

"We now have excellent control of the network configuration. Drastic improvements have been made in the introduction of new software. By automating some of the processes, we eliminated much of the manual work."

Chris Pratt stated that both he and the team at the Scunthorpe plant were proud about the prize.

"The team won the prize for Ericsson, and it's a well-earned reward for the hard work that everyone expended. It has been a colossal team effort on the part of the entire Ericsson organization."

Making money on upgrades

Software buyouts a potential "cash-cow"

Ericsson's world-wide installed AXE base represents a hard-earned asset that must be utilized. Software buyouts are one means of profiting from this base. Ericsson Network Systems Inc. in U.S.A. is pioneering in this field.

Customers and employees of Ericsson Network Systems are discovering that software buyouts, switching suppliers charging for software and software upgrades of existing systems, increase network quality, and reduce implementation and maintenance costs. By purchasing software before it is implemented at the network level, customers are able to negotiate greater volyme discounts, while Ericsson has greater certainty regarding the market for our software products.

Three upgrade orders

While software buyouts are not a new idea, only recently has Ericsson discovered the attractiveness of their profit potential in funding software developments. In the past, new software applications would be developed without the customer in mind, resulting in lengthy searches for possible customers.

However, in 1993 Ericsson secured three upgrade orders for its installed base in North America – from US West (Local Exchange and STP) and Southwestern Bell (Local Exchange). The two Local Exchange upgrades resulted in Ericsson receiving about 30 US dollars per installed line.

Two billion U.S. dollars

If these numbers were applied to Ericsson's world-wide installed Local Exchange AXE base (60 million lines), it is conceivable that an annual revenue approaching two billion dollars could be obtained.

Doug Smith, Western Regional Director for Ericsson Network Systems, says "The challenge for sales is to begin selling the add-ons that benefit Ericsson so much." The Western Regional Office was the first Network Systems Group to secure an order for a software buyout of local exchange network applications.

Clear vision

The Ericsson team had a clear vision of how their customer (US West) would be able to purchase the basic system comprising operational features with network signaling capabilities. In addition, the team included people from implementation departments, and early on identified significant cost savings from having a reduced number of Application Systems in the field.

Although revenue-generating featurers such as CLASS or Centrex were not included in the 1993 software buyout, CLASS enhancements in Ericsson's installed base could be purchased on an office-by-office basis.

Reduced payback time

Also in 1993, Ericsson signed an agreement with Southwestern Bell Telephone to upgrade their AXE-installed base of 63 AXE hosts and over 144 Remotes. New industry standards, such as those dictated by the Federal Communications Commission (FCC) mandating that local exchange companies like Southwestern Bell expand maxim four-digit carrier codes from 999 to 9,999 in all switches during the first quarter of 1995, were just one area Ericsson's upgrade program assisted in implementing new features quickly with reduced payback time.

Johan Westerberg, Central Regional Director for Ericsson Network Systems Inc. says, "Ericsson can manage the software 'vintage' in the installed base when a contract is signed to cover the installed base."

Text: Mike Margolis

NEW COMPANY IN CHINA

Ericsson is establishing a new MLC (Major Local Company) in China. The new company, registered under the name Ericsson (China) Company Ltd, shall serve to consolidate Ericsson's operations in the increasingly meaningful Chinese market.

Heading the new company will be Olof Lenneman, who currently is executive vice president of Ericsson Radio Systems. Olof will assume both the president's post and that of Country coordinator on September 1.

Hans Ekström, who presently heads Ericsson's China operations, will move to Singapore to become president of Ericsson Network Engineering Pte Ltd. He succeeds Ulf H Johansson, who is retiring.

New impetus in southern Africa

Ericsson's newly opened office in Harare is managed by a Norwegian, Olav Thorsen. He is a true entrepreneur, who stands poised to become engaged in one of the greatest challenges currently facing Ericsson's sphere of operations, to provide new impetus to the slumbering southern African telecommunications market.

"This is essentially a highly fertile country, with masses of unutilized potential," says Thorsen.

Olav Thorsen works with 13 countries from Ericsson's office in Harare: Angola, Namibia, Botswana, Zimbabwe, Zambia, Leshoto, Swaziland, Moçambique, Malawi, Tanzania, Mauritius, Madagascar and the Seychelles.

Olav Thorsen is coordinator for the entire region, excluding South Africa. This stretches from Angola in the west to Mauritius in the East – an area almost as large as Europe. The entire region is expected to experience an upswing as a result of the political developments in South Africa.

South African motor

Olav Thorsen's task is to find new business opportunities, initiate new projects and ensure that local Ericsson companies are established in those areas offering the greatest potential.

Demand is acutely high in virtually all areas of the telecommunications field. Accordingly, works for all units within the Ericsson organization.

"Previously, Ericsson had companies in northern and southern Rhodesia (today Zambia and Zimbabwe) but we withdrew from southern Rhodesia for political reasons at the end of the 1960s. Now, however, we are back to stay."

Italians in Botswana

The financial situation appears brighter now than for a long time and new orders are being taken at an increasing rate; new AXE networks for Botswana, Moçambique and Leshoto – international stations for Zambia, Zimbabwe and Swaziland.

The products are being delivered not only from Sweden but also from other Ericsson companies, such as Ericsson Telecommunicazioni SpA in Italy, which is currently laying more than 1,000 km of fiber-optic cable in Botswana.

One tenth of Zimbabwe's 12 million inhabitants live in the capital Harare (formerly Salisbury). In connection with the black population coming into power in 1980, many of the white population left the country. The remaining 150,000 whites continue to control the greater part of the country's industry and own the prime agricultural land.

One of the most affluent

The average annual income in Zimbabwe is only about USD 620 per person. Despite this, the country is considered to be one of the most affluent in the region. As in the rest of Africa, tribal affiliation is extremely important – often more important than political affiliation and social standing. Zimbabwe consists primarily of two main tribes. President Mugabwe and some 80 percent of the population belong to the Shona tribe. The remainder belong to the Ndebele, most of whom live in the southern region of the country.

Zimbabwe measures roughly 800 kilometers, from north to south and from east to west. The country has some of the most fertile agricultural land in Africa and is also rich in mineral deposits. Its primary exports are tobacco, maize and cattle.

Historically, the country's lack of water has been a major problem and today water from the Zambesi River has been diverted northwards to other areas of the country.

Left-oriented

The take-over of power by the black population in 1980 was followed by a shift toward a planned economy and socialism. The country's closest allies became countries such as Cuba and North Korea.

The domestic industries were protected through the introduction of high tariffs, with a contracting range of goods and services as a result. Currency restrictions and the high tariffs effectively decreased investment in the country.

"In fact, it has been easier for tourists to bring money in and out of the country than it has been for companies". Despite these conditions, foreign investment has increased in recent years.

Pressure from high taxation is relatively high. For example, Olav Thorsen pays 55-percent income tax, more than most people pay in tax today in Sweden.

"This is not so strange – one had Sweden in mind as a model when the tax system was developed," smiles Thorsen.

Thirteen countries

Olav Thorsen's area of responsibility encompasses thirteen countries: Angola, Namibia, Botswana, Zimbabwe, Zambia, Leshoto, Swaziland, Moçambique, Malawi, Tanzania, Mauritius, Madagascar and the Seychelles.

"Short-term, Tanzania offers the greatest business potential. Five projects are pending there, all waiting for the necessary financing, either via the African Development bank, the World bank, or SIDA."

Aid – with strings

The region is a major recipient of aid to developing countries from the more affluent nations. For example, Zimbabwe receives an average of USD 40 per person annually. The figure for Botswana is USD 100. Major providers of aid include Sweden, Norway, the U.S. and Great Britain.

Investments and aid are often closely linked. The providers of the aid often stipulate how the investments are to be used, and which suppliers should be commissioned. As a result, Thorsen's work is devoted just as much to aid policy as it is to technology and marketing.

As a rule, the supplier and the provider of the aid come from the same country. Thus, it is no coincidence that SIDA warmly recommends Ericsson, while French aid organizations prefer Alcatel.

"Currently, we are competing for an order corresponding to a value of SEK 1 billion destined for the Matabele region of Zimbabwe. Our competitors are the usual companies, with Fujitsu in the best position at present because the financing derives largely from Japan..."

Difficult to get through

Telephone density is low throughout the region. In Zimbabwe, only a few percent of the population has a telephone, in Botswana 5 percent. However, investment is rising and new telephone networks are being installed in Zimbabwe, Leshoto, Tanzania and Namibia.

There are not only just a few telephone networks, those that exist are often in poor condition. For example, in Zimbabwe it is difficult to call between the Ericsson office and the Swedish Embasssy, although the offices are in the same building. It is apparent that working in the region place special demands.

Long waiting list

Zimbabwe's telecom administration, the Post and Telecommunications Corporation (PTC) operates 127,000 lines. The need is much greater – 90,000 people are on the waiting list for a telephone.

"It's quite easy to find suitable office space here in Harare, the problem is getting a telephone installed. This impacts adversely of foreign establishment but, of course, speaks in our favor".

Latest products

Olav Thorsen has quickly established close relations with the telephone administrations in the region. Personnel from Leshoto, Namibia and Zimbabwe have been trained at Ericsson in Stockholm and Swedtel in Kalmar, the latter financed by the BITS foreign aid organization.

Increases credibility

"Telia's (Swedish Telecom) involvement is important and gives us greater credibility among prospective customers in the region".

The products which Ericsson markets are among the most modern in the company's range. For example, Zimbabwe recently purchased a Subscriber Line Management System - the same as the Telia installed. Most recently, a bid was submitted for a GSM system to Zambia Telecom and Telia, which have formed a joint venture company.

Well positioned

Ericsson is definitely well positioned in the region. This is not solely attributed to attractive products. The role the Nordic countries play in providing foreign aid is influential. The fact that Nordic politicians supported the freedom movements in the region and have maintained close contacts is also beneficial.

Zambia's president Frederick Chiluba, for example, was a trade union boss at Atlas Copco, while Namibia's president was a house boy for a Norwegian missionary couple. Such contacts are important.

Text and photo: Jan Kind

Developments in South Africa affect the entire region

Educational levels vary. Namibia and Botswana rank at the top, with Zambia and Angola at the bottom. "Of course there are universities," relates Olav Thorsen, but there are much too few companies and organizations which can employ the graduates.

Olav Thorsen in his office in Harare, which is located in the same building as the Swedish Embassy, in center of the city.

There are more than 20 different types of bananas in the world.

The political developments in South Africa are expected to provide a boost for the whole of southern Africa. English is the official business language in most of the countries in southern Africa. The exceptions are Angola, where Portuguese is spoken, and Namibia, where German is predominant.

The marketplaces in Harare are spicy attractions, a myriad of people, colors and aromas.

Ericsson meets Latin American operators

The third User Group meeting for Ericsson's mobile telephone customers in Latin American was held at the beginning of March. Ericsson's initiative as supplier to gather operators from the same region for mutual discussions and seminars has been much appreciated.

Just as at the first User Group meeting last spring, this year's first meeting was held in conjunction with the American CTIA fair. In between a meeting was held in Mexico in the fall. This third meeting in San Diego brought together some 25 operator representatives from seven markets in the Latin American region.

Representatives from the Ericsson companies on the local markets also participated, as well as speakers inside and outside the company. And the participant list gets longer with every meeting.

"Ericsson's initiative for this forum has without doubt answered the huge need to be with our customers," said Cecilia Lund, marketing communicator at the business unit for Mobile telephony American standard.

Closer collaboration
User Group meetings aim at getting closer collaboration between
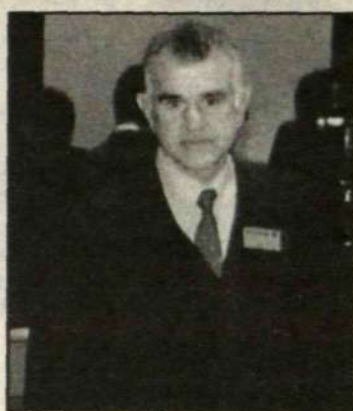
Luiz Alberto Garcia, from the Brazilian operator CTBC, was chosen as chairman of the Grupo de Operadoras Ericsson en America Latina (GOEAL).

Ericsson as supplier and operators as customers. By meeting regularly twice a year Ericsson gets an excellent opportunity to present new products, services and organizational changes for the entire Latin American customer group simulataneously.

Meeting point
The forum also fills another very important need: for operators to meet occasionally to exchange experiences at the same time that important dialog takes place with various key people in Ericsson.

"All in all an excellent forum to convey market needs and market demands more closely in areas within Ericsson that do not meet customers so regularly," says Niklas Heuveldop, coordinator

for Latin American User Group meetings.

During the meeting time was set aside for technological sessions and discussions of future needs and problems. Already from the first meeting to a large extent it was the operators who determined the direction and agenda for the program.

Committee
At the first meeting the operators set up a committee with four customer representatives (among them the chairman Luiz Alberto Garcia from the Brazilian operator CTBC) and two members from Ericsson.

They also decided that the forum henceforth will be called the Grupo de Operadoras Ericsson en America Latina, abreviated to GOEAL.

Committees
At the second meeting in Mexico it was decided to form four committees with representatives from both operators and Ericsson in the areas of maintenance and operation, new products, infrastructure and automatic roaming.

The thinking is that the commitees will bring about involvement and collaboration beyond the meetings as well.

After a suggestion from the latest meeting in San Diego Ericsson will publish a newsletter before the next meeting which will guaranty that all current informa-

tion will reach all GOEAL members.

Several interested
In the business unit Mobile telephony American standard the User Group meeting has already begun work on the North American market. Interest has also been shown in Asia and the Pacific Rim.

"Setting up a network where both operators and we as supplier

participate is not only important for our customers but also for us. Here we can quickly capture mutual desires and problems and together come up with solutions," says Cecilia.

For the Latin American market they have already begun to prepare for the next meeting. It will be held in the fall and this time Puerto Rico will be host.

Helena Andersson

A VALUED NETWORK. At the beginning of March the third User Group meeting for Ericsson's Latin American mobile telephone customers. There was a lot of time for the operators to discuss with each other and express viewpoints for Ericsson's representatives.

"Certified" instructors ensures quality

Customer training is becoming an aver more important part of business activity. In order to be able to offer high quality in training, independent of training centers, Ericsson Radio Systems Inc. (ERU) in the U.S. has begun to "certify" its instructors.

"There are four training centers in the world for the American mobile telephone standard, in Malaysia, Mexico, Brazil and the U.S. By introducing a certificate, that is to say "driver's license," for instructors the same quality of training is guaranteed whether it be done in Malaysia or Dallas. It also becomes easier to loan teachers, or, as we call them, instructors.

So says Per Nygren, responsible for operator services (Value Added Services) in business unit Mobile telephony systems American standard (RMOA).

"At Ericsson Radio Systems Inc. we are 15 certified instructors," says Stephen Gibbs, who himself is one of the first to get his certificate. It was during last year that the certificates first began to be issued.

Training to achieve this "driver's license" is done in stages and the program includes, besides technology, subjects such as pedagogy and presentation technique. Practical knowledge is also tested and is done so at three levels.

First certificate
Besides the "driver's license" for instructors they have gone a step

further in the U.S. and handed out the first certificate to a technician from the customer side, in this case from the huge mobile telephone operator CellularOne. This took place in October, and now a lot of customers are in the certification program.

Through collaboration with the State of Texas Education Program those who are certified can count this toward academic points. This is something that is seen as very positive by customers.

They are also very interested in Ericsson's training centers in Malaysia, Brazil and Mexico and in 1994 they will certify several of their own instructors.

Important for future
It is ever important to train customers since mobile telephone sys-

Per Nygren together with Stephen Gibbs, "certified" instructor from Ericsson Radio Systems Inc., U.S.A.

tems are becoming more and more advanced with more and more functions.

"Instructors are our face to the customer and therefore it is important that we have the same quality in training regardless of where it is done. Ericsson Radio Systems Inc. is true enough, so far, the only company in the

group to have instructors with "paper" in their training. Collaboration is going on between the business units and the ambition is that our other training centers for mobile telephony can eventually offer customer training with certified instructors," says Per.

Gunilla Tamm

May we offer a test ride...?

New Core Unit handles IS/IT

Ericsson Corporate executive committee, CEC, has established a new Core Unit as of Jan. 1, 1994 to further emphasise the need for a common approach across the company of Information Systems and Information Technology (IS/IT). The unit will assist other Ericsson units in this growingly important field.

IS/IT has replaced 'Data Processing' as a term in the past few years, and reflects our recognition of the increasingly important role that information systems and information technology plays, both in the creation of our products and the way we organize and run our business.

The new Core Unit for IS/IT is named EIT and it is staffed with a small number of professionals recruited internally and from the computer industry. EIT reports to a board with representatives from the CEC and the major business areas.

EIT, has been assigned corporate responsibility to guide the strategic IS/IT planning with directions and will continue the successful implementation of IS/IT Policy and Guidelines started in 1991 by ECIC/ECIOC.

Common platforms

EIT will also receive orders from the Ericsson Business Process Council to develop the new IS/IT common platforms and applications to support the Ericsson business processes. The overall objective is to improve productivity and quality in our business by demonstrating the efficiencies achieved through IS/IT co-ordination.

IS/IT can refer to the selection of software such as applications for financial reporting, manufacturing, planning and word processing. It also cover a range of questions relating to platforms (computers, PCs, workstations), Ericsson Corporate Network and Systems Management.

Separate systems

Traditionally, the Ericsson line manager has been responsible for selecting or creating the systems needed to support the unit's business objectives.

This has lead to separate systems used for similar purposes within the corporation. The mission for IS/IT is to evolve the current diversified IS/IT solutions to converge with the recommendations made in the IS/IT Policy and Guidelines, while at the same time improving the business value of IS/IT.

According to Jan Hjelmér, head of the core unit, "Managers have welcomed us – they are happy we can help them in their selections. Our job is to help Ericsson's managers to concentrate on their primary objectives, wether it is creating products, getting them to the market, or supporting our customers."

Not dogmatic

"Ericsson does not need to have 67 different financial packages installed. Even if we reduced the number to six or even 10, there is room for the manager with a specific need to run the package of his own choice. We can't be dogmatic, and we aren't going to force one solution when there's a need for multiplicity. We have to co-operate with the managers – who have bottom-line responsibility – to find the best solutions for the corporation."

"Our position", Jan continues, "is to provide the expertise of senior consultants – people with a technical background who are thoroughly familiar with Ericsson's business processes as well as vendor's offerings, qualified through the External Technology Provisioning process (ETP)."

Current activities at EIT:

■ update of the Ericsson IS/IT Policy and Guidelines
■ development of a new common platform for the business processes
■ specification and selection of a common product and project archives
■ specification and verification of common applications for finance, sales/order and supply.

For further information, please contact:

Jan Hjelmér, Manager Ericsson Core Unit IS/IT

Or for questions concering:
IS/IT Policies and strategies
Jan Älander and Sven-Göran Elveborg
External technology Provisioning: Staffan Karlquist
Platforms: Peter Cronström
Applications: Rod Hall
Archives: Jan Johansson

THE TAX PARADISE

Truly, Europe is Ericsson's home market. Many of the largest customers are found here, and there are important production facilities in many of the European countries. These circumstanses call for a comprehensive distribution system.

EDEN – the Ericsson Distribution European Network – has significantly reduced transportation time and freight costs in the European operations. Furthermore, EDEN has made it possible for Ericsson to benefit from the simplified rules on VAT taxation that were introduced within the European Community in 1993. This reduced the VAT-related capital costs, in the first year only, by some 20 million SEK.

ARRIVING TO THE HUB. Roger Ekström, center, and Lars Magnusson from Ericsson Telecom checking on the situation with a newly arrived truck driver from Sweden. Lars works with EDEN from Stockholm and Roger is conducting operations in Aachen.

Work began on EDEN, Ericsson Distribution European Network in 1990. At that time, agreement was reached among a number of large companies in Europe to simplify and coordinate their internal transports. With EDEN, a modern transport system was created, centering on the German city of Aachen.

The theory of this transport network is simple: From some 10 plants or distribution centers in Sweden, Germany, Spain, the U.K., the Netherlands, France and Italy, trucks loaded with goods depart each day for Aachen. On the morning of following day, or next following day, the vehicles arrive in Aachen, where they are unloaded. At a terminal, the goods are re-sorted so that the same trucks, later the same day, can return to their points of origin, now loaded with incoming goods from all other plants in the network.

Fixed schedule

To make life simpler for everyone involved, the trucks in the EDEN system move according to a fixed schedule. This means that manning for goods receiving and loading and be planned in advance, and those receiving goods know exactly when to expect deliveries. This alone means a significant quality improvement in freight handling, while enabling a more efficient utilization of personnel than before.

But that is not all. EDEN has also meant that transport times could be drastically reduced. At the beginning of the project, the goal was to reduce transport-related lead-times by half. EDEN has already fulfilled this ambition. From an average of 10 days between the various plants, transport times have now been reduced to 4.5 days.

The EDEN system works with "LTs," full Truck loads. Ericsson operates through the Aachen-based freight-forwarder, Hammer. Hammer provides the reloading and storage facility that is now available. A special company has been established for handling this service for Ericsson, called Time Shuttle International, which has 12 employees.

Also assigned to Aachen is Roger Ekström, from Ericsson Telecom. Roger is the EDEN-responsible person at Ericsson and is stationed there to safeguard the Group's interests, while working constantly to develop EDEN.

"Since the beginning, some additional smaller plants have been added to the system, such as Borås and Hudiksvall in Sweden," Roger relates. "Moreover, increasing numbers of Ericsson's suppliers are being persuaded to utilize EDEN. The objective, of course, is to load the trucks in the system as full as possible.

Cost-effective

As with all transport operations, the degree to which the trucks are utilized determines efficiency. In this regard, the Aachen operation provides close monitoring.

"Our statistics show that the freight cost per ton was reduced from DEM 695 in 1992 to DEM 579 last year, and we are working diligently to continue this favorable trend."

Roger cites Austria as an example of how EDEN is used. There, Ericsson Schrack is in the process of becoming another unit in the network, but, at the same time, the Group's various suppliers within the country are being investigated.

"Among these is a company which supplies power components to Ericsson in Sweden. By including their transports on the Austria truck, the degree of utilization is increased.

Saving on VAT

EDEN has meant not only faster, more reliable transports. This operation has also enabled Ericsson to utilize simplified regulations in such areas as VAT and customs clearance which the EU implemented last year. Roger Ekström continues:

"The EU's introduction of centralized customs clearance resulted in a considerable simplification. All national differences in customs tariff numbers and related matters have been replaced by uniform, joint regulations. The number of documents which must accompany a goods shipment has been reduced considerably. The EDEN office in Aachen is now providing more Ericsson companies with the reports that are still required for trade-statistics purposes.

In combination with centralized custom clearance, simplified VAT regulations were also implemented. Thanks to EDEN, Ericsson is also able to utilize them. By assigning the Swedish companies in the system a German VAT registration number, it is possible to "zero-VAT" deliveries made within the system. This is the way it works:

When goods are shipped into Germany, a VAT entry is made in the German VAT report. But this VAT can be offset by the entry outward VAT when the goods leave Aachen, such that a plus and a minus cancel each other on the VAT declaration.

During 1993, this method of handling encompassed almost DEM 300 million in goods. Since VAT in Germany is 15 percent, this is a handling service of considerable importance. The value of the service is in the large amounts of capital that would otherwise be tied up in connection with goods crossing the respective countries' borders. Obtaining refunds may take months, thus the savings in capital costs are considerable – almost SEK 20 million was saved this way during 1993.

More should take part

"Actually, the savings should be almost twice as large, but many companies remain unconvinced that such a procedure can and should be followed," Roger relates. "Today, it is the companies in Sweden, the Netherlands and Italy who apply this method of VAT-handling. In England, Orbitel utilizes this possibility to save money in this manner, while Ericsson Limited, ETL, continues to stay outside."

"The German National Tax Authority has been on hand to inspect how the VAT procedure works, with no negative comments regarding how we manage it," Roger points out. "Moreover, it was the Europe Commission's tax experts who, from the beginning, tipped off the EDEN personnel on its merits."

"It should be remembered that Ericsson is not the only one benefiting. For the authorities, it of course represents reduced administrative costs." Roger has been pleasantly surprised at how hard the EU authorities work to simplify tax and trade regulations.

Continuing to grow

With or without VAT, development of EDEN will continue. During the first year, 11,030 tons of goods were shipped, which increased to 17,862 tons in 1993. The forecast for this year is just under 22,000 tons.

A new service presently being tested is direct deliveries to locations where an installation of, for example, a radio base station is to take place. In cooperation with Ericsson Radio Systems in Kista and Ericsson GmbH in Düsseldorf, an effective method of goods handling is being developed whereby everything that is part of the installation is accumulated in Aachen, to then be trans-shipped in smaller trucks directly to the work site. Delivery time should be determined in consultation with the responsible regional office in Germany.

"We deliver to the door and also instruct our drivers to clean the site of packing material and similar refuse," says Roger. This a matter about which Germans are very careful. A tidy delivery, in cooperation with EDEN, improves the customer's impression of Ericsson's quality service!

LARS-GÖRAN HEDIN

Ericsson earns millions with EDEN
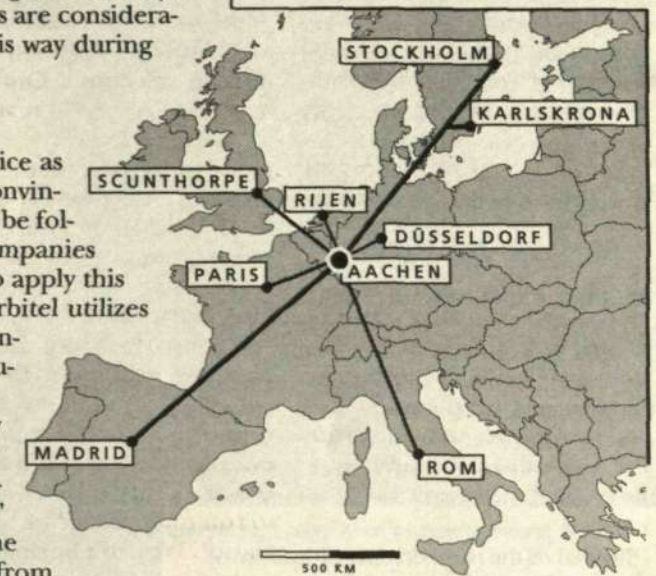
With Aachen as the hub in the network and the European MLC's as spokes, EDEN is a very effective distribution network. It is also used by numerous smaller companies, suppliers and others, not indicated on the map here.

Every morning, trucks gather at Time Shuttles ware-house in Aachen. Later the same day, they all return home, now with a fresh load of Ericsson cargo.

Video-conferencing in the Multi media world

A videoconference with colleagues in Paris and New York directly from the PC in your office. This is the latest in multimedia.

Sales of these products will begin early next year.

IsoENET is the name of the new standard, and in March at the giant CeBIT computer show, Ericsson and National Semiconductor generated considerable attention by being the first to demonstrate an isoENET system.

Global multimedia and videoconferences directly from the office will soon be a reality. The opportunities for working more rapidly and efficiently are of course tremendous.

Instead of the cumbersome procedure of booking time in a videoconference room, you sit at your desk and click on the names of the appropriate persons in the telephone list that you have set up on your PC, and a three-way videoconference, for example, is immediately set up with colleagues in New York and Paris.

Mounted above each PC is a small video camera and a microphone. All conference participants – the theoretical limit is 16, but practical considerations limit the number to 5 or 6 – can see each other simultaneously in a window on the display and can discuss a common document, drawing, etc. shown in another window.

Full participation

During the videoconference, everyone can work actively with the document using one of three general methods: shared pointer, shared whiteboard and shared screen.

Shared pointer means that the mouse pointer is shared and that the person holding down the mouse button is the one who controls the display.

With a shared whiteboard, participants can place an image, a photo, a drawing or some other object on the board, but thereafter, the object cannot be manipulated.

A shared screen means that everyone can manipulate the data on the screen but that only the image is manipulated. The actual data are not transferred. A normal telephone line in an Integrated Services Digital Network (ISDN) is used for communications.

Multimedia

Videoconferencing as described above provides an excellent example of how multimedia can be used. The general definition of multimedia, however, is the combination of speech, data, video and sound in a single terminal and a single system.

IsoENET is a multimedia technology primarily intended for large and medium-sized companies, particularly international companies, since isoENET can handle multimedia communications in both local networks and the digital ISDN network.

IsoENET is a network standard for multimedia that is expected to be approved this autumn by the IEEE 802.9 committee. The fact that it is an open standard may be decisive for its future. Many companies have invested heavily in local telephone networks, local data networks and even local video networks. With isoENET, these can be integrated to support new multimedia functions.

High quality

A critical factor with regard to video and interactive communication is that the communications link should provide sufficient quality so that the service is perceived as pleasing by users. Videoconferencing is normally characterized by jerky images, which are not acceptable and can even be distracting, if the picture and sound are not synchronized.

The multimedia technique used by isoENET is called real-time transfer, meaning that the communications link is circuit-switched in the same manner as an ordinary telephone call, thus guaranteeing an open line for the duration of the call. This differs from data communications methods that normally break the data into packets. This is economical, but transmission is vulnerable to sudden surges in traffic, resulting in noticeable delays.

The only delays introduced by isoENET are those attributable to coding of the video signal, which is done to reduce data volumes. However, these delays are controlled and synchronized in the network.

Two networks in one

For multimedia, it is important that video and images, which require vastly greater capacity than normal data files, can be transferred without blocking the network. (A single A4 page of text does not require more than about 500 bytes, while a four-color photo may require 50 MB, that is 50,000,000 bytes.)

The solution to this problem is to supplement a standard Ethernet network with a capacity of 10 Mbits/sec with a 6 Mbits/sec real-time multimedia network. Despite the fact that the two networks are integrated and use the same cable, they are independent of each other.

In isoENET, fixed time slots are allocated to multimedia communications, which guarantees transfer in real time. Multimedia retains its channels, regardless of variations in data communications.

Fixed channels

Because the multimedia net has a bandwidth of about 6 Mbits/sec, this means that it consists of a total of 96 so-called 64 kbits/sec B channels. (A B-channel is a bearer channel, which is one of the standard ISDN channels.) Acceptable quality for video communications requires six B-channels, which corresponds to 16 possible voice calls.

A user who wishes to open a video conference, requests the number of channels needed (6, 12, 18...96), which are allocated by the exchange.

While a video conference is in progress, the user owns the allocated bandwidth, regardless of what other users are doing.

Although there is one complication, it is not in the local network, in which each user has a connection that guarantees capacity for speech, data and multimedia. Instead, the complication relates to the link to the wide-area network (WAN). In order to obtain full multimedia capacity, not only in the local network but globally, the company must pay for more ISDN channels than are currently needed for conventional telephony.

The user

Multimedia users can continue working on their PC or workstation as usual. Existing cabling of type 10BaseT is able to handle multimedia using isoENET.
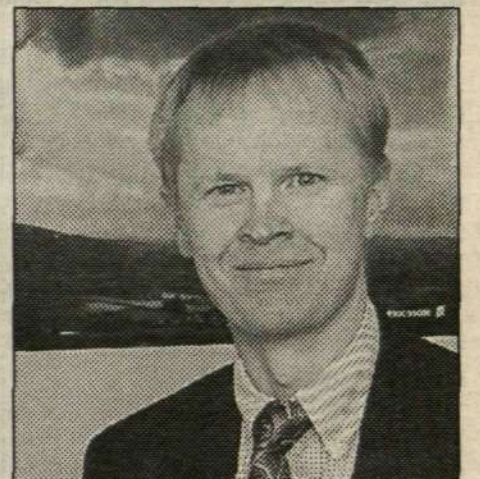
"The technology of the future calls for cooperation", says Mikael Halén at Ericsson Business Network AB. As for isoENET, it is a result of the cooperation between Ericsson and National Semiconductor, world leading supplier of chips for, among other things, the local area network Ethernet.

Few changes are required. The Ethernet module in the broadband module (BIM) must be replaced with an isoENET module. The user also needs a new isoENET card and a CODEC (compression/ decompression) card in the PC.

A small video camera, a microphone and a speaker are also required for videoconferencing. This equipment is inexpensive, with a total cost not exceeding SEK 2,000.

No limits

Many people wonder at times if technology does not race along at its own speed without consideration for what users really need. Do we need video conferences in which participants can see each other? Video telephones have not been a great success.

Others prefer to see the future potential. For business, multimedia will probably be

Multimedia solution

A practical multimedia solution based on isoENET could look like this: The isoENET is used to connect three LANs (Local Area Networks). Links between the LANs are provided by ISDN (Integrated Services Digital Network), the modern digital network that is now being rapidly implemented throughout the world. Today, users in most locations in Europe already have access to ISDN.

The LAN could include Ericsson's MD110 subscriber exchange, but isoENET is an open standard which supports the connection of virtually any PBX. However, with its distributed architecture, the MD100 is particularly well suited for business communications.

The isoENET implementation in our example is based on MD110-BPN, the broadband network for business communications developed by Ericsson Business Networks AB.

In order to manage ISDN signaling between multimedia workstations and the wide-are network, Ericsson has developed a new type of call server, which is based on Ericsson's own technology and the company's new programming language Erlang. The local BPN network is constructed using fiber optic cable with a very high data transfer capacity of 100 Mbits/sec.

Connected to this cable are BIMs, which are modularly designed units that are also connected directly to each workstation. Users working an Ethernet LAN have an Ethernet module in the BIM, while users working on a Token Ring LAN or from a terminal have modules for these systems. Multimedia users also have an isoENET module.

In the MD exchange, even telephone lines are connected to the BIMs via the Line Interface Modules (LIMs) used for voice calls.

Two roads to multimedia

Should multimedia be developed from telephones or computers? Which is the most economical?

A circuit-switched isoENET implementation entails significant initial costs, but costs decrease as more users are added.

An implementation based on existing Ethernet equipment would entail little or no expense initially, but as the number of users increases, the network load increases, making increasingly more expensive network upgrades necessary.

necessary within the next few years if a company is to remain competitive. Multimedia technology in general will revolutionize many forms of human activity.

Engineering students in Stockholm and Paris will be able to see a lecturer in California in a live, interactive transmission.

Real-estate agents or travel agents will conduct sales in an entirely new manner. Information in the form of pre-recorded videofilms will be stored on servers that allow customers to browse through the images.

Multimedia will also be used in education and to give hospitals the ability to consult specialists through videoconferencing. The possibilities are limitless.

Text: Lars Cedeerquist
Photo: Thord Andersson

"No" is to assume a heavy responsibility

"If I were a Swede, I would have a sense of uneasiness being outside the European cooperation," says Martin Bangemann, who is responsible for industrial matters on the EU Commission.

Martin Bangemann on the EU Commission in exclusive interview for Ericsson Contact:

"Sweden, and a high-technology company such as Ericsson, risk becoming isolated from the global political and technological development if the country remains outside the union." This is a statement by Martin Bangemann, who is responsible for industrial matters on the EU Commission. He is one of the key figures in the changes being made in Europe's economic community.

What advantages would Ericsson gain if Sweden becomes a member? At present, we are included only in the EES agreement.

"The EES agreement is already important, but it is insufficient for exerting full influence on decision-making within the EU. This is of particular importance for Ericsson, a company which participates in research and standardization, and conducts marketing internationally.

"As soon as an economic issue develops a political background, it is crucially important to be able to operate from a political platform in order to protect one's economic interests. And this is what member countries obtain through membership.

"Close political cooperation requires being "a member of the club." Sweden could participate in such a cooperation, particularly if the Nordic countries are considered a unit, with geographic proximity and common interests.

Carries weight

There is presently a concern among the employees of the consequences of membership. How should we go about convincing them?

"If a company is totally integrated in an economic cooperation, this works strictly to its advantage. All who work for this company share in the benefits.

"It is our conviction that the EU, particularly within telecommunications, carries considerable weight in the relationship between Europe, the U.S. and Japan. An individual country, even one that is well-developed and technically sophisticated such as Sweden, would have difficulty making itsself heard.

"The economic trend is becoming increasingly global, with politics moving in the same direction. If one desires to be a part of, and to influence the process, it is necessary to belong to one of the global players. Europe is such a player. Alone, Sweden is not sufficiently strong to become a global player.

Safer investment

At workplaces, people sometimes perceive the decision-making organs in Brussels as being far away, and there is a concern that resources may be removed from Sweden.

"Not becoming a an EU member could result in numerous companies being tempted to move from Sweden, since the advantages of membership that I have described are obvious for any investor. An investment in an EU member country is much safer than in a country outside.

"If I were a Swede, I would have a sense of uneasiness being outside the European cooperation, due to all the cultural and economic ties with Europe. Switzerland is an example; the only EFTA country not to have accepted the EES agreement. Increasingly more is being heard concerning the negative effects of this decision. For example, Swiss are being rejected as leaders, and even members, of cooperative research projects. The reason offered is that

"they are not a part of the European cooperation." This, regrettably, is one of the consequences of the decision.

"But I prefer not to use threat arguments to induce someone to vote yes. All are free to choose. And each must accept the consequences. Saying no is to assume a heavy responsibility! And this would mean isolating Sweden from the rest of Europe in a way that had never occurred previously.

Distance means nothing

What significance would the transeuropean networks have for Sweden if it becomes an EU member?

"The European network is much more than a network. The new technology is utilized by private individuals, companies and the public sector, changing the life of society as a whole. People say that Luleå, for example, is far from Brussels. But in the modern information society, distances mean nothing. An architect from Luleå, who is building a house in Salamanca, can do so while remaining in Luleå.

"It is also a matter of education, which is important for people living in remote areas. In such areas, people are compelled to refrain from studying at the university because they can't afford to move from their home localities. All this is in transition and, accordingly, our conviction is that the information society and the European cooperation are interdependent.

"An information society cannot exist strictly on a national basis. This is nonsense. By definition, it is a global system. Europe plays a key role in the creation of this new system.

"Accordingly, and particularly if I were part of the Ericsson organization, I would want to be a European, not because both words begin with "E," but because both more or less belong together.

JACOB SCHULZE

VACANCIES
AT ERICSSON

This is a selection of vacancies within the Ericsson corporation. They are published in the electronic News system, wich is being updated once a week. For further information about advertising here, contact Birgitta Michels at Ericsson Events, HF/LME/A. Phone +46 871924 18. The next issue will be published at the end of June.

Ericsson Radio Systems AB, Kista

MANAGER, MARKETING RUSSIA/C.I.S

We are now looking for a Marketing Manager for RMOA activities at ECR, our new local company in Moscow. You will report to the BR manager, who has been recruited recently. The russian market offers challenges and will likely show quick changes and rapid growth. During a short period we have contracted several AMPS/D-AMPS systems. Our system in Moscow is now in commercial service and serves as an important reference in our marketing.

Main tasks:
- Build-up of customer contacts and develop a marketing function for AMPS/D-AMPS
- Technical and commercial presentations
- Preparation of tenders
- Negotiate and finalise agreements
- Prepare budgets and forecasts
- Prepare and carry out marketing strategies

Contact: Håkan Jonasson +46 8 757 28 42 Application to: KI/ERA/A/HC Ulla-Britt Jansson

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Ericsson Radio Systems AB, BA Radio Communications, China

IMPLEMENTATION SUPPORT EXPERTS

We are establishing a new function within our Operations organization in China which will be responsible for support of the implementation of mobile systems. A high level of system competence is required for both Switching and Radio to be able to support both old and new mobile technology. We need to recruit a few experienced experts in these areas with an interest in longterm assignment (minimum one year) in China. The positions will be based in Beijing.

The persons we look for shall have extensive competence in RBS 883 and 885, or extensive competence in AS (installation testing and trouble shooting) and AS methods and acceptance.

Contact: Dan-Erik Grobecker in China, Memoid ERA.ERADG, Hans Falk, 08-7571402, Memo .ERAHFA, Magnus Ask, 08-7197481, LMEMASK.

Ericsson Telecom AB, Network User Products, -T/ETX/LL/NL or Design Centre Nynäshamn, NY/ETX/LL/D

LOCAL NETWORK GOES MOBILE

We are looking for designers and testers to work within the area of Cordless Terminal Mobility (CTM). CTM is a concept by which subscribers are provided with mobility within a limited area (eg a city centre) using the DECT standards. This represents a new area for Ericsson and it is believed to have a considerable market potential.

We are now in the process of establishing a project to implement our first version of CTM. The team so far consists of a few young, dedicated individuals who enjoy breaking new grounds. We would like to strengthen our team with experienced AXE10 soft- ware designers and testers. Previous participation in one development project is a minimum. Experience from mobile telephony is a merit, but not a requirement. Since we are a small team, you are expected to adopt an overall view of the system, while working with the details - a unique opportunity to be part of something new and exiting!

The positions are open both in Älvsjö (-T) and Nynäshamn (NY). For location Nynäshamn, the first few months should be spent in Älvsjö.

Contact:
Nynäshamn - Ingrid Östberg, NY/ETX/LL/D, phone 08-52063225, Memo: ETS.ETSINST.
Älvsjö - Björn Hallan, T/ETX/LL/NL, phone 08-749 6882, Memo: ETX.ETXBNHN.
Human Resources - Susanne Sundling TN/ETX/LL/H Phone 08-719 8210 Memo: ETXT.ETXSUSU

Ericsson Radio Systems AB, Kista

CMS 88 SYSTEM CHARACTERISTICS

The RMOA system unit in Kista is responsible for CMS 88 (AMPS, TACS & D-AMPS) system characteristics. Examples of system characteristics are capacity, processor load, delay time and link throughput.

The work comprises investigations, simulations and calculations as well as collecting feedback from test systems and commercial operation.

You are interested in system analysis and/or performing measurements in commercial systems. You hold a Master's degree and have at least five years of relevant experience from at least one of the areas telecommunication, AXE, radio or OSS.

Contact: Osborn Hogevik, 08-7573379 or Ulla-Britt Jansson, personel, 08-7573352. Send short CV to Memo ERARMOAA.

Ericsson Hewlett - Packard Telecommunications, Västberga/Mölndal

PROCESS MANAGER

Our mission is to deliver our newly formed foundation called the Large Building Block (LBB) for the TMOS family of products. The LBB is based upon a large number of Third-Party products and consists of both hw and sw. As our work is mostly cross-functional we will be based both in Stockholm and Mölndal. You will be responsible for defining, optimizing and maintaining the LBB process, defining the relationship with the other processes in the EHPT organization, making sure the LBB Team follows these processes and thus provides the nescessary documents and approvals as requested by the organization and ensure the LBB team follows the high quality standard in EHPT.

You have a Bachelor or Master Degree in Computer Science or equivalent, experience in Process Management and Product Administration, knowledge in Quality Standards

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incl. ISO9000 and ability to communicate and coorporate in a crossfunctional environment.
Contact: Steen Skipper Rasmussen, 08-7194783, Memo EHSSKIP or Anette Oké-Brådman, personnel, 08-7198287, EHSAOKE.

Ericsson Hewlett-Packard Telecommunications, Västberga/Mölndal

PRODUCT MANAGER

Our mission is to deliver our newly formed LBB Team unit (Large Building Block) for the TMOS Family of products. The LBB is based upon a large number of Third-Party (TP) Products and consists of both hw and sw. You will be responsible for maintaining involvment to ensure provisioning of the Standard LBB Release product, define the TP product components and their versions, lead the projects of verifying the components, coordinate with development projects and with the EHPT TP suppliers, provide the EHPT and Ericsson with product information and manage the LBB product in its total product life cycle.

You have a Bachelor or a Master Degree in Computer Science or equivalent, experience in Release Management, in all aspects of Product Life Cycle handling and in Project Management, business awareness and understand the technology development in the Telecom and Computer business.

Contact: Steen Skipper Rasmussen, 08-7194783, Memo EHSSKIP or Anette Ok` Brådman, personnel, 08-7198287, EHSAOKE.

Ericsson Radio Systems AB, Kista

STAFF FOR MOBILE TELEPHOINE SYSTEM, GSM IN SOUTH AFRICA

MTN is one of two operators in South Africa and in hard competition with Vodacom to win the market. ERA has implemented a GSM system with 7 switches going into operation with 50,000 subscribers from 1st of June. We need O&M staff to support them during the first 4 months of operation.

You will be seconding MTN's technical staff. We are looking to fill two positions, one based at the TMOS site in Johannesburg, the other at the MSC/BSC site in Durban. We also need In-House support based in MTN's premises

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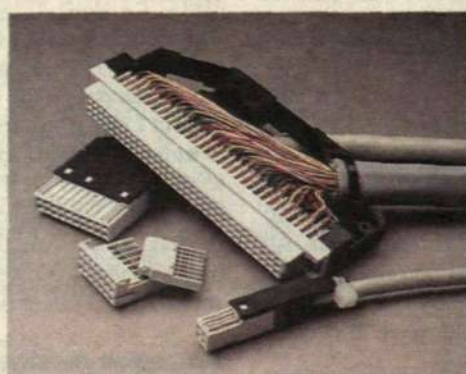
BURNDY IDC CONNECTORS

BURNDY IDC MACHINE

SOURIAU/BURNDY PRESS-FIT CONNECTORS

MILLIPACS™ 1 (2 mm spacing)
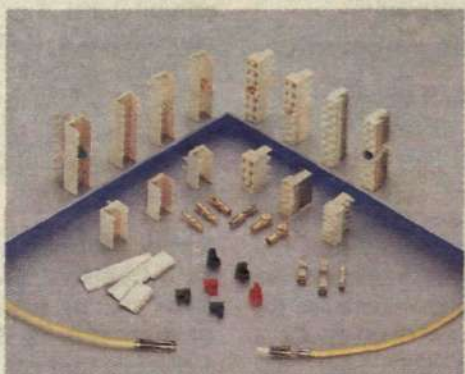
MILLIPACS™ 2 (2 mm spacing)

SOURIAU FIBRE OPTIC CONNECTORS

FCI connects the world of telecommunications.

Framatome Connectors International is one of the world biggest manufacturer of electrical connectors. Our assortment is one of the broadest in the market. We have connectors for telecom, computers, heavy and light industry, aircraft, military, marine, nuclear plant, automotive, consumer electronics and electrical power. We have the resources to offer you either a standard connector or a customer designed solution.

Australia	61 (2) 725 52 88	Germany	49 (211) 92 540	Japan	81 44 210 16 12	Sweden	46 (8) 532 56 330
Belgium	32 (2) 242 33 70	Great Britain	44 (582) 47 57 57	Mexico	52 (5) 576 23 00	Switzerland	41 (42) 32 14 34
Brazil	55 (11) 514 68 88	Hong Kong	852 510 81 31	Netherlands	31 (10) 459 63 99	Taiwan	886 (2) 362 35 80
Canada	1 (416) 757 87 61	India	91 (484) 310 132	Singapore	65 749 12 32	U.S.A.	1 (203) 838 44 44
France	33 (1) 39 49 21 83	Italy	39 (11) 451 96 11	Spain	34 (3) 771 40 12		

FCI
FRAMATOME CONNECTORS
INTERNATIONAL

together witn the their tecnical staff. You will support MTN in technical matters regarding the GSM system which comprise the nodes MSC/BSC/AUC/EIR/TMOS/BIP/VMS/RBS200&203. Your knowledge in the SS-Node is essential and you have to be familiar with signalling. You are open-minded and willing to co-operate. Duration will be 2 months starting ASAP. You should have minimum a B.sc or equivalent. We also will need a strong and competent Field Support centre to support this important market.

We are looking for a SS- and System-expert on a long-term contract. The system comprise nodes as above. You have worked the last two years with similar assignments and have good knowledge of GSM.

Contact: Lars Skoglund, 08-7573653, Memo ERASKOG or Fredrik Wijkander, +27 11 3143842.

Ericsson Telecom AB, TN

YOUNG SOFTWARE DESIGNERS

We are looking for newly qualified engineers to begin a career in software development in August. We develop Network User Product software for local exchanges, eg. Telia "Plus" services. This is a highly profitable part of AXE development.

All types of assignments are available within software development (system, design, test, method...). You can choose to have a continuously varied technical development. There are also many possibilities to work internationally, including travelling for short or long periods. Much freedom and flexibility for individuals/teams to meet their goals is encouraged.

Contact:
Per-Ivan Selinder, TN/ETX/LL/NI, Phone: 08-719 8249, Memo: ETXT.ETXPIS.
Johan Agnestig, TN/ETX/LL/NG, Phone: 08-719 9042, Memo: ETXT.ETXJOAG.
Susanne Sundling, Personnel, TN/ETX/LL/H, Phone: 08-719 8210, Memo: ETXT.ETXSUSU

Ericsson Radio Systems AB, BA Radio Comm. China

MSC CONSTRUCTION /TEST SUPERVISORS

For our expanding business in the Peoples Republic of China we need to recruit a number of MSC Construction Supervisors and MSC Test Supervisors. The Construction Supervisors will be responsible for MSC installations for a fixed number of sites. The MSC Test Supervisors will have same responsibilities for MSC testing.

The persons we look for must have at least a few years experience in construction or testing of MSC. The Supervisors will be based in Beijing, Nanjing or Guangzhou and the job includes a lot of travelling in China.
Contact: Hans Falk, 08-7571402, Memo ERAHFA, Magnus Ask, 08-7197481, LMEMASK or Bernt Hult in China, ERAHULT.

Ericsson Radio systems AB, Appl. Center for Mobile Switching & Radio Networks, Mjärdevi, Linköping

DESIGNER/TESTER CMS30/MRS

We are responsible for implementation of Radio Network features for PDC (Japan) in Linköping and are now looking for experienced AXE10 designers/testers.
Contact: ERA.ERAGEL Göran Elebring (design) ERA.ERAPOS Per-Ola Silversved (verification). Send your application with c.v or resume to Ericsson Radio systems LM/ERA/Z/HS Application center for Mobile Switching & Radio Networks BOX 1248 58112 LINKÖPING

Ericsson Radio Systems, Information Systems, Richardsson, Texas

Business Systems Analyst

Brief description: Support LAN-based operating software and the hardware on which it resides. Support LAN-based application packages, both commercial and ERU developed software. Analyze business problems, develop cost-effective state-of-the-art solutions, document and implement them in a multi-user micro-computer environment, consistent with ERU IS/IT policies.
Education/experience: Bachelor's degree in Computer Science or equivalent work experience. Four or more years' related work experience with a multi-user micro-computer environment. Experience in LAN hardware and software integration.
Skills: Knowledge and support abilities for an integrated LAN consisting of PC hardware, servers, operating software and application software, preferably microsoft LAN manager and NTAS. Knowledge of LAN and WAN links. Excellent problem solving and analytical skills. Good oral and written communication skills.
Contact: Jim Jinright, ERU, Richardsson

Ericsson Telecommunications, China

SUPPORT PERSONNEL - CHINA

A number of Support positions are available within the Ericsson Support Office (ESO) in Beijing and the three provincial Field Support Offices (FSO) in Guangzhou, Shanghai/Nanjing and Dalian. The total Support organization will for 1994 consist of some 150 persons of which 60 are expatriates.

The candidates for the different positions shall have 4-5 years experience in AXE based systems such as Local, Gateway OPS or MTX as well as proven ability to solve complex technical problems and with trouble shooting experience. Good knowledge in procedure/methods for AS/CN-A/AC-A and ASR activities are other required qualifications.
Contact: Henk Werkman in China, Memoid ETC.ETCHEWE KI/ERA/LDH Hans Falk, Memoid ERA.ERAHFA, Tph +46 8 757 1402 HF/LME/DK Magnus Ask. Memoid LME.LME-MASK, Tph +46 8 719 7481

Ericsson Radio Systems AB, BA Radio Communications, China

PROJECT MANAGERS - CHINA

For our expanding business in the Peoples Republic of China we need to recruit a number of Project Managers who will take responsibility for all implementation activities in a Province in China. You will be involved from contract negotiations until final acceptence in accordance with the Core 3 concept. Teh execution of the projects will be done in close cooperation with the Marketing Key Accounts Managers.

The persons we look for must have previous experience from Inter- national Project Management positions. If required, the successful applicants will be given adequate additional training in Product knowledge etc...

We will offer minimum one year assignments in China with family or as single status.
Contact: Hans Falk, 08-7571402, Memo ERAHFA, Magnus Ask, 08-7197481, LMEMASK or Bernt Hult in China, Memo ERAHULT.

Ericsson Radio Systems AB, BA Radio Communications, China

RBS CONSTRUCTION/ TEST SUPERVISORS

For our expanding business in the Peoples Republic of China we need to recruit a number of RBS Construction Supervisors and RBS Test Supervisors. The Construction Supervisors will be responsible for RBS instal- lations for a fixed number of sites. The RBS Test Supervisors will have same responsibilities for RBS testing.

The persons we look for must have at least a few years experience in construction or testing of RBS. The Supervisors will be based in Beijing, Nanjing or Guangzhou and the job includes a lot of travelling in China.
Contact: Hans Falk, 08-7571402, Memo ERAHFA, Magnus Ask, 08-7197481, LMEMASK or Bernt Hult in China, ERAHULT.

Ericsson Radio Systems, ERU/Engineering, Richardsson, Texas

Network Engineer

Brief description: The Network Engineer performs design for cellular systems with guidance from Senior Network Engineers and provides technical support to Sales, Marketing, Customer Support, and Operations.

The Network Engineer is responsible for determining optimum network configurations of multiple cellular switches, and preparing technical documents regarding transmission equipment and medium. This position will perform traffic analysis, troubleshooting transmission-related problems and preparing testing specifications. Also, the Network Engineer will document, write and maintain post-processing software.
Education/experience: Requires 2 to 4 years' experience (MS Degree would be considered to partially satisfy experience requirements). Should have extensive knowledge of programming post-processing applications in C on both DOS and UNIX platforms. Prefer knowledge of transmission concepts, traffic engineering, cellular telephony and data protocols.
Education: BSEE or BSCS.
Skills: Ability to document, assemble and support installation guidelines and procedures; ability to coordinate with other Engineering disciplines and field organizations on project tasks; excellent interpersonal skills and good oral and written communication skills; ability to provide technical assistance to customers; ability to travel; valid driver's license; knowledge of digital technology, SS7, X.25, and ESF preferred.

Contact: Rob Vestal, ERU, Richardsson

Ericsson Australia Pty Ltd, Melbourne

BSC CONTRACTOR

The position is in the FSC supporting Telecom's GSM network. Telecom are one of the world leaders in running a mobile network. Their AMPS network has the largest contiguous coverage and their GSM network is expanding rapidly and will surpass the AMPS network within the next few years. Also in the GSM network here we have achieved a major increase in our share of the market by replacing the Alcatel system in Sydney and Brisbane over the past 6 months. The work involves testing of BSC CNAs including major packages like CME R4. Customer Trouble Report analysis and technical investigations all involving close contact with Telecom will be a major component of the workload. We are currently breaking new ground in establishing a close strategic working relationship with Telecom. This encompasses all areas of support, delivery and implementation of new functionality.

The position is within a small motivated support team requiring someone with good inter-personal skills and an enthusiastic and outgoing attitude.
Experience required: General AXE System Background with at least one year experience in working with BSC/BTS preferably in an operational/support/ testing role. A good overall view of the GSM system is required. Good knowledge of the A interface is desirable as the Ericsson MSCs are connected to both Ericsson and Alcatel BSCs. Radio and cell planning knowledge would be advantageous.
Contact: Connie Malligeorgos, +61 3 301 1864, Memo EPACMM.

PCS/DCS 1900 Opportunities at EXU

Ericsson Network Systems, headquartered in Richardson, Texas, is playing a key role in the support of the PCS marketplace in the U.S. In fulfilling this role, EXU is establishing a Technical Assistance Center group for PCS/DCS1900 support. This group will be responsible for field support, installation support and configuration management for the PCS/DCS1900 system in the U.S. As a result, EXU currently has opportunites for individuals with in-depth knowledge of the AXE hardware and software, GSM/PCS and UNIX/TMOS. Specific opportunites include:

TAC Area Manager

– Responsible for all support activities for the DCS1900 application including field support, installation support and configuration management. The responsibilities include in-service performance of the DCS1900 switches in the field.

Technical Support Specialist

– Handle customer CSRs to perform initial analysis and to collect technical data to resolve problems. In-depth knowledge of GSM (preferably other cellular systems), with particular emphasis on support and trouble shooting activities. In-depth knowledge of AXE structure with SW specialization in PLEX/ASA.

Installation Test Supervisor

– Responsible for planning and supervising the installation and testing of the switch SW and HW for DCS1900. Comprehensive knowledge of SW install- ation and test, planning test phases, identifying SW faults, and switch applications.

Test Specialist

– Responsible for the technical support of AXE installation test activity of DCS1900. Responsible for developing and maintaining system test documentation for application systems, trouble shooting and investigation of system problems.

Maintenance Engineers

– Responsible for taking customer CSRs and performing analysis, collection of technical data and problem resolution. Ability to resolve SW, HW and DT issues. May work on implementation methods for new or changed products, including new systems.

These assignments require creativity, and the ability to take initiatve. Strong ability to communicate both verbally and in writing in English is required.
Contact: Betty Magness, EXU/HR/ER, Memo EXU.EXUBLM.

Ericsson Ltd, UK Mercury and Cable & Wireless Business Group

Strategic Marketing and New Business Development Consultant.

In order to support the aggressive plans of the Guildford based Mercury and Cable & Wireless Businees Group we need to recruit an additional person with particular skills. These skills includeknowledge and experience of AXE10 switching access and transmission products, experience of International marketing and business strategy.

This newly defined role requires a person that can look at existing and potential Cable & Wireless Networks and see business opportunities through innovation and concept thinking, can put a convincing business case together and delivery supporting customer presentations.

The Business Group is aiming high with a team that is committed to achieve 25%(500Mpounds sterling) market share of Cable & Wireless by 1999 for the Ericsson Group.

If you think you have the skills required, and the necessary commitment that this challenging role demands, please contact Fred Christmas at ETL/R.

ASM Manager.

To be accountable and responsible for Application System Modification activities for the following Systems: CMS 88, CME 20, OPS, Transit.

Ensure that the responsibilities of the ASM section are performed to agreed standards, budgets, contracts, procedures and criteria.

Previous experience or on the job training may replace the need to attend a formal training course. Minimum HNC/HND in Electrical Engineering/Telecommunications or equivalent.

At least 6 years experience of working in the Telecons industry where at least 4 years has been working for Ericsson in a Technical/Technical Management capacity in the AXE field. During those years at least 2 years of Management/-Supervisory/ Project Management experience.
Contact: N Urquhart ETL/R if you think you have the skills to fulfill this post.

Ericsson Mobile Communications AB, Kista – INTERNATIONAL ASSIGNMENT CHILE

ECS is opening market operations in Chile for its wireless mobile data system MOBITEX.

TECHNICAL SALES SUPPORT

Main tasks: local customer contact in Chile, sales support as a technical expert, customer contact in Latin America regarding technical issues.

You have good knowledge of the Mobitex system and general experiences of data communication. Preferably you know Spanish. The successful candidate will be offered minimum one year of assignment in Chile.
Contact: Jonathan Mytnik, +46 8 757 1721, memo ECSJMYor Eva Jansson, +46 8 757 1459, ECSEVAJ.

Ericsson Australia Pty Ltd, Melbourne

ENGINEERING POSITIONS

As a result of Ericsson Australia's (EPA) recently formed Strategic Partnership with Telecom Australia and the associated new business, there are vacancies for various engineering careers in the Engineering Services Unit.

All positions require the applicants to possess a relevant tertiary qualification in telecommunications or computer science fields and/or extensive & practicable work experience with Ericsson technologies (AXE). Excellent English verbal and written communication skills are a must. It is desired that successful applicants accept permanent placings under local conditions (this may require that you immagrate to Australia), although long term contracts may be negotiated. Applicants MUST conform to the minimum prerequisites outlined :

INSTALLATION ENGINEERS (PE)

To perform exchange design and documentation using PLEASE IE tools including checking and verification of all subcontractor inputs/outputs from engineering processes. Requirements are AXE system and product knowledge, detailed knowledge of PLEASE/UNIX, training in IE processes and possession of excellent customer skills.

DATA TRANSCRIPT ENGINEERS

Development and production of AXE exchange Data Transcript using DT tools including checking and verification of all sub-contractor inputs/outputs from Telecom DP&P process. Applicants are required to possess AXE system knowledge (Telecom Network), minimum of 2-3 years AXE Data experience, be trained in all DT tools and have excellent customer skills. Technical audit experience is desirable.

DATA TRANSCRIPT - PROCESS AUDITORS

Development and production of AXE exchange Data Transcript including regular auditing of subcontractor data production processes in regions of Telecom to verify process integrity and quality. Applicants are required to possess AXE system knowledge, detailed knowledge of Data Transcript process, skilled in the use of all DT Tools and have excellent customer skills. Technical audit experience is desirable.

Applications must be in writing and addressed to Dean Oppedisano, Human Resources Coordinator, Memoid EPA.EPADUO or BY POST: Ericsson Australia, P.O. Box 41, Broadmeadows, Victoria 3047, Australia. BY FAX - +61 3 301 1197

In the heart of Venice

Concealed behind the medieval, monastic facade, next to one of Venice's several hundred canals, is the center of the city's telecommunications.

There, in piously renovated premises dating from the 14th Century, are the AXE exchanges which serve 75,000 subscribers in the area.

Ericsson was a player in the Venice arena at an early stage. LM Ericsson already installed its first exchange in 1933. Soon, the system, then called AGF, covered 1,000 subscribers. There was

AXE in medieval monastery

a system shift in the early 1960s, with ARF being installed.

Venice's largest telecom revolution began in the early 1980s when planning of AXE was started, but it was not until the close of the 1980s that the system went on-line.

The apple of the Telecom company's eye

"All aspects had been studied in detail and minutely surveyed prior to going on-line," explains an obviously proud AXE maintenance technician, Manente Moreno, who has been involved for seven years.

"All eyes were on us here in Venice, since AXE was the leader in technical development on the telecom front – and still is today. A policy decision from the highest level of SIP, the Italian State operator, mandated that all aspects would function perfectly. A second, parallel exchange was connected simultaneously to serve as a backup unit and provide disruption-free service for consumers."

Venice's AXE system has functioned perfectly since it began operating in the late 1980s, according to one of the AXE maintenance technicians at the Italian government-operated SIP in Venice.

"However, the system has proven so fine-tuned and operates so reliably, that we will soon disconnect the second unit, which has been totally superfluous. Then, major savings will result in the form of reduced premises, personnel and operations costs."

14th century

The AXE exchanges are housed in a 14th Century monastery, which has been piously renovated according to the style of the period.

The monastery contains not only offices but also grandiose meeting premises where SIP's Board convenes at regular intervals. Major conferences are take place at a centrally located facility a stone's throw from the well-known St Mark's Palace.

From the window, there is a direct view of Venice's hundreds of narrow canals, lined with shining black gondolas, filled with colorful, camera-toting tourists.

Located on the next to top floor of the monastery are the AXE exchanges, which emphasizes the striking contrast between the picturesque boat life outside and the tranquil spiritual atmosphere in the medieval building, and the exchange room with its modern equipment.

Reinforced building

"Upon becoming aware that plans called for the building to house exchanges for 80,000 subscribers, the contractor ensured that the structure was strongly reinforced," Manente relates laughingly while leading a tour of the premises. "Of course, few non-specialists understand that one of the system's major advantages is its relative light weight and compactness."

Today, 75,000 subscribers are connected, with Venice's AXE technicians poised to meet the new requirements and challenges that are just around the corner.

Barone Gildo, who recently turned 58, has worked as a telecom technician at SIP for 37 years. He is one of the many technicians who has been around since the 1950s, when Ericsson's first exchange was installed in Venice. "It seems like only yesterday that he began working, not half a life ago," says Barone.

Five years of 'fussing over details' boost production

Lead time reduction (%)

— Procurement
– – – To customer
▬▬▬ Production

1991 — March -94 — Target -95
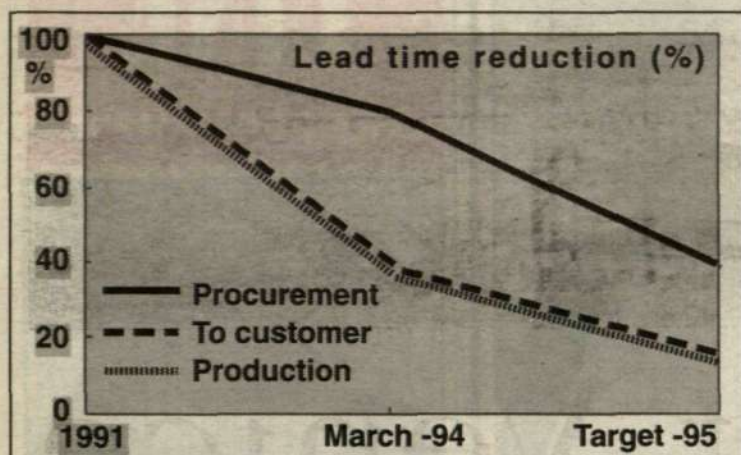
The lead times on which the improvement program focused were the lead time to the customer (which has been reduced by 60 percent), production lead time and the lead time for procurement to production facilities.

Improvement program at Ericsson Radio Access increases volumes tenfold

Continous improvements achieved by 'fussing over details' have raised the quality of deliveries of base stations at Ericsson Radio Access and Ericsson Radio's plant in Linköping. This has resulted in good relations with customers, which in turn has had an impact on important contracts, such as the large order received in February to supply base stations to Thailand.

"Cooperation between the customer, the marketing department and the plant is a prerequisite of the improvement program," according to Henrik Olesen and Hans Öström of Ericsson Radio Access.

The need for base stations for the NMT 450 and 900 mobile telephone systems increased during 1989. Radio Systems Sweden, as it was then known, which has since changed its name to Ericsson Radio Access, needed help with production and subcontracted the manufacture of certain components to Ericsson Radio's plant in Linköping. The project gradually came to involve the full capacity of the plant, which now handles all production of base stations for Ericsson's NMT systems.

Demanding goals

"When we started the project in February 1991, delivery quality was poor and the goals we had established seemed unrealistically demanding," says Henrik Olesen, marketing director at Ericsson Radio Access. As well as sales, the marketing department is also responsible for product management and operations.

The starting point was a 20-percent delivery precision rate to the customer, and our plans stipulated an improvement to 99 percent by 1995. By March of this year, we had reached 95 percent.

Good progress

"So we have made good progress towards our goal," says Henrik, explaining that the testing methods used are 'merciless' but necessary. Deliveries must be complete, and not even a single day's delay is acceptable.

The curves Henrik displays are proof that 'fussing over details' yields results. The volume of radio channels has grown from 3,000 in 1991 to 20,000 today, with a target of 30,000 for 1995. Production figures are equally impressive: the lead time has been shortened from 32 days to 13, with a target of 5 days for 1995.

"Cooperation between the customer, the marketing department and the plant is not only necessary but an absolute prerequisite," stresses Hans Öström, who works with logistics in the marketing department at Ericsson Radio Access. Goals are established, and progress is evaluated collectively. Outgoing deliveries are also checked one month in advance of the due date.

Shared commitment

One of the key elements of the cooperation is the commitment shared by all those involved. When customers visiting Ericsson Radio Access are shown round the Linköping plant, they become visible to production line workers. These visits are va-

lued both by customers and by plant employees, whose commitment is strengthened by them.

CARL

"It is thanks to CARL that we succeeded in shortening lead times and improving delivery precision," explains Anders Samuelsson, manager of Ericsson Radio's plant in Linköping.

CARL stands for 'Capital Rationalization at the Linköping plant.' The project continued for two years, starting in January 1992. It was a major project, involving new work patterns and new production control systems.

"When we changed our systems, we took a global approach and simultaneously introduced new work patterns," says Anders. "Training was an important factor in the project."

It takes time to change work patterns, and it was only at the

end of last year and the start of this year that all the changes began to yield results. Work patterns are more customer-oriented now than before.

Anders also stresses the importance of the cooperation with Ericsson Radio Access, particularly working jointly with the marketing department on long-term plans.

Supplier programs

The cooperation of suppliers is a prerequisite for shortening lead times and improving delivery precision. Accordingly, the purchasing department at the Linköping plant runs a special program for its suppliers, with whom closer integration is maintained now than was previously the case.

The targets set by the plant for lead times and delivery precision must be matched by a corresponding commitment on the part of the suppliers, who must also understand the demands imposed on them.

"It's not so hard to get started with an improvement program such as the CARL project. The hard part is sustaining the effort and maintaining the momentum until results are achieved.

The order received last winter to supply base stations to AIS in Thailand is a good indication that both the Linköping plant and Ericsson Radio Access are on the right track," concludes Anders.

Text: Gunilla Tamm
Photo: Björn Seger

"Ericsson guarantees high quality"

"The number of subscribers to our mobile telephone system is growing very rapidly. It is important that expansion should occur as quickly as possible, so it is essential for us to have a supplier who can produce large quantities in a short time," declares Wikröm Sriprataks, President of AIS Shinawatra Group in Thailand. "AIS is the country's largest private operator of a

mobile telephone system and operates the largest NMT 900 system outside the Nordic region.

"Ericsson's name is a guarantee of quality, and the company has been active here in Thailand since early in the 20th century. These were important factors when we chose Ericsson as our supplier of base stations. Your very high delivery quality was a

key element in our choice of supplier."

Rolf Granström is President of Ericsson Communications Thailand Ltd.

"It is not much fun having to tell a customer that deliveries will be delayed or incomplete. I need have no such fears as far as Ericsson Radio Access is concerned," says Granström. "Keeping your promises is a way of

showing respect for the customer. Ericsson has built up a very good relationship with AIS Shinawatra Group, largely as a result of the outstanding delivery reliability from Ericsson Radio Access.

"The excellent relationship was also an important factor when AIS chose Ericsson in January as the supplier of its GSM system."

"In my vision of the future of microelectronics, there will be sensors related to human senses and feelings," says Dr. Takashi Ishii.

An engineer's vision of more human technology

"Communication between people is not just a matter of information interaction. In my vision of the future of telecommunications, perceptions and feelings will also be communicated, almost like a telepathic transfer," says Dr. Takashi Ishii at the Microelectronics Research Center in Kista.

Takashi's first contact with Sweden was in 1975 and 1976, when he was a guest lecturer at the Microwave Institute in Stockholm. It was there that he met Bert Jeppsson, Senior Vice President, Components, and Professor Peter Weissglas. This was to be the first of many meetings.

"IC technology has been my main interest since receiving my degree in 1964, which was in mechanics, strangely enough. At that time. I worked at Mitsubishi, where we were discussing an extremely complex circuit with 1,000 million transistors on a single chip".

Japanese mistakes

"One day I made a typically Japanese mistake. I was engaged in a very intense discussion of the importance of selecting the correct material and process for beam lead technology, which is a kind of bond between the chip and the casing. I apparently mispronounced 'lead' as 'Read,' which is the name of a prominent researcher in microwave technology. My boss then thought that I was interested in microwave components and transferred me to that department.

This mispronunciation changed his entire professional carrier and was the main reason that he was subsequently employed by Ericsson in Sweden. The time he spent as a guest lecturer in Stockholm marked the start of his successful research on gallium arsenide transistors and optoelectro-

nic components. Bert Jeppsson was his greatest source of inspiration.

In spring 1984, Bert Jeppsson and Peter Weissglas visited Japan to prepare for an optoelectronics project to be conducted within Ericsson. Takashi, Bert and Peter, met again at Mitsubishi, and shortly thereafter, Takashi received an offer of employment in Ericsson's optoelectronics and microwave project.

Today Takashi works with competence enhancement in research and development at Ericsson's core business unit Microelectronic Systems Technology in Kista. He is also an expert in technical issues, following technical developments in Japan, but above all, he serves as Ericsson's spokesperson and project manager for the strategic alliance in microelectronics with the Toshiba Corporation.

Japanese relations

Japan has one of the world's fastest telecommunications networks. Advances in technology have progressed to varying degrees in Sweden and Japan. Japan is very advanced in hardware competence, while Swedish expertise in software and systems design is very advanced.

"A fundamental reason is the difference in mentality. Swedes are among the world's most logical thinkers and are very goal-oriented. The Japanese, on the other hand, are directed by emotions to a greater extent and work on the basis of a vision or an inspiration, which is tested until it functions. Both qualities are important to achieve balance in technology. Japan and Sweden do not compete. They complement each other," Takashi Ishii says.

"In order to meet future communication needs, a combination of the two ways of thinking will be required. A computer has logical, rational functions, but the human mind is not rational. We find it difficult to deal with the computer's rational functions and need to leave room for flexibili-

ty and human thought. This is becoming increasingly important".

Imitating human functions

What do we do when we construct entire systems on wafers of silicon and drive technical research and development to ever higher levels? Microelectronics is shrinking the world and bringing people closer together. What does microelectronics endeavor to accomplish and from what source do engineers derive inspiration for technological innovations?

"In my opinion, it's simple. We strive to imitate human functions and are becoming increasingly more knowledgeable in our understanding of human beings. The model is always human functions."

"The car has become as extension of the foot. A digital robot is similar in appearance to the hand. Today we concentrate more on central functions, such as the brain and the nervous system. A sensor is the equivalent of the eye. The sensor sends signals to a computer, and the eye send signals to the brain for an intelligent evaluation before activating the legs, the hands or the mouth. This is communication.

"In my vision of the future of microelectronics, there will be sensors related to human senses and feelings. In communication between people, not only concrete information will be transmitted. Understanding between people, between a man and a woman or between business associates, is based on perceptions and feelings. It is essential to receive the proper signals at all times in order to properly evaluate information and formulate an appropriate response. This is almost a telepathic transfer. For telecommunications to function optimally as a means of human communication, extremely sophisticated systems will be required.

Text: Inger Björklind Bengtsson
Photo: Anders Anjou

With the inclusion of TRIM in TQM, some people may think the time of TRIMming is past. Of course, nothing could be further from the truth! Do not put down those TRIMming shears but instead continue to pursue opportunities for improving efficiency in daily work.

When TRIM was integrated in TQM, it was undoubtedly because TQM is not merely a matter of improvement teams and yellow slips, but mainly a question of 'climate'. Creating a climate that is conducive to increasing efficiency and cost savings also creates a climate for continuous improvement.

There are virtually no limits on how much can be saved by trimming costs and finding more efficient work methods. Our own operations are a good example. Four years ago, internal magazines cost between SEK four and five million more each year than they do today. No budget increases have been necessary for the past three years. Despite this, the number of pages has increased, the number of issues of Contact has doubled, foreign distribution has increased sharply and we have allocated more resources for providing content.

The only cloud on the horizon is internal invoicing. The most expensive suppliers are internal. Personally, I feel that internal time charges that are many times greater than the actual cost of manpower, overhead, etc. must be questioned. There are corporate guidelines for determining internal prices, but they are not always followed. Some units instead seem to make comparisons with the cost of obtaining services externally and price their services accordingly. In my view, this is a practice that those who use internal services should not accept.

Therefore I believe that a serious discussion of internal invoicing is needed. Either internal invoices should be eliminated entirely, or prices should be set so that they exactly cover the cost of the resources that the purchaser utilizes. I, for one, do not want the services that I purchase from an internal supplier to subsidize other operations at that unit.