CONTACT

ERICSSON PUBLICATION FOR EMPLOYEES WORLDWIDE No. 8 1993

Out of Iraqi prison at last!

After 384 days in an Iraqi prison, Christer Strömgren, Leif Westberg and Stefan Wihlborg were finally released on September 22. A couple days later they were reunited with their families.

Pages 3, 6-7

We still need TRIM

Ericsson is sailing now with a fair wind. Still, TRIM work goes on as ever..

Pages 9-15

Fiber to the home

In Denmark, Ericsson joins in a field test with future tele technology for private subscribers.

Page 22

Telecom vital for EC

Telecommunication is an area with very high priority within the European community.

Page 24

We have something to offer Europe!

We live in a decade where Europe is going through unprecedented political and economic changes. These changes have a strong influence too on developments in telecommunications.

Sweden is now knocking at Europe's door, through its application for membership in the EC, but Ericsson has *been there for a long time now.* Contact spoke with Lars Ramqvist about his views on eventual Swedish membership in the European Community.

The common market and the resulting European union changes the entire picture of Europe. As for telecommunications, this means a huge liberalized and harmonized market. A market that offers exciting possibilities for companies that supply telecommunications equipment.

Our home market

Europe has always been an important market for Ericsson. Of our total turnover of some 50 billion kronor, Europe accounts for 60 percent. It is no exaggeration to call Europe "our home market." The EC accounts for 37 percent of this.

"This makes the EC our largest market by far. With the recent years' successes in Germany and Britain the EC's dominance in our business will be even more notable in the future," Lars Ramqvist predicts.

"I would like to identify our company as a "European" company in every sense of the word. And we have had our own companies in Europe for many years, more than 70 years, for example, in Holland and Italy. During the past ten years we have systematically strengthened our position in the EC. This was done through company purchases and market investments in many different forms.

"We have 17,500 employees in EC countries, and sales of close to 20 billion kronor a year there. In addition, we have manufacturing in nine different EC countries, so Ericsson has indeed taken root in the EC. In many ways we are well ahead of Sweden, which is only now seeking membership."

Many wonder

An important question, especially relevant in these times when Swedish unemployment is at a record level, is how will our very own company be affected if Sweden becomes a member, or not. We asked Lars Ramqvist for his views on this.

Is Swedish membership really that important for Ericsson? Doesn't the EES agreement provide more than enough so that Swedish companies will not be subject to discrimination in relation to companies with head offices in EC member states?

"When you stop to think about Swedish membership or not, you must of course bear in mind Ericsson's solid presence within the Community and that the EC, in many aspects, is already a home market. This relationship gives us a certain comfort, a reassurance against unforeseen events in the political arena.

"But at the same time it is also important to remember that Ericsson still has its head office and most of its base resources in Sweden. Hence, the company takes a positive attitude toward Swedish membership. We do so for very simple reasons.

"The internal market is a major opportunity for those who operate in it. For a company that like Ericsson is very dependent on the EC it is not good to be outside of it. The EES agreement makes it easier, but it gives neither Sweden nor Swedish companies and organizations any real influence in the European decision-making process."

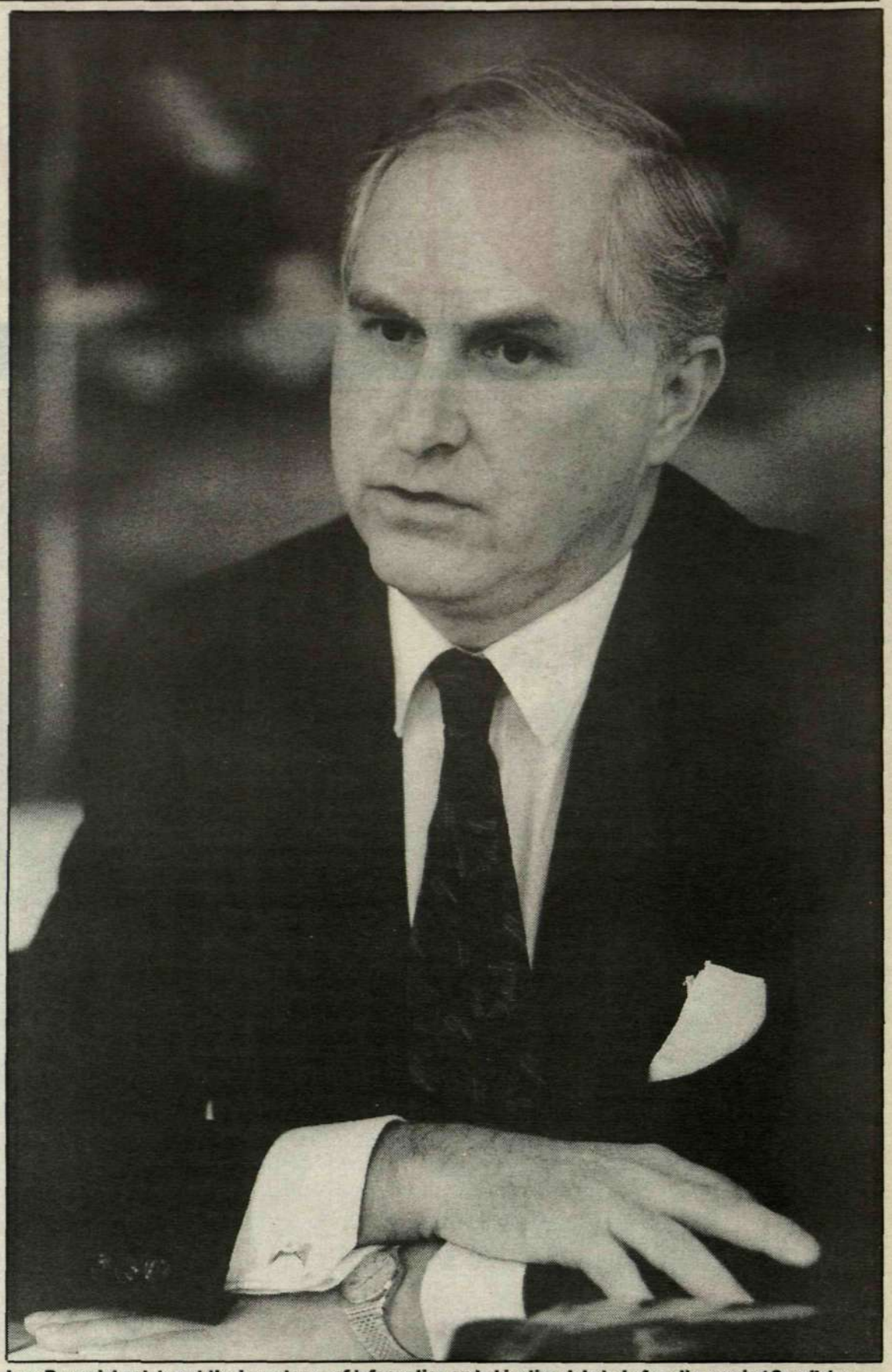
Lars Ramqvist also warns that the EES is not as stable as membership. An agreement is easier to tear up than is membership.

We can contribute

A common argument among the yes-sayers is that Sweden has a lot to give EC member countries. That the country with its experiences can share them in certain important areas where Sweden has progressed further than most of the countries in the EC. Lars Ramqvist feels that this reasoning also holds true for Ericsson as a company.

"Swedish membership will give us as a company greater possibility to contribute toward strengthening European collaboration in high technology and in this way reinforce Europe on the international scene. Ericsson's involvement in various RACE projects clearly indicates that Ericsson has the will to commitment. RACE is a number of research and development projects driven by EC request.

"I am convinced that Ericsson has a contribution to make to European development, not least when it comes to standardization work. Our branch, telecommunications, is a power center for innovations and developments and it plays a key role in social evolution – in the pursuit of a higher quality of life.



Lars Ramqvist points out the importance of information and objective debate before the coming Swedish referendum on joining the EC. He himself sees the EC as a guarantee for peace in our part of the world.

Seek knowledge

Even if he himself has his views on the EC issue clearly defined, Lars Ramqvist has a profound understanding for those who are in doubt. It is not easy to take a stand as a private individual in such a large issue as the EC still is.

In the coming months information about the EC and debate on membership or non-membership will intensify even more. The best way to tackle one's lingering doubt is to acquire more knowledge, Lars Ramqvist urges.

"The EC issue is far too important to be dismissed with sentimental arguments and political propaganda – regardless of which side it comes from. That's why we must try to sift out the objective arguments, study them thoroughly and then take a stand.

"And then one must take a stand not only on what Swedish membership means for Sweden and for oneself, but also at the same level on what it would mean for the country and its inhabitants to be outside of the EC.

Guarantee for peace

"The most meaningful, I believe, however, is the importance of EC for the stability in Europe. Regrettably, there are great problems in our part of the world even in this day and age.

Just think of the tragedy we are witnessing today in the former Yugoslavia and the unrest in Russia. It is only through collaboration that we in Europe can look to peaceful future evolution," Lars Ramqvist concludes.

Text: Lars-Göran Hedin

CONTACT

Publisher: Nils Ingvar Lundin

Editor: Lars-Göran Hedin, tel: +46 8 7199868, memo: LMELGH.

Editorial assistant: Pia Rehnberg, tel +46 8 719 78 69, memo: LMEPRG

Fax nr: +46 8 7191976

Distribution: Birgitta Michels, tel: +46 8 7192814. Memo: LMEBIMI

Layout: Nymedia.

Print: Aftonbladet Civil, Gothenburg, 1993.

Cover photo: Pressens Bild

CONTACT is published by:
Telefonaktiebolaget LM Ericsson
HF/LME/DI
S-126 25 STOCKHOLM.

HOME AGAIN!

Now Stefan, Christer and Leif long for their work

Without doubt Stefan Wihlborg, Christer Strömgren and Leif Westberg are the most widely known persons in the cantine at ERA in Kista on this Monday. Only a few days before the entire Swedish population could follow their homecoming out of captivity from Baghdad.

"When we got the word that we would be released, everything happened very quickly," they recall. "We got the news at three in the afternoon, and just about twenty minutes later we were outside the prison walls. We were preapred that it would all go very fast and we actually had our bags packed well in advance."

Now they just want to get back to work again, and clearly they mean working abroad. Soon, Stefan and Christer will be going to Kuwait, from where Stefan will take a vacation. Christer will finish his work down there and then follow some courses in Sweden. Vacation will have to wait a while.

Unreal

"How does it feel?"

"Well, that's the question we seem to answer most," says Stefan, laughing.

"Unreal," replies Leif. "It has felt unreal all along, and even now it feels as if it never happened."

The first three weeks were the worst but also as Christmas approached it got hard."There was a turning point at Christmas," says Christer. "Families were allowed to come and visit, and then they were allowed to come every six weeks. We got food and other things that we longed for. In the prison they also changed the guard system, which was better for us.

"Up to Christmas time food consisted of "military rations," which they got from the Swedish embassy.

"There was nothing wrong with this food," says Sefan. "All three of us are pretty good at fixing food and we spiced up the canned food. The risotto was almost in a gourmet class by itself."

They could move around freely in the section for foreigners, from seven in the morning until dusk, when they were locked up in their section. The days were all alike – preparing food, eating, sleeping, reading (among other things they studied the GSM system), writing letters and playing football or volleyball.

Sundays were the highpoint of the week. Personnel from the Swedish embassy came to visit and they exchanged letters. The letters meant a lot both for the three and their families back home.

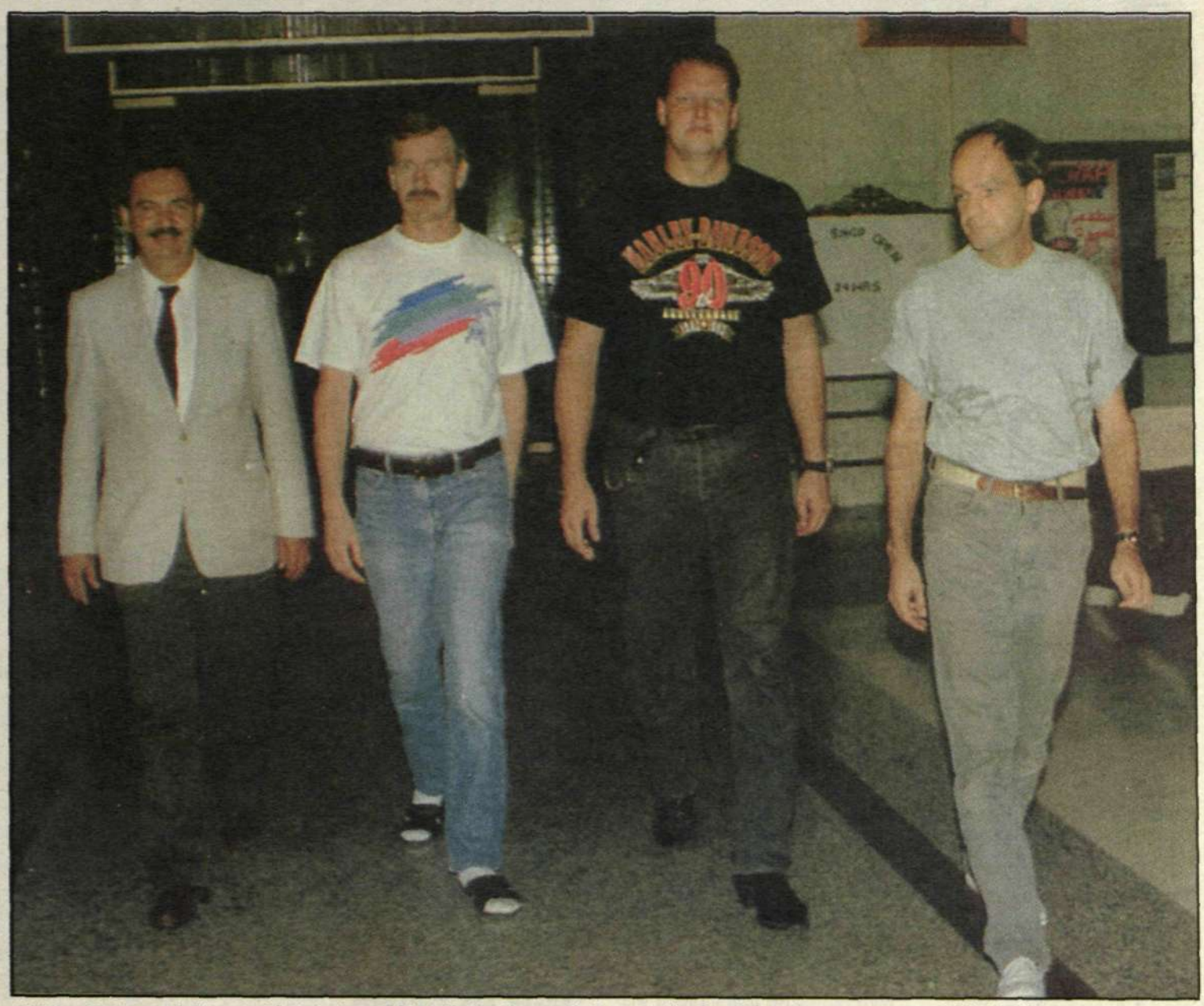
Hundreds of cards

They never felt forgotten or abandoned. Many wrote to them with greetings and at Christmas time they got hundreds of cards. One particular card stands out in their memory. It was from a 6-year-old boy in Mexico, whose father works for Ericsson.

Neither Christer, Leif nor Stefan felt they would spend seven years in prison. After the summer they began to have a touch of a feeling of pending release that would come eventually.

"I guessed we would be free before the end of September, and I was right," says Christer, laughing.

Gunilla Tamm



Christer, Stefan and Leif are just being released in Bagdad and are on their way to the Swedish embassy, acccompanied by their lawyer.

Finally, the waiting ended

"It was like the first snow. You know it will come and you wait for it, but still you are surprised." It is Karin Strömgren, mother of Christer Strömgren, who draws the comparison of how it felt when news came that the three captives were free at last. It is shortly after 7 on the morning of Friday, September 24, and the bus carrying the families is on its way to Arlanda.

Christer Strömgren, Leif Westberg and Stefan Wihlborg, after 384 days in Abu-Ghrab prison in Baghdad, are on the way home. On the government plane that picked them up in Athens were Prime Minister Carl Bildt, Ericsson's president Lars Ramqvist and Lars Stålberg from the Ericsson crisis group. At the same time relatives were on their way from Kuwait and yet another was on the way from Bangkok.

"We were lucky in that the planes all landed around the same time," says Eva Andreassen, personnel manager for business unit RMOG at ERA, the unit where the three "Iraq-Swedes" worked. Eva is part of Ericsson's crisis group, and, among other things, has had close contact with the families.

The bus drives directly into the VIP area, where the government plane is due to land. At the cafeteria inside there is coffee and sandwiches and most people reach for a cup of coffee.

Leif Westberg's two children, Alicia and Chary, were being interviewed on TV4 and are back at the airport. A condition of granting the interview was that they should return before their father landed, and this was done.

"There is nothing to do but wait but soon it will be over," says Olga Westberg, Leif's mother. "Sure, it was a difficult time, but it's over now. We knew that the boys had it relatively well in prison and this made the waiting easier.

Suddenly the mobile phone in Bertil Westberg's pocket rang. It is his sone Bernt-Åke calling from Sydney, where he is working for Ericsson. He wanted to know if his brother had arrived safely.

No, not quite yet, but then Eva Andreassen announced that the plane with a big P had landed.

Out in the autumn sun the photographers waited on the tarmac. They had a few minutes to click away before Stefan, Christer and Leif moved in together to meet their families. It was a meeting without journalists, TV cameras and flashlights. The closest family, wives and fiances, were met first. Other relatives waited for a few minutes more.

Alicia and Chary finally got their daddy back, Leif Westberg.
Photo: Gunilla Tamm

"It feels like butterflies in my stomach," says Karin Strömgren, looking both in anticipation and happy. A few hours earlier she recounted that she had slept well during the night and was not all nervous.

Bewildered, happy and very much hugged, Christer, Stefan and Leif together with their families head for the bus that will take them to the press conference. Leif's two children hug to their father as closely as they can.

The press corps is massive, with the daily city press, countrywide publications and several TV and radio channels. None of the men or their families show any signs of stage fright as they move up to the podium. The questions piled up on them as press photographers' cameras clicked away.

After just over an hour it is time for Stefan, Leif, Christer and their families to terminate the "official" part of the reception. On the weekend they will go to a retreat, where they will have the chance to really realize that the long wait is over.

Gunilla Tamm

MORE ON THE LONG DRAMA DAY BY DAY • PAGES 6–7

Ericsson buys Teli

Ericsson has bought a large part of the Teli concern from Telia (formerly Swedish Televerket). The purchase is part of an agreement that also includes a new delivery agreement for AXE, worth more than a billion kronor.

The Telia factory in Nynäshamn is one of the biggest AXE-producing units in Sweden. Now it will strengthen Ericsson's production capacity. **Photo: Televärlden**

With Teli, production capacity is strengthened, above all on the AXE side in Sweden. The 1,350 Teli employees affected by the purchase will be a valuable addition to Ericsson, which is now cutting back on new hiring of personnel in Sweden.

The purchase of Teli AB and several other companies in the Teli concern was made public at the end of September. Telia, as Televerket now calls itself, wants to revamp its activities as an operator so as to better meet the competition in a more liberalized and internationalized market. That's why it was an obvious solution to sell to Ericsson, together with which Telia developed AXE.

The companies that Ericsson has taken over are:

- **Teli AB in Nynäshamn (30 employees)**
- **Teli Telecom AB in Nynäshamn (804 employees), Älvsjö (165), Gothenburg (21) and Spain (7).**
- **Teli Mobile Systems AB in Gothenburg (99).**
- **Teli Connection Systems AB in Skellefteå (148)**
- **Teli Business Systems AB in Vänersborg.**

Altogether the units that Ericsson has taken over had a turnover of about 1.4 billion kronor in 1992.

AXE investment

The supply agreement signed at the same time includes heavy investment in the Swedish tele network. Telia has ordered AXE to such an extent that practically all Swedish tele subscribers will have access to so-called PLUS services and other digital services. This way modernization of the network will be ready much earlier than planned. In a few years Telia reckons that the swedish tele network will be one of the world's most modern.

"The swedish tele market today is one of the most open and competitive in Europe," says Telia's president, Tony Hagström. It is against this background that Telia is putting its house in order and has chosen to put more into its role as a tele operator. One has sought to find a solution for Teli that gives the company new possibilities for development and to set employees at ease.

Competence

For Ericsson the deal means a welcome addition of competent personnel, but also a strengthening of its product portfolio. The Teli units that will be taken over also handle development work, in software for AXE, Mobitex, Wide Area Paging and operations support systems.

"The Teli purchase thus means a powerful boost of competence in a number of personnel catgories," says Johan Siberg, responsible for coordination of Ericsson's production units.

Capacity

"It also means a real strengthening of Swedish manufacturing capacity for AXE. Teli has accounted for two-thirds of Telia's needs for AXE in recent years and has a capacity of about 400,000 lines a year in its factories.

"The immenese strengthening of personnel that the purchase brings with it is welcome," says Britt Reigo, personnel director. "The purchase gives such a huge boost of competence that the newly drawn up plans to recruit an additional 1,000 employees in Sweden can be cut back.

However, there are still certain areas of competense were we need to hire more people, despite the competence boost that the Teli purchase gives to Ericsson.

"The purchase of Teli is yet another example of our continuing investments in Sweden in an ever more gloomy business climate," said Lars Ramqvist in an interview.

"Teli is a well-run company that is ideal for the demands of the future. The competence that Teli's workers possess is a positive boost."

LGH

Teli in brief

The Teli concern develops, produces and markets services and products in the field of telecommunications.

Its history stretches back a long way in time, all the way to 1891, when a repair workshop for tele equipment was started in Mosebacke in Stockholm.

Turnover for the entire company in 1992 was two billion kronor and the number of employees was 1,800.

The units that remain in Telia are, among others, Teli Service AB, Teli System Support and Teli Innovation Capital AB.

Portable space phone

Now Ericsson is taking up the competition with Motorola in satellite-based mobile telephony. This is being done with the help of a pocket phone that has now been developed for Inmarsat. Inmarsat is the leading company in satellite-linked telecommunications, with 72 countries as interested parties and more than 30,000 customers.

Kurt Hellström, president of Ericsson Radio Systems, handed over a model of the new telephone to Olf Lundberg, general director of Inmarsat, at a recent ceremony in Paris. It is a dual mode phone, that is a phone that functions both via a land-fixed radio network and via Inmarsat's satellites.

First out with DECT phone

Ericsson is the first tele supplier to win type approval for cordless business phones according to the DECT standard. It is the Freeset that has been approved in Germany. Further approval is expected in most of Europe before the end of the year.

With the approval Ericsson Mobile Networks in Holland can now get DECT launching on the way in selected countries in the fall. The Freeset system can be installed to business switches of several makes. It will also be sold by Siemens, through a collaboration agreement.

New language from Ericsson

Ericsson has set up a new company, Erlang Systems AB, which will introduce commercially Erlang, a very powerful programming language that was developed at Ellemtel.

Erlang has been shown to be up to ten times more productive than other computer languages. It is used in several large software projects in Ericsson, which is now trying to expand Erlang knowledge by making the language a commercial product.

New GSM orders

During October Ericsson received orders for system expansions in Greece, Portugal and Malaysia.

In Greece, the consortium Panafon ordered GSM for a second phase of its network expansion. An interim agreement has been signed that covers expansion in Athens and other large cities.

In Portugal, Telecel, one of the country's two GSM operators, bought radio and switch equipment for a total of 500 million kronor. Behind the order is anticipated immense growth for GSM in Portugal.

In Malaysia Ericsson will supply both analog and digital mobile telephony to the operator Mobikom. A contract was signed for equipment according to the AMPS/D-AMPS standard. The contract in the first phase is for expansion worth 330 million kronor.

Upgrading of AXE in U.S.

Ericsson has signed an agreement with Southwestern Bell to upgrade more than 200 AXE switches to the latest software version.

The upgrading gives the American operator access to a number of new functions, including ISDN.

Confidence with new factory

"The new factory is a pearl in the company. The long-term investment here is to a large extent the result of a desire for change and the competent developments that personnel have manifested.

"Flow orientation, flexibility and job milieu are the factory's three corner pillars," says Karlskrona manager, Bernt Elje Petersson.

So said CEO Lars Ramqvist when he, together with the province's governor, Ulf Lönnquist, on October 14 dedicated EBC's new Verkö factory, which is part of the new Telecom City in Karlskrona. Here they manufacture the business switch MD110, DRX and BusinessPhone, as well as telephone sets for export to some 80 markets all over the world.

In the 10,000 square meter plant, where the demand for rational production is matched with the best possible job milieu, were assembled all the personnel together with the press and hundreds of specially invited guests.

"It is industry's obligation to meet today's conditions," noted Lars Ramqvist. "Our new factory is a symbol that the industry climate in Sweden has become better. Now we can even bring home production from abroad. The opposition and the present government have understood that it is industry that must pull the country out of the problems we have."

Lars Ramqvist pointed out, however, that the politicians must understand that industry reckons with unchanged conditions and absolutely no deterioration. This is necessary to safeguard industrial activities.

"Ericsson is investing greater resources in research and development, far more than any other industrial company in Sweden.

"This year it is close to 16 billion kronor. Some 14,000 employees work only with research and development."

As an example Lars Ramqvist pointed to the Ericsson-owned EP Consulting Group AB, with 180 employees in Karlskrona.

This is one of Scandinavia's leading consulting companies in the area of telecommunications. Some 40 of EP's employees are involved in just development of the MD 110.

Here, too, there is a unique laboratory for AXE-based mobile telephony.

EP Consulting is one of many trump cards in Telecom City. Here there are also the mobile operator Europolitan/Nordic Tel, Nokia Telecommunications and the institute in Karlskrona/Ronneby, inaugurated just a few hours after the Ericsson factory. No other institute in Sweden invests goal-oriented in telecommunications as this one.

All the visitors are offered the chance to participate in the various units in Telecom City. The day ended with a panel discussion led by Bertil Torrekul on the theme of "How can Sweden maintain its leading position in the world in the area of telecommunications."

Participating in the debate were Lars Ramqvist, Per Unckel, Minister of Education, and Stig Hagström, university chancellor. They were all quickly united in their view of education's immense significance for our ability to defend our place in this knowledge-intensive area.

Thord Andersson

Wireless data/faxcommunication with Ericsson and TI TravelMate

Now you can equip your Texas TravelMate notebook computer with a powerful Ericsson V.32 bis modem. And you only need a single cable to connect the modem to an Ericsson handheld mobile phone, NH 97 or NH 72.

- Even sensitive information can be transmitted over the telephone network or cellular phone network since the modem permits data encryption.
- An advanced faxprogram operating under Windows is included.
- You can remotely connect your Texas TravelMate notebook to your office computer network.
- An ideal tool for managers, sales personnel, service engineers e.g.

For more information, please call:
Ericsson Computer Products.
Phone +46 8 757 52 00, Fax +46 8 757 52 01

Texas TravelMate notebook computer with Ericsson modem connected to an Ericsson handheld mobile phone NH 97.

Ericsson Computer Products
S-164 81 STOCKHOLM
OSLO phone +47 66 84 16 50
COPENHAGEN phone +45 33 88 39 40

ERICSSON

384 days' work for a release

For more than a year Christer Strömgren, Leif Westberg and Stefan Wihlborg were held in an Iraqi prison. While the three tried to pass the time in their common six-square-meter cell, intensive negotiations were being held in Sweden to get them home.

Ericsson's crisis group and the Swedish Foreign Office expended immense resources to get the Swedes reprieved by Saddam Hussein.

Let's look back at the year that went by since the Ericsson technicians were seized in the desert. We begin from the start, Thursday, September 3, 1992.

Thursday, September 3

At 6 in the morning Leif Westberg, 42, Christer Strömgren, 43, and Stefan Wihlborg, 32, leave Kuwait City. They are working for Ericsson Radio with installation of radio base stations in Kuwait. The day's assignment is to prepare for continued installation in a site in northern Kuwait. The site is located in the proximity of the Sabriya oilfield, about thirty kilometers from the border with Iraq and less than ten kilometers from the demilitarized zone.

When the job in Sabriya is completed, the three head north. They hope to make contact with UN personnel to find a route that partly ran parallel with the border with Iraq in the direction of the site Abdally. Since a meeting is scheduled for the afternoon in Kuwait City, the three are trying to gain some time this way. Normally, they would go back to Kuwait City a bit and then head north on another road.

That they choose to continue on the unknown route north can be explained to some extent that it is also sign-posted that it leads to "UN/HQ," UN headquarters in the area. What Christer, Leif and Stefan do not know is that UN headquarters here is on the Iraqi side of the border, a boundary that was not marked.

They learn that they have already gone over the line from a Norwegian UN corporal they meet. It is too late now to turn back. They are already discovered by the Iraqi police. After some discussion, they gather that they are to accompany the Irqai police to explain why they are in Iraqi territory. They are then driven to the port city of Basra, where they spend the night.

Ericsson's office in Kuwait sounds the alarm late in the afternoon when the three do not return from their assignment as expected. Contact is made with the police and the military in Kuwait, who initiate a search. During the evening the crisis group at Ericsson is alerted in Stockholm.

September 4

Throughout the day the search for the missing Swedes continues. Ericsson personnel patrol the routes in the area. The Norwegian UN corporal out at the Iraqi border confirms that he saw three Westerners in discussions with the Iraqi border police the day before. Everything indicates that it is the three Ericsson technicians he had seen.

During the morning the crisis group in Stockholm meets for what would be the first in a long row of meetings.

The missing Swedes are taken during the day from Basra to Baghdad.

September 8

This day comes the first official notice from Baghdad that the three Swedes are being held prisoners. It was Iraq's chargé d'affaires in Stockholm that relays the message. That same day Swedish diplomats Jan Ståhl and Torkel Stienlöf travel to Baghdad to get a clear picture of what really happened.

It is clear that the three stand accused of illegally crossing the border and that they were searched according to Iraqi law. They are being held in an Iraqi military camp, awaiting trial.

September 20

After a brief trial, Christer, Leif and Stefan are sentenced to seven years for illegally tresspassing across the border. After the trial they are transferred from the military camp to Abu Ghraib prison, 30 kilometers outside of Baghdad.

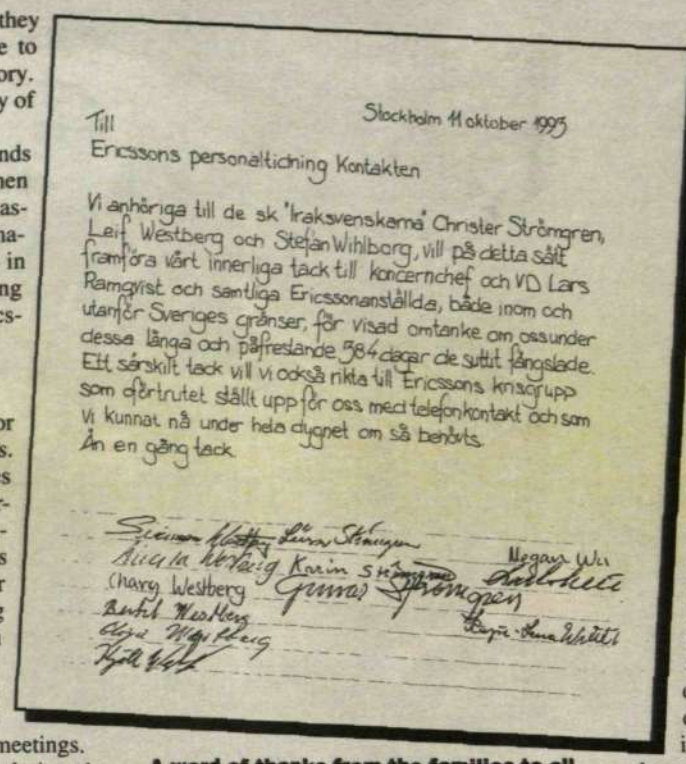
The prison has a pavillion for foreigners, where there are already some Britons, among others, being held, who were also arrested for having turned up on the wrong side of the Iraqi border. The three Swedes are housed here, at their own request, in one and the same cell. The cell has room for a double bunk and an extra mattress on the floor. It is crowded and uncomfortable, but on the other hand the three can move about relatively freely in the pavillion during the daytime.

In Sweden, Foreign Minister Margaretha af Ugglas comments on the sentence of the three:

"It is with great dismay that I received news of the sentence of the three Swedes. The sentence metered out is incredible and totally unacceptable. It is in no way proportional to the charge". The foreign ministry promises that the Swedish government will continue its efforts to get the three free.

September 21

The crisis group at Ericsson works together with the Foreign Office (UD) so that various channels they may be able to get the Swedes free. This day it is learned that UD, among other things, has contacted Palestinian channels, aminly within the PLO, to help get the Swedes free.



Till Stockholm 11 oktober 1993

Ericssons personaltidning Kontakten

Vi anhöriga till de sk "Irakssvenskarna" Christer Strömgren, Leif Westberg och Stefan Wihlborg, vill på detta sätt framföra vårt innerliga tack till koncernchef och VD Lars Ramqvist och samtliga Ericssonanställda, både inom och utanför Sveriges gränser, för visad omtanke om oss under dessa långa och påfrestande 384 dagar de suttit fångslade. Ett särskilt tack vill vi också rikta till Ericssons krisgrupp som ofärtrutet ställt upp för oss med telefonkontakt och som vi kunnat nå under hela dygnet om så behövts.
Än en gång tack

Stefan Wihlborg Lena Strömgren
Ulrika Westberg Karin Strömgren Margaretha Wihlborg
Christer Strömgren
Leif Westberg Gunnar Strömgren
Bertil Westberg Birgit-Lena Wihlborg
Aina Westberg
Kjell Wihlborg

A word of thanks from the families to all the Ericsson colleagues that showed their support for the three.

September 23

Foreign Minister Margaretha af Ugglas meets with the UN Secretary General in New York and asks his help in liberating the Swedes.

September 25

King Carl Gustaf sends a letter to King Hussein in Jordan, with a request to help free the three Swedes. The sentence in Baghdad is appealed and everyone now expects the Iraqi appeals court to confirm the sentence that was imposed. Only when this is done can a mercy plea be made, which from the Swedish side is considered the only possibility of getting the three free.

October 15

At the request of the Iraqi authorities a mercy plea is filed on behalf of the three, already before the judicial process is ended. At UD in Stockholm the Iraqi request is seen as a good sign. Everything indicates that the Iraqis have opened up the possibility of a pardon from the president.

October 31

The sentence of seven years is upheld by the appeals court.

December

The Swedish diplomat Lars Olof Brilioth, who happens to be in Baghdad then, indicates that there are signals from the Iraqi side that the Swedes will be released by Christmas. Hope kindles anew among the families and colleagues at Ericsson. On December 14 the Swedish Red Cross delivers medicine worth six million kronor to Iraq, a mission that has since been followed by several more.

December 24

Christer, Leif and Stefan do not celebrate Christmas in freedom. All hope of release by Christmas is lost. But in any event they are allowed visits by the family just before Christmas. Together with Lars A. Stålberg of the crisis group they travel to Baghdad for the visit.

After the first family visit the Iraqis are relatively generous with visits from kin. Every fifth week relatives are allowed to visit the three.

January 4

Prime Minister Carl Bildt of Sweden invites the Iraqi chargé d'affaires to Harpsund and delivers a message to Saddam Hussein with the release of the Swedes as its objective. The two meet twice again during the month, on January 22 and 25, during which Bildt reminds him of his message to the Iraqi leader.

In January the U.S. launches a cruise missile anew into Iraq, which surely works negatively against the Swedes' chances of being set free. During this month, Saddam Hussein's half-sister is treated for cancer at a hospital in Sweden. When she returns to Baghdad, UD reminds her of the situation of the three imprisoned Swedes.

February 16

Ericsson Executive Team. the top 30 executives in Ericsson, meet in Stockholm. In a joint letter they voice their support for the three captives and encourage them to keep their spirits up.

April

The week before Easter the Swedish UD emissary Peter Tejler meets in secret with Iraq's Vice Prime Minister Tariq Aziz in Baghdad. Tejler hands over, among other things, a letter

For almost precisely one year Christer, Leif and Stefan were held in Abu-Ghraib prison. There behind the grim walls they were treated relatively well by their Iraqi guards.

The newspaper Aftonbladet mounted a mail campaign for the prisoners in Baghdad. On their homecoming the enormous bulk of mail was handed over to Christer, Leif and Stefan.

from Margaretha af Ugglas with a new request for mercy for the Swedes.

April 28

Before Saddam Hussein's birthday Ericsson employees are urged to submit a list of names petitioning him to free their imprisoned colleagues.

Within a few days some 29,000 signatures stream in from all over the world. The list is handed over by Lars A. Stålberg in Ericsson's crisis group to the Iraqi chargé d'affaires in Stockholm.

May 19

The Swedish government decides, through the UN, to give Iraq 15 million kronor in disaster aid.

June 24

The Swedish government decides to give an additional 50 million kronor in disaster aid to Iraq. The money will also go this time through the UN.

August

At the beginning of the month Lars A. Stålberg from the crisis group again visits the three imprisoned colleagues in Baghdad, together with Ingrid Sandell, from Ericsson's medical department.

During the month high hopes are built up that the three would be released on the one-year date following their capture.

Lars A. Stålberg talks with UD about what can be done before the one-year date to get the three free.

Carl Bildt summons Iraq's chargé d'affaires to his office toward the end of the month and proposes an appeal for mercy from King Carl Gustaf.

September

At the beginning of the month it is clear that the Iraqis have favored Carl Bildt's request. Through the UN Secretary General a message is relayed to Margaretha af Ugglas that the matter can now begin to be considered seriously. The same signal comes to UD via Iraq's ambassador in Geneva, who is also Sadam Hussein's half-brother. They let it be known that a plea for mercy from the king must be made in writing.

September 10

Cabinet secretary Lars-Åke Nilsson at UD makes a first trip to Geneva to discuss the issue with the Iraqi ambassador. They agree that things will now get on the way.

September 14

A telephone call from the ambassador in Geneva. He lets it be known that a request for mercy should be handed over on site in Baghdad. A letter to Saddam Hussein is composed but UD wants further reassurances that it would lead to positive results.

From this day up to the time of release Lars Stålberg has daily meetings with Carl Bildt in the prime minister's office. Lars-Åke Nilsson and Peter Tejler from UD also participate, as well as First Marshall of the Court Hans Ewerlöv.

September 17

Lars-Åke Nilsson again travels to Genva and discusses the issue with Saddam's half-brother. The response is such that UD judges it worthwhile to proceed with its letter.

September 18

Saturday evening. Hans Ewerlöf travels together with Peter Tejler from UD to Amman. They have the letter from the king with them. They head directly to Baghdad where they prepare for a meeting with Saddam Hussein.

September 19

Sunday evening. The prime minister has also summoned Nils Ingvar Lundin and his own information secretary, Lars Christiansson, for daily meetings in order to prepare for an eventual homecoming.

September 21

Ewerlöf and Tejler wait for a signal to hand over the letter. While waiting they visit the three in prison and explain the situation.

September 22

Christer, Leif and Stefan are ordered to leave their cell. They are quickly driven to a hotel, where the Iraqis arrange a small press conference. From there they are taken to the Foreign Ministry, where Ewerlöf and Tejler are also summoned.

Here the three Swedes are formally handed over to the two Swedish emissaries. Immediately thereafter Ewerlöf is called to the presidential palace.

In front of Iraqi TV cameras Ewerlöf finally hands over the letter to Saddam Hussein in a well-orchestrated ceremony.

As word of the release goes out on the news wires, there is mass media chaos in Sweden. All the papers want to interview the families and representatives from Ericsson. Lundin and Stålberg first try to get some clarity of the situation – whether the prisoners have been really handed over to Swedish authorities.

At 4 o'clock in the afternoon it is clear that all three are free. Lundin and Stålberg join in a meeting with the prime minister for a couple of hours to discuss transportation home to Sweden and they have direct telephone contact with the three.

It is already decided from the start that they will return in a government plane. Carl Bildt, who kept negotiations secret from his government colleagues, has orderered that the government aircraft will be kept at the ready. It can be done under the pretext that the plane has a technical problem...

September 23

On Thursday morning Ewerlöf and Tejler leave Baghdad with Christer, Leif and Stefan. They are met in Amman by the government plane that was dispatched there. Traveling from Stockholm were Carl Bildt and Lars Ramqvist, who come off in Athens.

Bildt has earlier booked hotel rooms there for a Swedish volleyball team. The thinking is that the group will overnight here before commencing the last leg of the journey home to Stockholm.

The hotel staff is somewhat astonished to see that the volleyball team includes the Swedish prime minister and the chief executive officer of Ericsson in the vanguard. But Bidt puts them at ease with flowers.

In the evening the group goes out to a restaurant to celebrate the release.

September 24

At 10 o'clock Friday morning the government plane lands at Arlanda. Leif Westberg's wife, Siriwan, has just landed from Thailand. At the same time the families of Christer Strömgren and Stefan Wihlborg arrive by charter plane.

After a somewhat chaotic press conference the entire group is driven to the Thoresta spa, where reunited with their families, friends and colleagues, they spend the weekend.

Text: Lars-Göran Hedin

Crisis group was busy all the time

During the entire period that Christer, Leif and Stefan were in prison the Ericsson crisis group was busy all the time trying to win their freedom. The entire group met at least once a week and a smaller working group met even more often.

As good as on a daily basis, work was being done in various projects that were launched to hasten the release of the captive Swedes in Iraq.

The first half year, every week and later every second week meetings were organized at the Foreign Office (UD) for the families. They were combined with meetings between families and the crisis group.

The company's medical department maintained close contact all the time to support them in the very stressful situation in which they found themselves.

"Our experiences from the first seizing of hostages in the fall of 1990 have been of of immense help in the work of the crisis group," says Lars A. Stålberg.

Now, as then, a thorough evaluation of the crisis group's work will be made.

This will provide new recommendations on how such situations should be handled.

"One can always improve on every job," notes Lars A. Stålberg.

LGH

South America – new market for MINI-LINK

The MINI-LINK family continues to conquer the world and according to the latest top rankings this product of Ericsson Radar Electronics is now in some 71 countries.

One market that has grown tremendously in recent years is South America, where the growth curve is moving strongly upward.

"Deregulation and economic growth in the Latin American countries have paved the way for sales successes," confirms marketing manager Kent Arne Johnsson, in the marketing department in Mölndal.

Some 95 percent of MINI-LINK production is exported today to customers around the world.

The strongest markets are above all in Europe and in Central America, but since about five years ago countries in South America too have shown an ever greater interest for the Swedish-manufactured radio link.

"Brazil and Mexico have long been among our biggest customers in this part of the world, but now other countries, among them Chile, Argentina, Colombia and Venezuela, have begun to grow in terms of volume and realize that a well-grounded infrastructure demands a functioning telecommunications network."

Free competition

And this is where ERE in Mölndal comes into the picture. MINI-LINKs have shown that they go hand in glove for the purpose. Above all, it is MINI-LINK 15 that created the successes in the Latin American countries.

Deregulation and the removal of tariff barriers have paved the way for free-market forces, and in several South American countries state-monopolized companies will soon be a memory.

Competition and efficiency are new bywords and with support and help from the American dollar the countries' economies have begun to grow even more.

"One example is Chile, which last year reported economic growth of a full 10 percent. For us, this positive development in the country meant that we were recently able to sign a three-year contract for sale of MINI-LINK 15 for the country's largest teleoperator, CTC."

Brazil and Mexico already belong to the developed market in Latin America. During 1992 these two countries accounted for a full 30 percent of total MINI-LINK turnover.

"The contract is rotating and provides confidence and stability for the operation."

New customers

Ulf Stenberg is one of two ERE marketing salespeople in South America and it has befallen him to sell MINI-LINK to customers in above all Argentina, Chile, Venezuela and Colombia.

He knows what he is talking about when he says that growth potential in these countries is immense.

"In two years' time Argentina is expected to have about 200 MINI-LINK terminals. There is heavy expansion going on here in telecommunications right now.

In Colombia they will be expanding the mobile telephone system in 1994 and of a total six new operators we hope that three of these will turn to Ericsson.

Also there is much to hope for from Venezuela. They have had mobile telephony for about two years now and the network is being widely expanded.

Positive response

Ulf Stenberg has worked hard in the past few months with South American customers. The response so far has been nothing but positive.

It is left to be seen if these efforts will bear fruit. The answer is a few months away still.

"In this job you have to have take it as it comes, but sooner or later a contract comes up."

Cathrine Andersson

Marketing manager Kent Arne Johnsson and marketing salesman Ulf Stenberg both believe in the continuing sales success of MINI-LINK on the South American market.

Joint British armaments fair

This year for the first time in Britain there was a joint navy-army matériel fair, the RNBAEE '93 (Royal Navy and British Army Equipment Exhibition).

The exhibition took place in Aldershot, southwest of London, from September 5-10.

Unlike Farnborough this exhibition is open only to exhibitors that are suppliers to the British Ministry of Defense.

Nevertheless, ERE was represented as a subcontractor for several British companies. Hence, at Radamec's stand the Sea GIRAFFE and Kalle Mk11 laser were exhibited in the form of models, and at British Aerospace (BASE) there was a model of our new sight-secure laser mounted on their marine Sea Archer 30.

Many delegations

Besides the British the exhibition was also attended by a large number of foreign defense and industry delegations.

During the exhibition week ERE organized a reception at a nearby hotel, Pennyhill Park Hotel & Country Club in Bagshot. The 100 guests included persons from the U.K. Ministry of Defense and the British defense industry as well as Nordic defense and industry representatives.

The reception was very warmly received by our guests.

Hans Morwing

Reception at Pennyhill Park, from left, Bengt Halse, president; Gustaf Taube, military attaché in London; Lars-Olof Linders, and the Swedish naval chief of staff, Vice Admiral Dick Börjesson.

The TRIM spirit lives on

TRIM culture is thriving in Ericsson. There are lots of activities going on that all have a focus on increased cost-consciousness and improved profitability.

The idea is that the TRIM spirit will bloom further as a natural part of TQM and that it will be a meaningful part of Ericsson's company culture.

"Company culture is achieved by all employees working together. In the TRIM group we have daily evidence that the TRIM spirit lives on," says "ruling" TRIM general Johan Siberg.

"It is a matter of continuing to cut costs if Ericsson is to cope with the tough competition in the tele market," says Johan Siberg, head of the TRIM group at present.

Soon it will be two years since Lars Ramqvist started TRIM. Since then two TRIM groups have led and coordinated hundreds of different profit-raising activities in the company. TRIM has extended over a very wide field and covered everything, from simple everyday savings to far-reaching structural grasps in, for example, production. Hopefully, all Ericsson employees have been touched by TRIM.

When Johan Siberg took over after Lars Berg as TRIM leader just about a year ago, TRIM already began to show visible effects in Ericsson's earnings report. Today, TRIM's significance is more evident, but the total effect of the improvements that TRIM led to are not seen in accounting.

"We have cut costs from 41 to 37 percent of invoicing, with some 2.5 billion kronor. A major part of these savings have been committed to maintaining Ericsson's heavy investments in technology and development," notes Johan Siberg. "Without TRIM, the recession would have bitten deeply into these investments for the future."

"At the same time I would like to stress that the TRIM group cannot take all the credit for all the improvements that have beem made and that continue to be made. There are many powerful change projects with the TRIM effect – Second Stage at ERA, Focus project in ETX/S and the new organization of business area BZ.

Battle on several fronts

TRIM work is being driven today in part on the business area level, and in part on the company level around the world. In addition, there are a number of cross-projects in some prioritized areas:

- Information and computer systems
- Benchmarking
- Production structure
- Company coordination in purchasing
- Technology costs and investments
- Administration, travel, hotel, etc.
- Office use

The TRIM group has worked with some 30 Ericsson companies around the world. TRIM has also participated in a number of theme conferences, among others productivity, economy steering, TQM, purchasing and design activities.

"Regarding our own project, TRIM has also received more than 300 suggestions for improvements. Bengt Franzén handled most of these. The aim is to act on all good suggestions.

80 systems become 4

Information and Computer Systems, IS/IT, is an area that absorbs more and more money in large companies. Ericsson's geographically spread activities with many different companies has led to the growth of a number of different systems for, among other things, order processing and economy.

"TRIM has worked with reducing the number of standard systems. From now on there will be two economy systems instead of 60, as was the case earlier. For orders and manufacture 20 different systems were being used previously. This will eventually be replaced by two standard systems.

Some 20 projects with TRIM links in benchmarking were begun during 1993.

In purchasing, there is far-reaching coordination going on. Focus is now being put on common purchase of computer equipment, programming and consultancy services.

TRIM

In this issue of Contact we give a lot of coverage to TRIM. Now when Ericsson is sailing with a fair wind, it is important not to throw caution and cost consciousness overboard.

"For some time now there has been good collaboration and a negotiating model for the purchase of electronic components.

"We in the TRIM group also want to emphasize first hand the importance of using internal resources, as long as it is economically worth while."

Difficult research

During this year the TRIM group has pursued work with the aim of reducing the number of applications systems in AXE. Here the GAS project in ETX is a successful example.

"We have also pointed out the importance of limiting the growth in the number of systems tests plants in the company. These account for some of Ericsson's heaviest costs right now.

"In general it aims at getting better control of our steadily increasing technology cots. TRIM follows closely various projects to raise productivity and quality in, above all, software design.

"Bo Hedfors' project to increase quality in software design – Ericsson System Software Initiative – will have major significance in this area," notes Johan Siberg.

Fewer outlying offices

Ericsson's activities in Stockholm are spread over huge parts of the city. Its real estate office, REM, is working intensively on housing these activities in the company's own offices. The decision to build 750 new office workplaces in Älvsjö is an important move.

"This way we can reduce our rental costs."

By using Ericsson Bostäders (Ericsson Housing) hotel booking and by taking advantage of discounts negotiated by the company, rooming costs outside of working time can be reduced considerably.

A new travel agency agreement was signed this year. It gives Ericsson more advantageous travel services . For the Stockholm area a new taxi agreement was signed in the summer that allows cheaper taxi trips and access to various forms of extended taxi services.

A real challenge

"By and large TRIM has helped in raising cost-consciousness and in reducing costs. Now when the company is on the rise it is important that we continue our efforts. It is necessary for us all to TRIM further and to constantly keep the TRIM spirit alive.

"In this very mission we have no choice. Our competitors are not sitting idly by. They are also trimming their activities in order to survive in a market where prices for products are being pushed down 15-20 percent a year."

Text: Lars-Göran Hedin
Photo: Magnus Thorle

TRIM-group during 1993:

Johan Siberg, LME,(chairm.), Torbjörn Andersson, BX, Bertil Bogren, BR, Peter Johrén, BZ, Håkan Rusch, LME, Roland Sjöö, ETX. Lena Asp, LME, has acted as secretary and Bengt Franzén, EBC, as project leader.

"This has been an exciting job"

When Johan Siberg looks back on his year as head of TRIM, one thing comes readily to mind – the deep commitment to TRIM that Johan and his colleagues encountered throughout the company.

"It has been a lot of fun working with the TRIM group. We have had a broad insight into the entire company and could exchange experiences with colleagues all over the world. During this second year we ahve also been happy to see measurable and evident effects of the TRIM project in many areas.

"Perhaps the previous TRIM group had only a taste of the power of TRIM, while we could see effects more clearly. We also see an enormous future potential for TRIM.

"I must also humbly admit that success is not only attributable to this TRIM group or its predecessor's work.

This is something that all of us in Ericsson have achieved together. Something I hope we shall continue to rally around.

"For," says Johan Siberg, there are lots of dormant ideas to be awakened and unmentioned TRIM projects that have yet to see the light of day. One of the most important tasks ahead of us for next year must therefore be to develop and improve the company's suggestions activities.

"We have handed out 500 TRIM cutting boards to people who came up with suggestions for TRIM projects. They now adorn Ericsson employees' kitchens all over the world. And everyday it reminds them that one must learn to cut in thin slices and save the crumbs."

With a boost in capital, we don't need the bank

They are working hard in the company to raise capital turnover. There is a lot of money to be gained here. With ESCR, Ericsson Systematic Capital Reduction, the goal is to free several billion of the company's working capital to finance future growth. Such capital rationalization would mean that Ericsson can avoid bank loans, and instead future investments will be self-financed.

Torbjörn Andersson leads the support group that works with dispensing information about ESCR, Ericsson Systematic Capital Reduction. Bengt Abrahamsson is secreteray in the group. If ESCR achieves its goal, Ericsson will benefit by 4 billion kronor a year, money that can be used for financing the company's growth.

One of the activities that the TRIM group has been heavily involved in during the year is ESCR, Ericsson Systematic Capital Reduction. CW Ros of the Executive Committee is chairman in the steering group for ESCR, and its chief advocate. Torbjörn Andersson leads *the support group, which during the year has* worked hard with spreading information about ESCR and following capital flows in a number of the company's activities.

"ESCR is an activity that involves the entire company and whose utmost goal is to liberate so great a portion of Ericsson's capital that the company can manage its growth without recourse to external financing," says Torbjörn. "Capital rationalization is nothing new, but it has come into focus with TRIM. ESCR is an attack method that is now common to all Ericsson's activities.

No infinite resource

In a large company such as Ericsson it is easy to get the impression that money is something of an infinite source. Line managers and others who have final responsibility for the profitability of their own operations neglect to reckon on what capital flows in their activities mean economically. They reckon on revenue and costs so as to be able to present as good an earnings report as possible to their superiors.

"They completely forget one underlying factor, working to regain the invested money as quickly as possible. Spreading this insight is ESCR's most important mission," Torbjörn Andersson emphasizes.

"Our pedagogical task is to explain where money is being tied up in the operation and why. And to localize the processes where they tie up too large sums or where money is locked up for too long a time."

Process thinking

Torbjörn Andersson is talking here about processes. Process thinking is a central prerequirement for achieving results with capital rationalization. By carefully analyzing all the company's processes, in technology, marketing as well as production, and how they affect each other, you can also find "capital thieves," that is the factors that put a brake on the speed of capital turnover.

"Efforts in Process Management in Ericsson give us ideal conditions for cutting back, improving and simplifying various processes. Principally, TQM and its focus on continous improvements allow help us to make better use of the company's capital."

Capital thieves

"But," Torbjörn emphasizes, "that call for a lot of larger and more overall structural grasps in many areas. The combination of structural grasp and local improvement work is a good way to disarm the capital thieves. Long lead times and quality problems are the main capital thieves. That's why it is not only those who work in ESCR and with Process Management that can make inroads to increase the speed of capital turnover – and thus Ericsson's profitability. The individual worker can make valuable contributions, by helping to lift quality in some of the five quality areas that Torbjörn Andersson points out:

Product quality: The product must meet the customer's expectations, so that the customer pays immediately after delivery.

Process quality: Effective and uninterrupted production makes for shorter lead times.

Order quality: Orders should be so clearly specified that what is manufactured is really what the customer bought.

Delivery quality: All problems in deliveries delay payment and ties up capital.

Invoicing quality: An invoice should be easy to comprehend, so that it can be paid without delay.

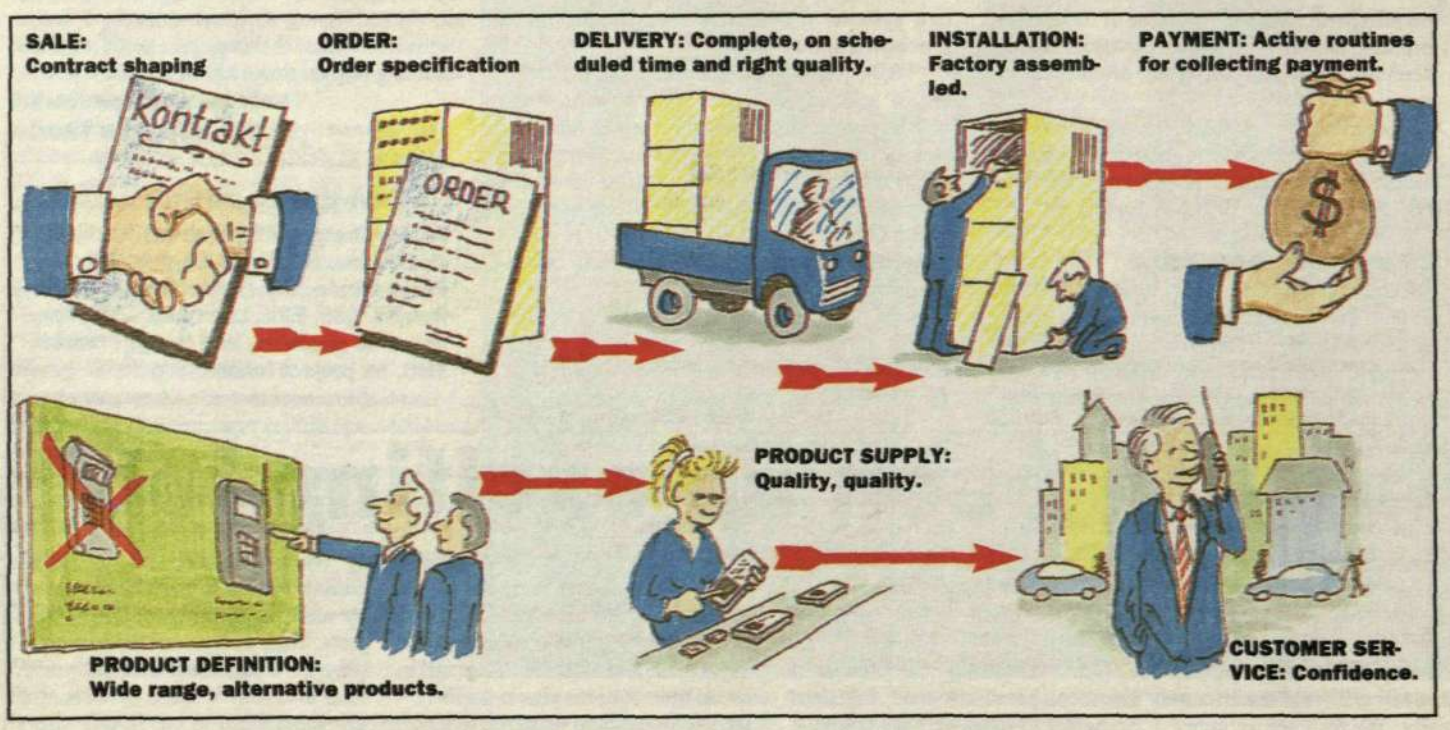
Enormous sum

The employed capital is the sum of all goods, goods that are under manufacture or finished, credits, liquid means and plant assets. In Ericsson that is about 40 billion kronor. This capital today is turned over 1.5 times a year, since the company's sales are more than 60 billion kronor. Even a small increase in the rate of turnover has an enormous impact.

The target for ESCR is an increase of capital turnover of 15 percent a year up to 1995. This means that 4 billion must be liberated annually. This can then be used to self-finance the company's continued growth, Torbjörn explains.

In other words Ericsson would not have to go to the bank to obtain capital for major investments and other capital needs.

Text: Lars-Göran Hedin
Illustration: Kim Gutekunst



PROCESS-SCHEME shows some of the factors that affect the rate of capital flow and what can be done to speed it up.

TRIM has a lot to do with learning to cut thin slices. With customer documentation on thin Compact Disks Ericsson has eliminated tens of millions from its sales costs. Photo: Magnus Torle

CD-documentation – melody of future

AXE is a complicated technical system. To manage operation and maintenance you must have access to correct documentation. That's why every year Ericsson consumes half a million binders filled with 150 million pages of AXE documentation. This costs 120 million kronor every year. This total can now be halved, thanks to CD technology.

Two CD disks and five binders. This is what is needed today for a modern "customer library" for an AXE exchange. This replaces 2,000 binders with 600,000 pages of text.

TRIM goes on in Ericsson. Few stones are left unturned, most have been turned once or several times. "Docware" is a good example of this.

Docware is the common designation for all documentation in the form of handbooks, manuals, technical descriptions, etc. that customers receive upon delivery of, for example, an AXE exchange or radio base station. In a complicated system such as AXE the bulk of this information is close to incredible.

Into the electronic age

"A normal customer library for AXE consists of five sets, each of which contains 419 binders," says Johan Gyllenswärd at ETX. Johan is responsible for the unit in Network and Engineering Services, which works with Docware. He and his colleagues are now driving new technology and new methods for documentation. It is now possible to shut down the machine at swedish binder factory Esselte that just manufactures for Ericsson and to reduce the need for paper drastically. Now Docware is entering the electronic age.

"Ericsson can now offer its customers all the documentation on two CD disks. All that is needed to be able to read it is a CD-ROM reader and a PC. The PC is already there and a CD-ROM can be had for a couple thousand kronor. With this small investment the customer enters a new era. The space that is taken up with huge binder storage can be used for something else and the time that staff took up going through binders is now replaced by seconds of searching with CD technology.

First generation

The first generation of EDW, Electronic Docware, is built in the same way as the traditional binder library. What most distinguishes it is the electronic search possibilities, electronic links between closely related documents, and formats of course.

"We have consciously chosen to retain the earlier layout and structure so that customers can feel at ease and familiarize themselves with the new medium," says Lage Backman. Lage is head of the unit in Karlstad that is responsible for production of Docware, above all for AXE.

The idea is that future generations will be able to draw on wider use of electronic possibilities. Quite simply, it will be a lot 'smarter."

"By next year there will be a new operations and maintenance manual that will also use SGML. With SGML it is possible to transfer files into other software that customers use. There will also be EDW on hard disk, as well as an "on-line" system.

"The on-line version is sheduled for 1995. This allows the customer to connect with a data base at Ericsson where documentation exists and thus bypass the need for dealing with CD disks".

Simple updating

However, compared with binders the CD is not particularly difficult to handle. On the contrary. Updating, which is done at regular intervals, becomes much simpler and, above all, safer.

"Instead of sending out loose pages to be inserted into the binders – when someone has the time to do so – we now send instead a whole new CD," says Johan.

This way the customer is always one hundred percent sure to be updated.

Halving costs

Making a single version of huge documentation on CD is more expensive than the traditional binders. But in reality it is extremely unusual having just a single copy. ETX calculations already show that with 2.4 copies the CD is cheaper. Normal documentation is issued in five copies, so there is money to be saved, says Lager Backman.

"When we reckon 1994's forecast production for us at Documentation Services, we see that we can cut costs from 34 million kronor to 17 million with CD. If all documentation were to be put on paper that will call for 93,000 binders and 41 persons to put them together.With all this same documentation on CD there is a need for only 17 persons.

"This is only a fifth of all of Ericsson's annual production of documentation binders. In total the company spends 120 million kronor on AXE documentation alone. This sum can now be halved."

Customer demand

"We must remember that this is not only a question of money. It also has to do with putting the customer in focus and making it easier for those who work with operations and maintenance of our systems," says Johan Gyllenswärd. "And in many places, in the U.S. for example, EDW is more and more a demand from customers".

"Those who have tried EDW are all positive and we get a good response from tele operators that are now evaluating the technology," says Lage. Today in Sweden EDW is used by Telia West, a project is also driven by KTAS in Denmark, MET has supplied EDW to its customers, etc.

"For us who have developed this technology it is a challenge to get it dispersed throughout Ericsson," Johan notes. Today, EDW exists in English but French and Spanish versions are on the way.

Text: Lars-Göran Hedin

Extended AXE-deliveries to Norway

Ericsson has signed a supplementary agreement with the Norwegian PTT, extending the existing contract for AXE equipment through 1996.

The original contract, wich made Ericsson principal supplier of digital exchanges for the Norwegian telephone network, covered the delivery of about 800,000 AXE lines during 1991 to 1995. the extension agreement that was recently announced covers the supply of 200,000 additional lines during 1996. To date, Ericsson has delivered more than 70 exchanges with a total capacity of 400,000 lines.

The parties have agreed not to disclose the value of the contracts.

"We are pleased with the supplementary agreement, wich provides a firm foundation for operations in Norway over the next few years. The agreement indicates that our principal customer is satisfied with Ericsson's AXE deliveries, despite the fact that some ISDN functions have been delayed, compared with the original plans", says Steinar Tveit, president of Ericson A/S in Norway.

Swiss PTT choses SDH from Ericsson

Ascom Ericsson Transmission Ltd (AET) has been chosen by Telecom PTT Switzerland to be one of the two main suppliers for the expansion of their transmission network with SDH (Synchronous Digital Hierarchy) technology. The order was won as a result of the know-how consistently developed by Ascom and Ericsson in this field. This SDH technology is based on ETNA, the Ericsson Transport Network Architecture.

Telecom PTT Switzerland will invest considerable financial resources in developing its SDH network over the coming years, in order to offer its customers efficient and mor economical telecom services. This will include network nodes for the national, regional and local levels as well as a network management system.

The Swiss PTT estimates that the average annual order value will be approximately SEK 270 million (CHF 50 m.) over the next ten years.

Ascom Ericsson Transmission Ltd, in wich Ascom holds 60 percent and Ericsson 40 percent, develops state-of-the-art transmission systems for telecommunications networks. The company has the responsibility to market all Ericsson transport network products in Switzerland. In the international market, AET functions as a competence center for selected products in the field of network access.

MFS Intelnet buys unique AXE-system

Ericsson is providing MFS Intelnet Inc. with an AXE digital switching system for use in New York. The system has a unique combination of local and long distance capabilities in a single AXE. This allows MFS to offer its customers both local and long distance services through one carrier, providing the customer with one single bill.

With the AXE, MFS can respond almost immediately to each customer's request folr new services. The AXE's modularity and flexibility give MFS Intelnet the ability to economically establish service for New York customers, wherever they're located.

The AXE is equipped with a management system that allows MFS Intelnet to constantly monitor the network for potential service problems. The AXE's Intelligent Network features permit tailored services and will allow MFS Intelnet customers to enjoy the future advantages of PCS and wireless services.

TRIM

Streamlined cable factory

Ericsson Cable's factory in Hudiksvall is a very well streamlined operation today. Continous improvements here are a part of company culture, and TRIM is a foregone conclusion.

Without efforts to hold down costs, the factory's future was uncertain. Management realized this soon enough.

In December '91 when Lars Ramqvist took the initiative on TRIM he stipulated that the target for this mission was a reduction of the group's total cost of sales to reach the level 35 percent of invoicing by the end of '93. The aim was to cut costs by 15 percent.

Already before the start of TRIM, however, Ericsson Cables "of its own initiative" had begun to clean up its house.

Janne Sjöden, president of ECA:

"The latest global analysis had pointed to a considerably more difficult competition situation for ECA. The future seemed dismal. Quite simply, we had to be more effective if we were to achieve reasonable profitability."

Difficult time

It was a tough message, which quite logically led to thoughts of restructuring. It meant a tough but necessary route that led to the liquidation of the Special Cable Division in Kungsbacka. It had fought long for its survival.

Since Kungsbacka was so dependent on OEM and the vehicle industry, which is heavily competitive, it was badly hit be the recession.

"We picked out the developmental bits of power and tele cable and transferred them over to Falun and Hudiksvall, respectively. Most of the machinery was taken to Falun.

The entire shutdown and move was done in the first half of '92. The only thing left was a small sales office to maintain market contacts. Some 200 employees were affected by this tragic company closure. Moving of the developmental bits meant only a few new recruitments in Falun and none at all in Hudiksvall.

Continued rationalizing

Later, there were further significant rationalizations in both Falun and Hudiksvall. The power cable engineering group was moved from Spånga to Falun, which meant lower costs and greater efficiency. Moreover it was an advantage to gather everything under one roof. Parallel with this there were rationalization moves in the Power cable division.

"At the beginning of '92 we made a thorough analysis of tele cable activities," recalls Janne Sjöden. "The event took place at Folkets Hus (The People's House), where we assembled all the employees to inform them about the situation. We also went through the necessity for everyone to be involved in the change process."

TRIM program

Out of this came a project that was to be implemented in the entire company.

A TRIM program was eventually devised for cable activities: Costs were to be cut by 20 percent. A new staffing plan would be drawn up, which meant 120 fewer services in the office and the workshops. Product range would be analyzed and the use of raw materials followed up and improved.

Motivation

Gunder Andersson is the one who works most with the use of raw materials in ECA.

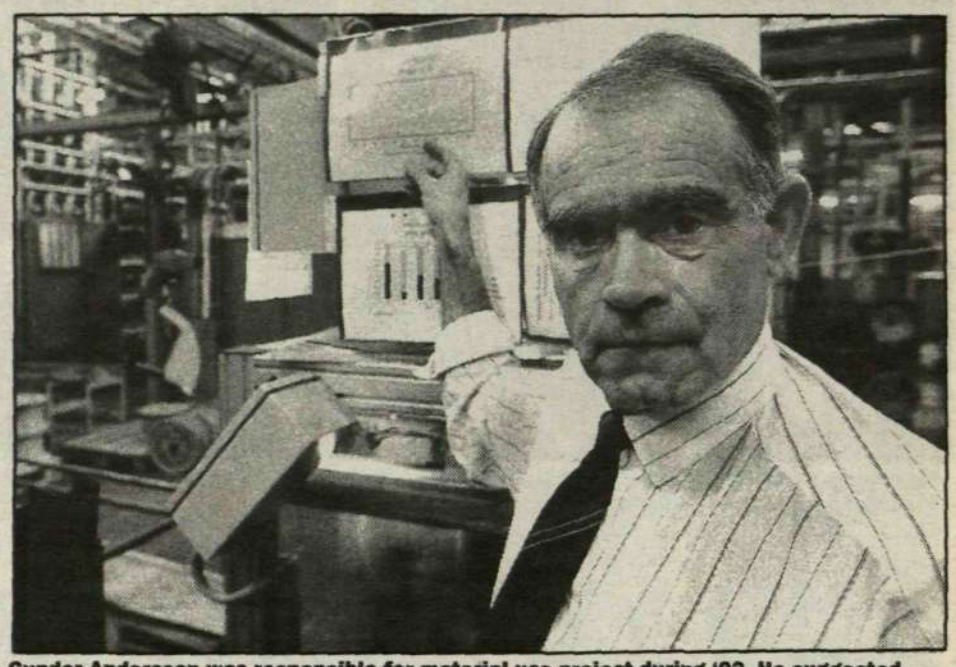
"We made every effort to motivate, interest and help operators with job assistance. The aim was that they themselves could follow up their own waste output and analyze the reasons for it. For example, in one of the insulating jobs, the level of waste fell from 8 percent at the beginning of '92 to 4-5 percent at the end of the year".

In total the use of material in the Telecable division improved by 12 million kronor during '92, and the positive developments are expected to continue through '93.

Elimination

At the same time there was an overall elimination of products. In copper cable they did away with 50 percent of the product range. Low-volume articles and articles with low profitability were dropped. Today Ericsson can get certain of these products from Forslid AB – Ericsson's cable distributor. Forslid buys products from other cable companies in Europe and then sells them to our customers.

"In September '92 we also began the P-50 project. This focused in the first instance on the level of use and secondly on line speed. The aim of P-50 was to increase productivity by 50 percent in eight months. We almost managed that, reaching 48 percent and moreover taking second prize in Ericsson's contest worldwide for best job improvement."



Gunder Andersson was responsible for material use project during '92. He suggested then, among other things, that one could, via each machine, follow up waste percentage through a simple curve diagram, shown measured against one of the insulating lines.

Good results

The results for TRIM regarding ECA were:

- That the company shrank from three divisions to two – power and tele.
- The number of employees was reduced from 1,040 to 745 persons.
- Total costs were considerably reduced.
- Material use improved considerably, up to 6-7 percent. Each percent improvement amounts to 2.5 to 3 million kronor.
- Significant capital rationalization. Total capital turnover increased heavily.

"Of course, this has been a very painful process, that affected many people," says Janne Sjöden. "However, cutting back and living simpler in every manner is a chosen path that one is forced to take in order to secure the company's long-term survival."

Janne also emphasizes that the job is not finished.

"In order to maintain our competitive strength it means that all the time we have to do some global analysis, to compare ourselves with the best and their methods. We must also continue to increase our export activities significantly, both in Hudiksvall and Falun.

Text: Lena Zacco-Broberg

"Unfortunately TRIM has meant a painful process for many people," says Janne Sjöden, "but at the same time it was a necessary route to secure the company's long-term survival."

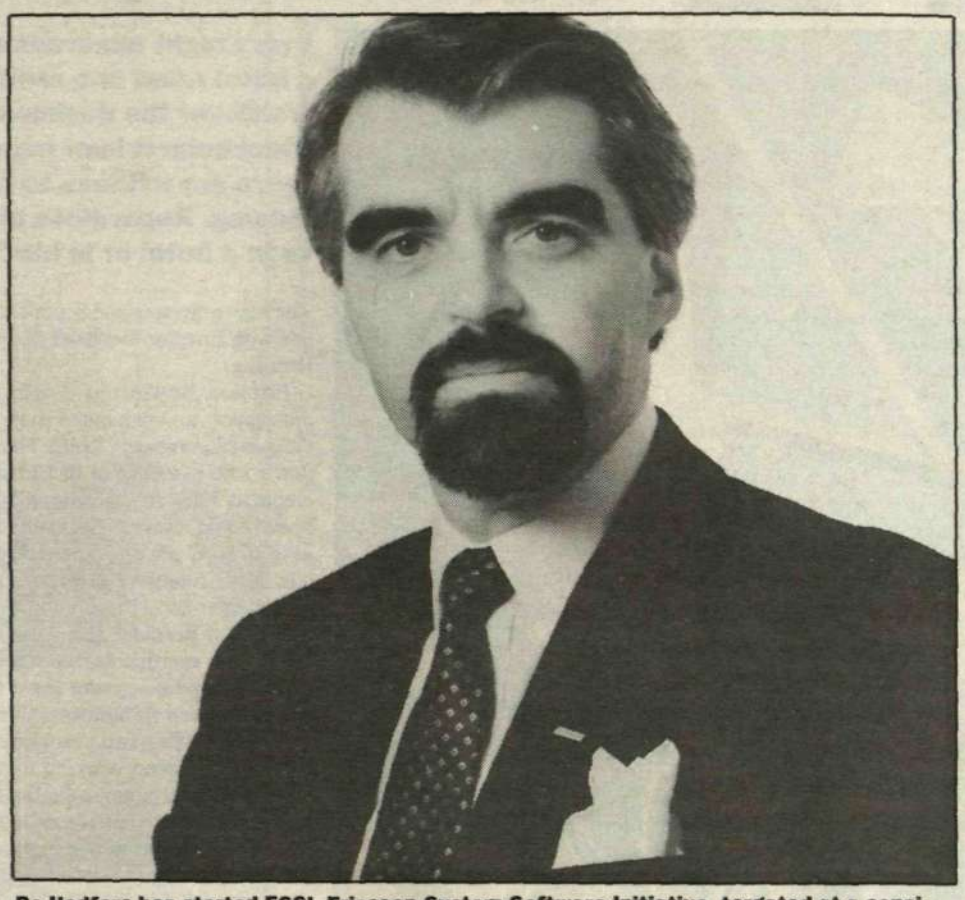
TRIM

Major push for better software

In 1997 Ericsson would be the world's best supplier of software for telecommunications. This is the goal of ESSI, Ericsson System Software Initiative.

ESSI, which is Ericsson's most powerful quality effort so far in the area of software, is being led by Bo Hedfors, who has top responsibility for technology development in the company.

"Through ESSI we shall improve our chances of breakthroughs between now and 1997. This means that the number of faults in our software will at least be halved every year."



Bo Hedfors has started ESSI, Ericsson System Software Initiative, targeted at a considerable improvement of software quality within AXE applications.

The development of software, SW, as it is sometimes called, has acquired greater strategic significance for Ericsson in the past ten years. Today SW is a vital part of the company's entire product range. At the same time that the number of installed AXE lines is increasing from year to year, regrettably so too is the number of fault reports that has its origin in software.

"We reckon that the total costs for handling fault reports in software this year will reach 1.5 billion kronor. In other words, software faults cost Ericsson enormous sums, while at the same time cutting into customer confidence." Bo Hedfors is concerned about this situation.

Comprehensive measurements

Over the years we have followed operations security through various measurements. Moreover, in the past two years some measurements were done with the help of PQT, which stands for Productivity, Quality and Time. These measurements have been collected from all the companies that supply AXE. That's why there's a lot of available data to build a quality effort on.

"For example, PQT has shown that some 16 percent of all products accounts for 80 percent of all the faults reported during the first 6 months of operation," says Bosse. "On the other hand, PQT also shows that 60 percent of all products are entirely fault-free during the same period. This means that fault reports is not something that we have to live with. There ought to be good possibilities for improving the situation by concentrating on correcting the some 175 products that account for 80 percent of the faults". The aim of creating ESSI is to achieve improvements for breakthroughs in SW development.

"In the first place we will use two powerful tools – Policy Deployment and SEI. With the help of its technicians Ericsson's SW development will attain an international top level. The goal is by 1997 to reduce the number of faults per 1,000 "program lines" (for example, non-commented Source Statements) to the best international standard, which Ericsson has studied in benchmarking with its partner Hewlett-Packard.

It is intended that our development centers will work parallel with Policy Deployment and SEI.

Policy Deployment is one of the tools in TQM. It is a methodology that stems from the present activities goal for the next 3-5 years. This comprehensive goal is broken down into yearly targets according to what has to be achieved. Then a few but vital actions are identified that can be implemented at all levels and units in the activities.

"An important aspect of Policy Deployment is root cause analysis of a problem. For such an analysis to be thorough, a broad commitment is required of all those involved in the operation and very close follow-up of the vital actions that unite them in their efforts.

"By having everyone involved in the task one can reach an understanding of what needs to be done," says Bosse. He points out that Ericsson has entered into close collaboration with Ranx Xerox in Policy Deployment. This is a leading international company in this field. Ericsson's internal support functions for quality work – Ericsson Quality Institute, EQI, and the quality unit in Bo Hedfors' own corporate function, DTQ – now have access to Rank Xerox expertise in Policy Deployment.

Measuring maturity

The SEI model is an internationally recognized method of juding maturity in an organization that works with SW development. The model is therefore usable in internal and external benchmarking. The model is closely related to the various quality prizes, but it is better suited to precisely SW development.

SEI evaluates maturity in the determined operation on a five-grade scale, where "1" represents lowest maturity and "5" the highest.

"As far as we know there is no development organization in the world that has attained level 5 as yet, and we have not yet decided in Ericsson whether that is the goal level we shall pursue.

"A first assessment points to a maturity level in Ericsson's SW development corresponding to a level of somewhere between 1.5 and 2.5.

"Over the next year all development centers will be assessed according to SEI. Thereafter, it will be followed up on an annual basis. In 1994 at least one development center should have reached level 3 and in 1966 we should have at least one at level 4."

A network of internal SEI assessors is now being formed.

Part of TQM

Bo Hedfors says that ESSI is not an isolated phenomenon or some overriding campaign. The program began as an integral part of Ericsson's TQM efforts. ESSI's goal is TQM's goal and the SEI model is totally "compatible" with the various quality awards that are being won through TQM.

"And Policy Deployment has always been one of Ericsson's tools for TQM. What ESSI does is to initailly introduce Policy Deployment in an overall company context.

"I feel that Policy Deployment is precisely the powerful tool we need to reach the breakthrough level in our SW improvements. And here I mean breakthroughs that are reflected in the company's earnings," Bosse Hedfors points out.

Text: Lars-Göran Hedin

News is money

"When everything has its price, news too is money." At one time one of Sweden's leftist rock groups sang this. Nothing is more true. As we stand on the threshold of the information society today one should invest sensibly to acquire information.

In Ericsson this is not too hard. The company has access to several international services in the area of information. 'Information and News Services', at ETX is a specialist in electronic information search.

When the library services at Ericsson Telecom at head office (HF) were reorganized last year, two units were formed with the special task of gathering information for internal customers. 'Literature Service' continues to take care of traditional printed information. The growing range of electronic information sources was handed over to the new unit Information and News Services.

The unit is located today at Marievik in Stockholm. Four persons work here on gathering information for internal assignments. Through Ericsson's Corporate Network and external data connections they monitor more than 2,000 public data bases around the world. There is a huge quantity of information stored electronically today. Finding the right bit in this maze calls for experts.

Cost effective

It is well to speak of this activity in the context of TRIM.There is a lot of money to be saved by tracking down information with the help of expertise.

"First of all, we have as major customers a number of agreements with large data base owners and data base hosts," says Urban Lindh, head of the unit. "This means lower prices. And we also use ECN to a large extent, instead of usually calling up data bases via modem. It means huge savings, both when we seek and supply information."

Press clippings

Urban Lindh points to the unit's press clipping service as another example of cost effectiveness.

"We have an agreement with an English agent who daily monitors more than 700 publications. From that we gather information that concerns Ericsson and we store it in our data base. Here our customers in Ericsson can access it, at a reasonably cheap cost."

The quarterly fee for this service works out to about 25 kronor per employee. This is a good price compared to many external suppliers.

"And it is so easy to access this information via Memo," says Urban. Some 40 Ericsson units have so far registered as takers of the service.

Patent agreement

Many tasks are individual searches where one is often in a hurry to get information. A considerable part of this concerns the area of patents.

"It is quite common for our designers to have information regarding whether a certain solution or product is patented somewhere in the world. Then we can come up with a quick and effective search in the patent data bases that exist today."

International News Service has recently signed an agreement with one of the most important data bases. The agreement gives access to search codes that considerably simplify and speeds up searches. This way you can be more certain about the result than if than if you yourself should try to tack down a patent.

"But one can never be completely certain, since certain countries, such as the U.S., for example, do not publicize patents before they are granted. One knows nothing about the applications.

High service

Fast and sure service is a pre-condition for a unit like this to survive. They have full responsibility for their economy – activities must be self-supporting. That's why it always costs something for the unit's services. How much often depends on how quickly an answer is needed. The quicker the need for the search, the more it costs.

"We sometimes apply a fixed fee for our customers, sometimes a flexible one, depending on the actual search," says Urban. There is a "quality guarantee" which says that if a customer is not happy with the information that is given, he only has to pay the fixed fee.

Text: Lars-Göran Hedin

Millions to save with cheaper lodging

Ann-Catrin Barot, Cathrine Lundgren, Annika Lindquist and Veronica Söderberg at Ericsson Bostäder help our colleagues to book overnight stays at cheaper rates. Photo: Magnus Torle

Every night hundreds of Ericsson people go to bed in a hotel room or a rented apartment in Stockholm. Whatever the decision they make on their stay in Stockholm it is of major economic significance. There are millions to be gained with cost-conscious lodging. Regardless of whether the guest wants to live in a hotel or in his "own" apartment.

The key to cheaper and better lodging lies with Ericsson Bostäder (Ericsson Housing).

Ericsson Bostäder is a section in the support unit personnel support in the parent company, LME. The section's role is to assure that Ericsson employees and others visiting Stockholm could have high-quality lodging at good prices – in resident hotels, hotel rooms or ordinary rented apartments.

Ericsson Bostäder also looks after villas and apartments belonging to Ericsson employees who leave Sweden on contract assignments abroad.

During the past two years Ericsson Bostäder has been working together with the TRIM group to find cost-effective solutions when it comes to hotel and other forms of overnighting in Stockholm.

Ericsson big customer

With an annual hotel booking in Stockholm of close to 50,000 nights Ericsson is a big customer that should be able to negotiate substantial rebates.

It differs from hotel to hotel but as a rule it could amount to a discount of between 25-40 percent.

By booking a hotel room through Ericsson Bostäder those who want to stop over in Stockholm can reduce costs considerably. Agreements have been signed with most of the hotels on discounts for Ericsson employees, but the aim is to reduce the number of hotels by next year.

Own choice

A pleasant alternative to hotel rooms, especially with prolonged visits to Stockholm, are some of the apartment alternatives that Ericsson Bostäder can offer. There are ordinary rental apartments and resident hotel apartments on offer.

Every night between 700-800 persons are using an apartment that was booked through Bostäder.

"This is definitely a savings alternative," says Cathrine Lundgren at Bostäder. "We can offer fine hotel apartments in a price category from 300 kronor a night. And the rooms are fully equipped, with telephone and TV."

At Svit hotel in Sundyberg, with which Bostäder signed an agreement a couple of years ago, there are now 56 single-room apartments of varying sizes. They have been much sought-after, not least by overseas guests visiting plants in Sundyberg or Kista.

Its location close to the subway station means that Svit can offer excellent communications. In addition there is also a recreation room and a cafeteria where guests can have breakfast, if they do not want to prepare their own.

TRIM

Success with Svit hotel has led Bostäder to seek new similar alternatives.

City appartments

In a new building going up at Klara Strand, near the central railway station, Ericsson has leased no fewer that 76 two-room apartments.

"They will be really fine apartments, fully equipped and in a very attractive location," says Cathrine. "There has been a lot of interest in these."

The first phase of the apartments has already been rented out for a long time in advance.

Worth the price

An apartment in Klara Strand costs 420 kronor a day, that is to say about 12,000 kronor a month.

This is very cheap for this kind of apartment and is about half of what a corresponding apartment would cost on the external market. Of course, compared with hotel rooms, the price difference is even greater.

"That's why we have had so much support from the TRIM group for our activities," says Kurt Kangas, head of Ericsson Bostäder.

"It is not all that hard to see why. If on average you could save as "little" as 300 kronor per hotel night, this alone corresponds to 15 million kronor a year".

"And the trend just now is that the number of overnight stays is increasing heavily," Cathrine fills in. "That surely has to do with Ericsson's hefty order bookings and all the new business contacts that they entail".

Conference discounts

Ericsson units that for one reason or the other cannot find suitable alternatives for organizing courses and conferences internally can even make a TRIM input by using the discounts that Ericsson Bostäder has negotiated with more than ten training centers and conference hotels around Stockholm. The agreement provides for a 10-20 percent discount on the ordinary prices.

"But before you turn to us, you must have very good reason for holding a conference outside of Ericsson's own premises," says TRIM leader Johan Siberg.

"The main rule to be followed then is that courses and conferences must be held internally, as long as it is possible to do so."

Text: Lars-Göran Hedin

Finding the way to cheaper lodging

Ericsson Bostäder's offer of overnighting alternatives is easy to locate in Memo. Do this:

1. Go into Ericsson Nytt by writing "N" when you are in the EDT menu. Press Enter. You now have a list of the latest company news.

2. Write "11" and press Enter. You will get a list of alternatives of what Bostäder can offer.

"11 PRICES" - hotels in Stockholm.
"11 SWEDEN" - hotels in Sweden
"11 EUROPE" - hotels in Europe
"11 WORLD" - hotels in the rest of the world
"11 CONF" - conference guide in Stockholm.

3. When you have decided on the alternative you prefer, write this into the top right corner, for example, "11 PRICES" and press Enter. Now you will get a list of "TRIM-proof" hotel alternatives.

"We must above all avoid unnecessary expenses," says Peter Johrén, business area controller at Business Communications and Network.

Cost-consciousness a rewarding business

EBC (Ericsson Business Networks AB) has long worked with systematic TRIM activities.

Business communications, EBC's biggest area, is faced with very tough competition around the world. For many years profitability has been under heavy pressure in this market.

"Constantly improving profitability in EBC is a prioritized area," says Peter Johrén, business area controller and economy director in Business Area Business Networks (BZ).

TRIM 92 and the continuing TRIM program have additionally focused on measures to improve profitability both in the company EBC and in the business area as a whole.

Cost-conscious

"A very important part of the TRIM program in EBC is to build up cost-consciousness among all employees,"says Peter Johrén. He has worked hard in getting this message across in the company's organization.

"Everyone must contribute to reducing costs," he says. "Above all we must avoid unnecessary expenses. A more effective method naturally contributes also to holding down costs."

Much of this has to do with each employee using common sense and utilizing available resources in as intelligent a manner as possible.

"One has only to compare with one's own personal economy," says Peter.

"There, most of us try not to spend more than is necessary. That means using cheaper alternatives when these are available."

Video conference

An example of earlier TRIM activities in EBC dealt with reducing costs in connection with travel by looking at the means of travel and to a large extent using video conferencing instead of meetings.

This was done a lot in connection with implementation of the AU-90 project.

This is an example of a more fundamental TRIM activity. The project was devised to reduce our ADB costs and included as well systems exchange as a thorough clearing of the company's ADB register.

This meant immediate and very big savings for the operation.

Improved production

Another current example of a fundamental change is production conversion in Karlskrona with investments in the new Verkö plant.

This top modern factory, which was dedicated on October 14, has a very rational production flow. The organization is flat.

Workers have been given greater personal responsibility.

Increased responsibility

In the new factory workers themselves have total responsibility over setting up a complete business switch or telephone, adapted to each customer's specific needs.

"The change at Verkö will contribute immensely to more effective production at the same time as workers get a much better work milieu," says Peter Johrén.

TRIM part of TQM

The continuing TRIM activities in EBC will be a part of TQM work.

"This means that cost-consciousness and continous improvements at an even higher rate than before will be part of our working day," says Peter Johrén.

"It is important for everyone to understand that TRIM is not a parenthesis in the form of a project that is carried out over a limited time. TRIM is part of our daily work.

"With this we all have to contribute actively so that Ericsson can continue to invest in necessary research and development and marketing activities.

"This is amajor prerequirement if we are to remain a world leading company."

Text: Thord Andersson
Photo: Conny Domnauer

Future demand for high speech quality

We have long accepted somewhat worse sound quality in mobile telephones since they so obviously have other advantages. But now when the cordless phone, in the form of the digital personal telephone, is coming into more general use and seriously begins to compete with the fixed network, the demand for good speech quality increases.

At Ericsson Radio the research department, RCUR, is working with speech quality on future systems but also with improving the sound in existing digital systems.

First of all it should be said that it is possible to build a perfect mobile telephony network with superb sound, no dropped words, no noice, easily recognizable voices, etc. But then that is a luxury network, with perhaps 10 percent capacity in the number of subscribers and calls, compared with today's version.

When it comes to mobile telephony there is a sort of "quality-quantity" trade-off. The operator wants to have as many calls as possible in his network, but the more he squeezes into his limited frequency band the more he risks losing in terms of sound quality.

The digital signal in the fixed network is pulse code modulated (PCM) for a transfer speed of 64 kilobit/second. This provides good quality and listeners cannot note any difference with the analog signals. In the world of mobile telephony one cannot afford such big bandwidths. It is a matter of coming down to a quarter or one-eighth of the transferred information. With transfer speed of 13 kbit/s, as in GSM, or even lower, as in the American D-AMPS or the Japanese PDC.

New demands now talk of a halving of the already heavily reduced bandwidth in order to take in twice as many calls in the same frequency area.

In a short time

This is the reality in which Ericsson and other tele companies are working. It means developing in a few years a system that allows optimal use of frequency areas with existing or even higher quality.

The main work lies in so-called speech coding, which compresses signals in a more or less natural manner. Nevertheless this does not have to be too complex since it demands powerful signal processors, which in their turn cause the telephone to use more current and thus shoots up the price.

A lot can also be done in radio transmission and network. All parts influence each other and better radio transmission, for example, gives greater leeway for the speech coder and vice-versa.

Ericsson is working with solutions that are robust, that use general patterns for sound, that more effectively track and treat faults in radio transmission and that finally manage to eliminate the echo that becomes annoying through delays in the digital handling of signals.

Key to speech

Speech coding is the key to the digital process. Its underlying task is to cut down the information "overflow," that is to send over as little as possible but keep clear speech with an identifiable voice.

Here they are working with analysis of human speech, which is quite slow and follow certain rules. Something that makes it possible for one, with fair certainty, to predict how the speech will continue from a given situation.

The work tools are algorithms, mathematical formulas that figure out how signals must be filtered for transfer. This can be done more or less effectively, you can store more and more in the memory to bring down the signal that is sent, but as has been noted the processes become more complex, the demand for strong signal processes increases and power use rises.

Regardless of how excellent speech coders still are, they throw out information that remains lost. It is not a matter then of a coding that can fully be inverted so that the original quantity of information can be regained.

People's voice and hearing are very finely tuned instruments that are still in great part unresearched. Letters in the English language, it is said, can be pronounced in a hundred ways depending on where in the word it appears.

Even if the digitalized sound is made clear and articulate nuances can disappear so that the speech becomes robotized and the voice hard to recognize.

One can find a villain in this context. Namely that speech coders up to now have been pattern based after human speech with a quiet background. A pattern that is far too simple and that does not take into consideration what the reality is.

The sound that enters into a mobile telephone can be (and perhaps always is) much more than speech. It can for example be noise, music, buzzing, other voices, etc.

That's why we have, in the hunt to develop general patterns, begun to study more and more how sound is accepted by the ear. So as to be able to "fool the ear."

Human ears

Different properties in human hearing can be used when one tries to design optimal speech coding. For example, so-called masking effect, which holds that certain tones drown out others, that a tone with a certain frequency and a certain sound level knocks out other frequencies. This can be used by allowing the inevitable noise to grow at a suitable point, that is to say when the spectrum is stronger. Here there is a huge potential for improvement.

The ear is also relatively insensitive to phase position in a speech signal. One can reduce phase information without sound quality diminishing notably. On the other hand one must take more care with lighter voices, for example, female voices, since their higher base tone frequency demands more finely divided signals.

The total knowledge of the ear's properties can be used when one designs mathematical algorithms.

Echo

When all corded phones are exchanged for cordless ones there will be delays in all systems, since speech coding, channel coding/interleaving etc. means obvious delays in transmission.

Delays will mean that the acoustic and electrical echo that is found in the system will be audible. For this to be endurable there must be an echo canceller (which in principle is a way of supressing the echo by adding a corresponding copy).

Much is very rigidly specified in speech coders and channel coders on the transmitting side. But on the receiving side, where one can correct faults that arise during transfer, there are possibilities for improvements.

Before the signal is sent out as radio waves in the atmosphere certain important bits of speech in the channel coder are protected. (What is important or not important has been decided in the speech coder which classifies blocks according to a three-grade scale). The protection means in principle that the bits are sent two or three times. The protection takes up a fairly large part of the transferred signal, in GSM, for example, 9.8 kb/s of a total 22.8 kb/s.

With the receiver the signal from the radio frequency is first de-patterned to a low frequency and is then digitalized. The next step is to try to detect if it was ones or zeros that were sent. This is done in a so-called equalizer, whose main task is to compensate for multipath expansion/time dispersion (radio waves are reflected in various objects and is delayed correspondingly much, which causes the received signal to destroy itself).

After the equalizer comes the fault-correcting decoding, which takes care of the faults that, despite everything, sometimes crop up.

Good fault-correcting codes mean that the system permits more disturbances in the atmosphere, that is to say that it is more robust.

In general it can be said that Ericsson benefits from the fact that speech and hearing research have come a long way in Sweden. Especially in the academic world.

The institute for speech transfer at KTH, the Royal Institute of Technology, has a solidly established reputation internationally going back a long time. They do research both in speech synthesis, that is how people control muscles and produce speech, and speech recognition.

Ericsson Radio has also over some 15 years worked with Chalmers institute on information theory, the place for Sweden's most advanced research when it comes to speech coding.

Speech research is very important for mobile telephony. A call must be experienced as being pleasant. Mobile telephony, which so far is being used mostly for brief calls, from cars etc., must now begin to compete with the fixed network.

Personal telephony

But how goes it now with personal telephony?

"I think we can make a good and robust speech coder for a personal telephony system that transmits with the same speed as today's GSM coder. With a quality that is comparable to today's fixed network," says Hans Hermansson at Ericsson's technology development department.

"In the future system one should be able to communicate with multimedia, that is to say video, speech, images, music.

"But," Hans Hermansson adds, "it must be more important that we be able to speak with each other with high quality than that we be able to play computer games over the tele network."

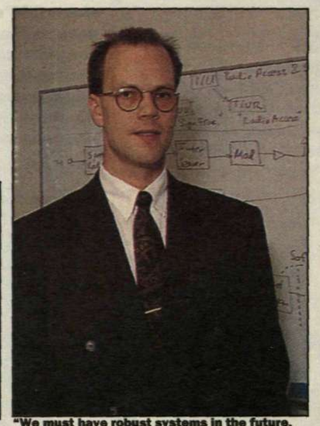
Lars Cederqvist

RCUR in brief

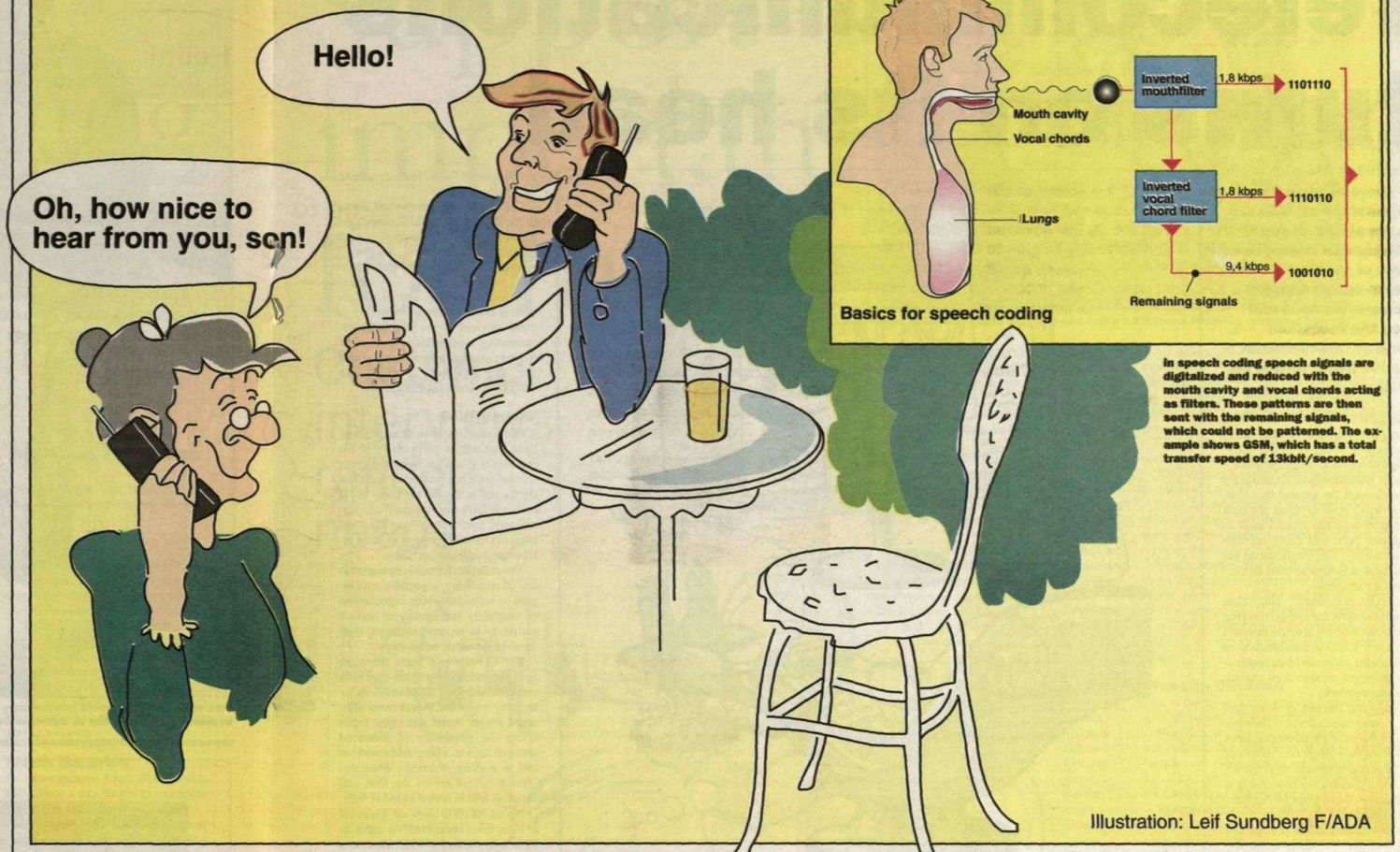
RCUR's department that works with signal handling does research both in future systems and with improving existing systems.

The department consists of two units, one that works with speech quality, echo problems, etc, and the other that researches radio transmission and radio access.

The talk quality unit works in a cross-scientific area while the radio unit deals with pure technology where one figures out how data is sent and received in the best way. The units are deeply integrated.



"We must have robust systems in the future, otherwise difficult radio conditions would not manage transfer of the sound signals. Speech quality must be affordable," says Björn Gudmundsson at RCUR.



In speech coding speech signals are digitalized and reduced with the mouth cavity and vocal chords acting as filters. These patterns are then sent with the remaining signals, which could not be patterned. The example shows GSM, which has a total transfer speed of 13kbit/second.

This is how a mobile telephone call works

A mobile phone call consists of a series of operations, many of which take place in the small telephone, which is a wonder of advanced technology.

The sound that is spoken into the pocket phone's microphone must, generally speaking, be converted into a digital signal consisting of ones and zeros, cleared of information "overflow" so that there is little as possible to send, equipped with protection so that it can also handle more difficult radio conditions and then modulated from digital to analog signals in order to be able to be sent via radio waves.

The call is then taken from a radio base station, which in principle drives the process in reverse.

The signal is filtered (other frequencies around are removed), switched in the demodulator from analog to digital signal, detected in an equalizer, corrected in the channel coder, which attempts to correct faults that crop up in the radio transfer and is speech coded before it is converted into a normal telephone signal, so-called PCM, which goes out over the ordinary tele network.

Should the call go from mobile phone to mobile phone the entire process is repeated once more since the signal must then go out to a base station which sends it further to a mobile phone.

Target: As small as possible

Minimizing the sent signal is obviously a common goal in all communications, and even in the analog system there is some form of contraction in that one filters away the highest treble tones (it may be difficult to distinguish an f from an s) and the lowest base tones (which give a more natural sound but do not affect perception).

To transfer human speech it is enough to reckon with a frequency area of 200-3,400 Herz.

When the signal is to be digitalized samples of 8,000 times per second are taken on the frequency. In order to determine the amplitude with acceptable certainty 8 bits are demanded for each sample, that is to say 8 zeros or ones. (gives 256, that is 2 raised to 8, alternative measure).

Signals in the fixed network are pulse code modulated (PCM) in this way and demand a bit speed of 64 kbit/s. Listeners cannot detect any difference with the analog signals.

Speech quality measured subjectively

There is no objective way to measure speech quality with mathematical tables and curves. Speech and hearing are far too complicated phenomena that we know too little about. That's why subjective measurements are called for.

The questions that one wants answered may be: Is the sound in the new digital GSM system acceptable? Is GSM better than the American D-AMPS? Is analog better than digital? Or vice-versa? What happens when you push speech coding to the limit and halve the frequency band to take in as many calls as possible?

There is a lot to test, but it is not always that it demands comprehensive research. During the process of development work, when small changes are being made, the trained expert himself determines whether the sound will be better or worse. But when it comes to bigger changes, then it calls for independent tests with test subjects.

There are norms for how a proper test should be carried out. Three types of international standardized methods exists.

Absolute Category Rating, ACR tests, where test subjects evaluate sound quality on a scale of 1-5, where 1 is bad and 5 is good.

Difference Category Rating, DCR, where you can first hear the speech test in the original and after it has gone through a system, for example GSM.

It is evaluated from 1-5, where 5 means almost undiscernible deterioration compared with the original.

Comparison tests where you hear the same element twice and then determine which is better.

In principle, ERA has stuck to ACR tests, but is also in the process of developing its own methods working together with ERISOFT.

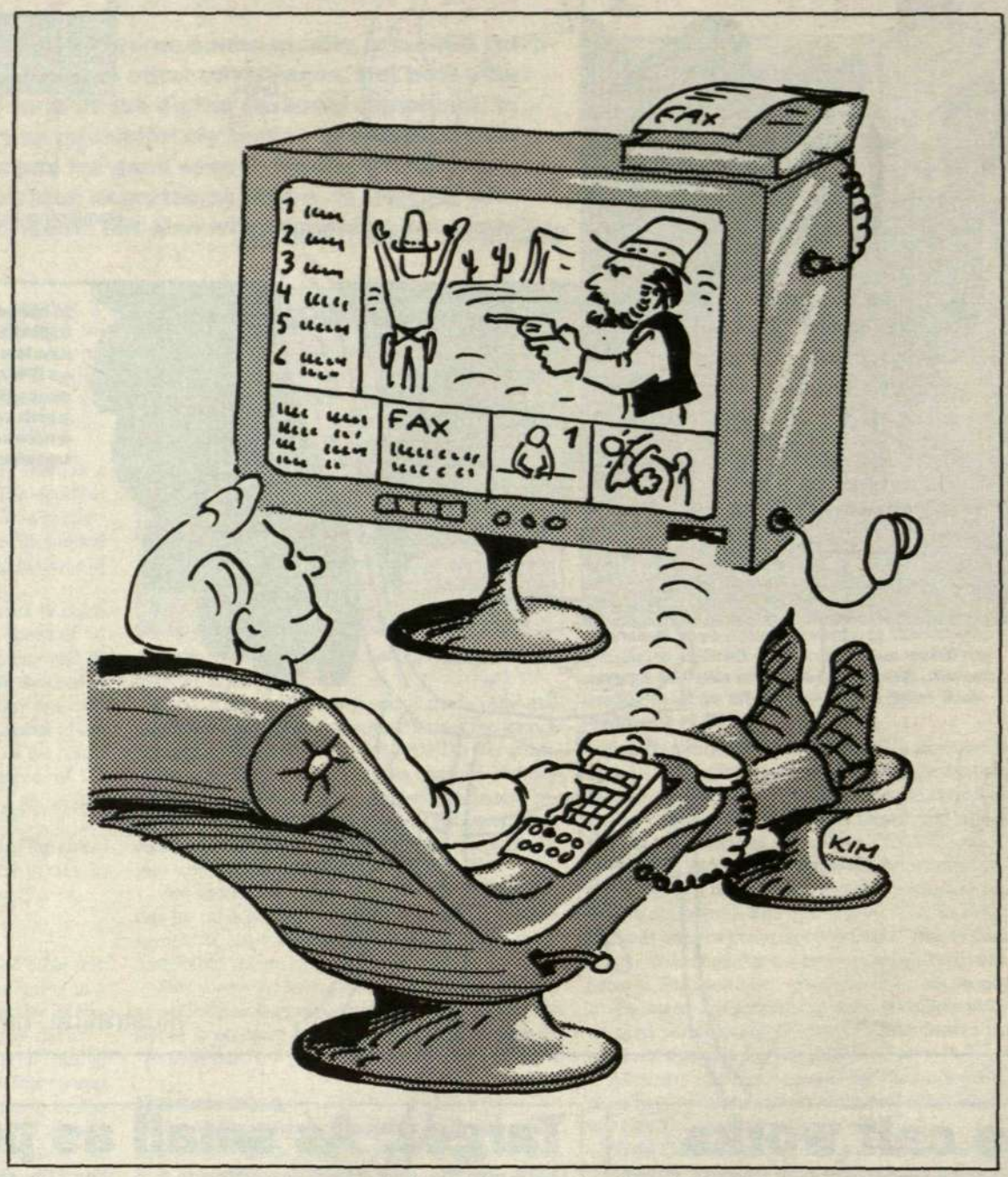
An ACR test is done with some 10 to 15 persons (with reasonably good hearing) chosen at random and then placed individually in a lab where they sit before a computer-guided test program. The test subjects must be entirely "unused," that is to say that they must not have participated in a similar test before.

The test takes about half an hour, you sit with a receiver in your hand and punch in your verdict. Experiences show that the test is considered very difficult. Setting an absolute evaluation on a scale of 1 to 5 is not easy. That's why they usually have a training session before the actual test so that research people can learn to identify what is meant by good, less good, etc. But during the research process it very easily happens that a person begins to do his own calibration after a while.

"Measuring of speech quality is done in a studio where researchers over a period of thirty minutes listen to taped sounds and classify them on a five-level scale," demonstrates Hans Hermansson at the development department.

Telecommunications turns on its head

The 1990s are proving to be years of reckoning for established industries. An ability to cope with change is now the basis of survival for business enterprise. No sector is immune and even the fast-track world of telecommunications is being turned on its head.



In the future, the combined telecommunications/TV-command centre might find its way ino our homes.

Traditional methods of delivering information and entertainment are in the course of being reversed. Information obtained through the ether – such as television will increasingly come through the ground by cable. Conversely, most of what we now receive through the ground such as telephone calls will come through the air waves. The implications for equipment suppliers as well as customers are immense.

Telecommunications and data communications are also converging to the point where it is difficult to tell them apart. It is now feasible to have digital audio, video and data applications delivered to desk tops via the telephone network.

Clearly the amount of voice and data communications flowing through the world's telephone lines is growing at a huge rate. But owning networks is becoming at the same time a commodity business.It is the data that flows through the lines that is valuable.

As new opportunities emerge and risks increase for distributors and suppliers of information, global alliances are being formed.

This year has seen BT and America's MCI link up to establish the world's first intercontinental telephone company. This aims to provide multinational corporate clients with one-stop shopping for voice and data transmission services around the globe.

AT&T has also launched its worldsource venture to exploit the global market in conjunction with Singapore Telecom and and Japan's Kokusai Denshin Denwa Co.

At the same time companies are seeking to become global distributors of interactive digital multimedia services. There is a dash down the digital highways that are being created. The goal is to succeed in connecting the telephone network with the display capabilities of the television set and the processing power of the most powerful computers.

The hottest concept is that of interactive digital multimedia. The big players are preparing for a surge of growth in new markets created by the marriage of communications and entertainment technologies.

Microsoft Corp. in the U.S. has had discussions with Tele-Communications Inc. and Time-Warner to establish Cablesoft to promote standards as the computer, telecommunications, publishing, entertainment and other industries converge on interactive TV and other multimedia platforms.

A consortium of Apple computer, AT&T, Motorola, Sony, Matsushita and Philips is also reported to be looking to create multimedia capabilities for home-entertainment systems.

Cable market grows

The growing convergence of technologies is likely to find a growing outlet in cable TV. By the year 2000 Europe is forecast to have some 45 million cable connections representing around 27 percent of all households on the Continent. About 55 percent of the projected connections are likely to be located in three countries – Germany, France and the Britain, with strong growth also likely in the Nordic countries, Benelux and Switzerland.

"The hottest concept is that of interactive digital multimedia services"

The Netherlands has some five million cable connections, while Belgium has the highest cable penetration in Europe , with 88 percent of households having wired TV reception.

Sweden's PTT, Telia, formerly Televerket, was responsible for starting the country's cable television boom and now controls some 60 percent of Sweden's two million cable households.

In France, the market is divided into Plan Cable networks owned by France Telecom, but leased to private operators, and networks both owned and operated privately.

Germany, with some 10 million subscribers, boasts the highest number of cable customers in Europe. By the end of the 1990s, some 17.5 million homes in Germany are expected to be linked to cable TV representing 50 percent of the country's households.

Cable in Britain is witnessing record levels of investment and growth. The last year has seen investments , deals and financial commitments to fund over 3 billion pounds (about 40 billion Swedish kronor) of cable construction in addition to the one billion pounds already invested and dug into the ground.

Cable business in Britain has been stimulated by the country's liberalization of telecommunications. There are now more than 130 individual franchises , of which 70 are expected to be operating by the end of 1993.

Britain's liberalization process started with the privatization of BT and the establishment of Mercury Communications. The liberal environment also allows cable companies to offer an alternative telephone service to their customers.

"Digitized information can be transmitted at declining cost anywhere"

Britain is the only country in Europe that provides its cable operators with such freedom, and it is the linking of telephone services to cable television that is radically transforming the economics of the country, just as is the case in the United States. It is also the reason why franchises in Britain have attracted so much interest from North American telephone operators.

Cable building has pushed ahead in the Britain and the U.S. despite recession, and with the support of such companies as US West, Southwestern Bell, Videotron and Bell Canada.

Forecasts indicate that 12 million British homes will be accessible to cable services by the year 2000, representing a penetration level of 51 percent. Actual subscribers to cable TV are expected to rise from 700,000 to some six million.

Competition

Cable could create viable local telephone companies particularly if the industry is given the right to operate its own switches between franchises. By the end of the decade cable could certainly have asserted itself as a significant third force to BT and Mercury in the provision of local telecommunications services.

The problem for cable operators is one of credibility, especially with regard to business where expectations of reliability and quality of service are likely to be more stringent than those of domestic consumers.

But in Britain, at least, there are firm indications that cable operators can establish their credentials as telephony suppliers. Apart from offering cheaper rental and calls, cable offers the possibility of enhanced services such as a beep when another call is waiting, warnings when unwanted callers are on the line, call transfers and itemized monthly bills.

About 300,000 lines are expected to have been connected via cable in Britain by the end of 1993. Forecasts suggest that by the end of the decade cable telephony will generate more than 1.1 billion pounds (close to 14 billion kronor) in revenue a year.

Major operators such as BT are having to come to terms with a fast-changing environment. A major challenge is how to more fully utilize existing networks.

Digitized information can be transmitted at declining cost anywhere, using fiber-optic cabling, satellites, broadcasting frequencies and plain old telephone wires, which on average are in use only 1 percent of the time.

Linkage to television is being seen as an answer. There are some 157 million homes with television in Western Europe, most of which also have a telephone. Research is under way into the transmission of video signals down ordinary copper telephone wires.

Video-on-demand

BT is proposing to launch a video-on-demand service via telephone lines to compete with cable and satellite television as well as video shops as early as 1994.

The big question for the various players is whether they are applying themselves and their capital to real market needs. Serious investors in areas such as cable are steeling themselves for a long and tough road to profitability. Others who lack funds, partners or management expertise will fall by the wayside. Exciting opportunities lie ahead for the far-sighted.

Support important for future

Holger Ronquist, Sören Ahlstedt and Anders E Nilsson studying customer interviews.

Customer interviews reflect needs

In Ericsson everyone is talking about "the customer at the center." What does the customer really want? Yes, better service and support.

This was shown in a major survey in which 16 mobile telephone operators were interviewed on their views about Ericsson and the services they hope to be able to buy from Ericsson in the coming years. With the help of suppliers customers have to develop their network in order to increase revenues.

It is Customer Support at Business Unit RMOG at ERA that together with Ericsson Hewlett-Packard Telecommunications AB took the initiative for the survey.

"The interviews, which began in April this year, have been concluded. Now we are creating a program of measures," says Sören Ahlstedt, responsible for Customer Support at RMOG.

Sixteen operators in Europe, the Middle East and Asia were part of the survey, undertaken by Holger Ronquist and Anders E. Nilsson from the consulting company Teknosell. In order for those interviewed to freely express their views there were no representatives from Ericsson present at the interviews.

Support is an area that is becoming ever more important but which is still neglected throughout the entire Ericsson group.

"We ought to look at the computer industry, where they are really good at customer support," says Sören.

Now that the former Swedish Televerket has lost its monopoly and more non-telecom companies are coming in as mobile telephone operators the demand for customer service is even greater.

Illustration: Leif Sundberg

PTT and investors

The operators interviewed fell into two categories: traditional PTT, that is tele administrators; and investors, that is companies without broad experience in mobile telephony.

"The difference between traditional tele administrations and investors will narrow in line with deregulation of telecommunications," Sören explains.

Altogether some 100 people were interviewed in depth. There were three separate interviews per customer, with representatives from top management, marketing and technology. Above all, there were two questions that stood out:

Which services do customers/operators expect to buy from Ericsson in the coming years?

"Do Ericsson's present offerings correspond to operator's needs?

From the interviews it was concluded that most customers felt that Ericsson's systems were good but when it comes to support and services there was room for improvement.

Most customers felt that Ericsson was a very technology-oriented company. When a mobile phone system is installed and put into operation the technology is important. As the system grows the technology no longer is the focus but rather it is support and services the operator wants.

Close to Ericsson

One of the areas that customers demanded was a broader spread of competence.

Here they wanted to have a collective approach and together with Ericsson draw up plans for the year. This applied not only to courses for technicians but also "general basic courses" for hundreds of administrators.

Another desire that came forth was to have a "systems engineer" as a link between the operator and Ericsson.

The customer's desire for proximity with Ericsson came out clearly in the interviews.

"By being close to the customer we gather important information on how he thinks and acts and this way we can actively contribute to making his network function optimally," says Sören.

In line with deregulation, tele administrations are more profit oriented.

One result is that personnel is being reduced and they no longer want to have reserve parts in storage. Instead, they want to shift this to suppliers and pay for this service.

"Our goal is to have satisfied customers by offering services that customers demand and are ready to pay for," Sören points out.

Missions

The views that came forth from the survey interviews form the base for a program of measures that were later presented in the fall.

"We will document the survey results, improve and expand our customer services programas well as organize sales conferences. But that's not enough," says Sören.

"We must also undertake "a mission" internally of adopting another viewpoint when it comes to customer support."

Being close to the customer is important. Here we already have a good base through the Customer Support Center (ESO) spread out through the company.

"The interviews in the survey show that operators want to have help in developing their systems. Through closer collaboration we can help our customers to grow and to increase their revenues while at the same time we can earn money," Sören concludes.

Gunilla Tamm

"Human contact" will sell Ericsson

Freedom, closeness, companionship and ease. These are some of the key words in the new marketing concept for Ericsson's mobile telephones. This applies to the new generation of pocket phones that will be launched in a "new world" - a world that is demonopolized and where competition increases between both operators and manufacturers of mobile telephones.

Of all of Ericsson's products the mobile telephone is special, in that it is the only one that is sold directly to the common consumer. The market is totally different from that for other Ericsson products.

"A mobile phone is consumer capital goods, just like a CD player, video camera or TV. Prices fall, new models replace others and the competition among various brands is razor-sharp." So says Leif Dahl at Ericsson Mobile Communications, ECS, Lund, where he is responsible for marketing communications for mobile telephones around the world.

A new world

"We are entering a new world regarding mobile phones," says Leif. "A demonopolized world, with huge volumes short life cycles, price pressure and competition between operators, with reduced call fees as a result.

"In this new world there are also the new values of the '90s, which place solidarity and relations at the center. It is a new, gentler lifestyle that takes over after the tough '80s. Harry HotLine, which has been a symbol for Ericsson's mobile phones, was a tough "lone wolf" and when he spoke on his mobile phone one never saw with whom he was speaking. In the new concept it is precisely companionship that is important. In the advertising shots that have just come out it is always at least two persons that are talking, discussing or laughing with each other. The mobile phone itself is not part of the photographic image but is placed alongside the advertising text.

HotLine removed

In Sweden HotLine stands for mobile phones from Ericsson. With the GSM phones we are coming in on new and bigger markets, such as Germany and France. A survey was undertaken in order to find out what people in Europe associated with the name HotLine.

"It showed that the French associated the name with fashion and clothes, while for the Germans it had something to do with computer servicing," says Leif. The name HotLine is also not accessible outside of the Nordic countries. At the same time here in Sweden there was a court dispute over the use of the name HotLine as a trademark. The result of this dispute is that Ericsson is now obliged to discontinue using the name as a logo overall from the start of next year.

Flexible concept

The new marketing concept will be a help in keeping Ericsson's large market share as far as mobile phones are concerned. This is particularly true for GSM phones. The user will feel such loyalty to his mobile phone that when he or she switches to a new model Ericsson will continue to be the preferred choice.

The image material used in the new marketing concept is of the momentary image type and exists in 20 different variations. The photos were shot in Asia, Europe and the Nordic countries. The advertising text centers around certain lead words, which will convey a feeling of warmth and companionship. The message is it is easy to have human contact with the help of a mobile phone.

Soft tone

The tone of the images is tempered and soft. Ads, brochures, billboards, packaging and directions for use, all of these are part of the new concept and follow the same style.

By combining the texts with different images it is easy to apply the concept to different markets and to different mobile phone systems. This applies not only to cultural differences but also if it happens to be a new or seasoned mobile phone market.

With the composition of texts and images we have had today's mobile phone user in our vision. It is men and women (there are more and more of them) between 25-45 years of age, well-educated, active and interested in what is new.

Internal marketing

Mobile phones ought to be the product that the public at large associates with Ericsson. This makes all the company's employees marketeers, and that's why it is extremely important that the thinking behind the new marketing concept should be well-known.

"In November, we will be starting an information campaign. Among other things, there will be an info package with brochures and video that will be sent out to Ericsson's 200 top managers," says Leif. This in order to provide them with the means to inform their staff more thoroughly.

In these pages there is one of the new ads that will usher Ericsson's mobile telephones into "the new world."

Gunilla Tamm

Marketing of mobile telephones is different from that of other Ericsson products," says Leif Dahl, Ericsson Mobile Communications in Lund.

Advertisements, brochures and packaging – all follow the same style.

THE AVERAGE DISTANCE BETWEEN MOUTH AND EAR IS

147 MM

Take an ordinary ruler, bend it slightly and measure the distance between your mouth and one of your ears. That, more or less, is the size of the Ericsson Handheld GH197.

To be absolutely precise, its dimensions are 147 x 63 x 30 mm. It could be even smaller, but better optimal than minimal.

And every cubic centimetre is fully used, so not one of its 295 grams is superfluous.

At one end, the earphone. Developed by hi-fi experts and worth its weight in gold in noisy surroundings.

At the other, the microphone. Highly sensitive to the user's voice but with unique technology that cuts out ambient noise.

Between the two are the clear, informative display and the logically arranged buttons in functional and numerical groups. Other features include the big memory, which can store up to 99 names and numbers, pending on the SIM-card, the flexible antenna and a standard battery with power for three hours' talk-time.

Then, of course, there is Ericsson's complete accessory programme with its portable and vehicle Handsfree Kits. Why not pop down to your nearest Ericsson dealer now? But leave the ruler at home. You won't need it to discover that the distance between people has become even smaller.

Ericsson Mobile Communications AB.
S-223 70 Lund, Sweden

MOBILE PHONES BY ERICSSON

Fiber optics sheds new light over Copenhagen

With the help of fiber optics in the form of Fiber to the Home, Danish subscribers will be able to enjoy a host of new tele and cable-TV services. Fiber to the Home is a field trial driven by the Danish tele administration, KTAS, Ericsson, NKT, and Ericsson's and Bang and Olufsen's jointly owned company DIAX.

One of the goals is to research future expanding possibilities for communications between the home and the outside world, which is attainable thanks to optical fibers.

"We want to have experience with optical fibers and a flexible access system in the subscriber network. Could you come up with a good idea," said KTAS to Ericsson in 1990.

KTAS had been following broadband developments and the new technical possibilities, thanks to fiber.

RACE success

They had studied the successes in the fiber optic project that Ericsson and NKT drove together in the European development program RACE, Research and Development in Advanced Communication in Europe.

Now KTAS wanted a similar project.

Hence both Ericsson and NKT became involved and went into an agreement with KTAS at the turn of '91-'92 for a field test.

Ericsson had to work on demand specifications in collaboration with the customer, which is unusual.

"Doing an individual "demand-spec" was, in principle, new for us. It was exciting and evolutionary," says Jan Rönnberg from development unit ALFA in ETX.

"It meant really knowing the customer and understanding his needs.

On September 20 this year it was time for inaugurating the field test in the Danish suburb of Ballerup, outside of Copenhagen, which is KTAS' first test site.

"Ericsson's aim with the test is to demonstrate our access network system and show that we have both competence and products within access and fiber areas," says Peter Borre.

He is marketing manager for transport networks at Ericsson in Denmark, LMD. He adds:

"The system is unique in that it combines telephony and cable-TV services as well as being run with a common operations and maintenance system. The test is a good example of how the shaping of access networks should look in the future and it goes very well with Ericsson's strategies and products.

"The products that are included are the flexible access multiplexer DIAmuX as well as optical splices and cross-connects."

Future possibilities

Fiber connections will give 100 residents in Ballerup the chance to test a number of new advanced functions via TV, telephone and computers, for example:

- Direct contact with the workplace via high-speed and video connections.
- Interactive TV that can both send and receive signals. Can be used with training. Sick children can follow school courses via TV at home.
- Video on order. Films can be ordered from a library.
- HDTV, the future high-quality TV.
- Home security. The home can be monitored from other places. A video camera is linked to the home with sound connection to the monitoring site.

All of this is obtainable thanks to thin, simple threads of glass fiber, which are no larger than a strand of hair.

"Thanks to this fiber we have the communications possibilities we previously thought impossible," says Keld Bonde Jensen, department engineer at KTAS tele division.

"So far we are very pleased with Ericsson's work and are excited about what this test can mean for the future."

Fascinating fiber

The principle with optical fiber is to send a number of different signals through the same glass fiber without them colliding, which can happen in copper cables.

The advantage with optical fibers is that they can also transmit considerably greater quantities of data with better quality compared with copper. Moreover, at the same time it can send signals to various areas in one and the same fiber.

New services can easily be had from a centrally located terminal.

In the field test each cable from Ericsson consists of four fibers. One for telephony and one for television. The remaining two are reserves.

The entire system is run and monitored by an O&M, operations and maintenance system from DIAX Telecommunications.

Tests ahead of future possibilities have begun; in Ballerup the future is already here.

Happy, competent customer

The Danish tele administration, Tele Danmark AS, which today is owned 51 percent by the Danish state, consists of five telephone companies.

KTAS is one of the two largest. Having it as a satisfied customer is great and stimulating, but it also demands a lot. It is a competent customer that is well versed in technology issues of the future. KTAS is on the rise and wants to be well prepared and forward-looking.

"I think KTAS is one of Ericsson's most competent customers," says Torben Olsen, responsible in the field test for operations and maintaenance at LMD.

"Ericsson is one of our largest suppliers and we are very pleased with their work. We have had close collaboration for some 25 years and I hope that it will remain so," says Keld Bonde Jensen.

Together with competitors Siemens and NKT, Ericsson competes for KTAS business.

KTAS vision of the future

Of the optimal supplier, Keld Bonde Jensen says:

"The supplier of the future will be cheap and knows his customer and the different markets. He will have a wide range of services to offer, with several broadband services, he can foresee tomorrow's needs, possess broad technical competence and keep his promises and hold to delivery times.

"You are well on the way to all of that. The last-named question of time, however, is not an Ericsson strong point. You have difficulties in sticking to schedule, this you must improve."

That's why everyone involved in the field test is happy that everything, from the starting promised times, has been kept.

"Our vision of the future is to have all cables in fiber and to be able to offer our customers a broad range of services based on broadband," says Keld Bonde Jensen, concluding:

"If you can manage that and hold your prices down, then the future is yours."

Luxury and "mux"

The new services that subscribers in Ballerup will be able to use are possible thanks in part to optical fibers and in part to two multiplexers.

The signals in the fibers go through two different multiplexers, so-called muxes. The first, DIAmuX 500, can be connected to various kinds of service suppliers. The services are delivered to the subscriber via fiber optics as well as an optical network terminal, DIAmuX 20. DIAX has designed and supplied "muxes."

"We have not had any major problems during the course of the project," says Olle Onselius, manager of ALFA.

Of course, a few minor problems came up during the project. There were some problems, for example, with current supply and earthing of the optical network terminals that were placed out at subscribers.

This was a new problem for Ericsson, which has now been resolved and which provides experience for future projects.

Competent customer – Keld Bonde Jensen is pleased with the new possibilities that are reachable thanks to fiber optics, and is hopeful about the future.

From left, Svend-Dahl Petersen, NKT; Henrik Schmidt, KTAS; Olle Onselius, ALFA; Dan Jensen, KTAS; Peter Borre, LMD, and Claus L. Hansen, DIAX.

Another, somewhat unusual procedure came up with a small problem for DIAX.

"When you call in Denmark the charge begins as soon as you dial the number, not, as in Sweden, when you get an answer," notes Peter Borre.

"The Danes are the only ones in the world who have this, which actually is not so bad. The network is loaded even if you do not get an answer," continues Olle Onselius.

"Our multiplexers couldn't resolve this problem at the start.

"Now we know what measures were needed, so it is no longer a problem," say Claus Hansen and Tom Simonsen from DIAX, relieved.

They, like all of DIAX, are heavily customer oriented and technically competent.

Collaboration over borders

"What was also noteworthy in the project is that we transcended business area borders. We at ALFA have not been part of any big line organization, which facilitated or complicated our job.

"It was we together with DIAX, LMD and Ericsson Business Networks, ECA, who had to handle the entire field test. This was very educating.

"It was also very stimulating working together with DIAX."

They and Peter Borre were responsible for the field test.

From Ericsson, fellow-workers from ETX, LMD, ECA, and DIAX made an enthusiastic, competent and complete team.

"This is how we should work," says Anders Larsson from ECA. "It is evolutionary and satisfying for all parties and I hope that there will be more and more of such projects."

Joséphine Edwall

Ericsson's Danish headquarters at Nauticon are ideally situated close to Kastrup airport.

Welcome to Ericsson in Denmark

Just outside of Copenhagen, along the water, lies Nauticon-Ericsson in Denmark's modern and customer friendly house.
The premises, which consist of four Y-shaped, five-story glass buildings, occupy 25,000 square meters. Denmark's Ericsson co-workers are happy here and the customers are impressed.

In 1992 Ericsson workers in Denmark were finally brought under one roof – in the newly built offices of Nauticon, at Sluiseholmen 8. The name that was given to the building after a naming contest is most suitable, since it lies right within the water's edge of Copenhagen harbor.

Ericsson has 750 employees in Denmark, of whom 450 work at Nauticon and 150 with installation and service work out in other parts of Denmark. In addition, about 150 people work in Ericsson's and Bang & Olufsen's jointly owned company, DIAX, which is located in Jylland.

LMD works with all the business areas. The president is Kaj Juul-Pedersen. Despite the global recession things are going well for LMD. The offices reflect positivism, happiness, efficiency and enthusiasm. Nauticon is designed along Ericsson's security rules for development activities. They are airy, modern, light and pleasant buildings, with beautiful parquet floors all over.

"We rent the premises at a very advantageous price and have not had to pay for the interior decorating. Moreover, we have very pleasant conference facilities for everybody in the organization the world over," says information manager Heinrich Mönsted, pleased as he takes in the beautiful view from his office.

ALFA's work very successful

ALFA – Application Lab Fiber Access, was created in 1990 with the task of working over a three-year period with various research and development projects.

Organizationally ALFA belongs to BU Transport Network Systems in ETX. By the end of the year the unit will be dissolved according to plans, knowing from the start that an applications lab has a limited mission.

Colleagues in ALFA, with manager Olle Olsenius at the head, have now achieved such successful results, however, that the unit will be re-established in some other form in BU Local. It is not yet clear who will be head of the new unit. They are all agreed on the following:

"We would love to have Olle as manager, but since he no longer wants to be that, we can only hope for someone who is equally competent and pleasant and that we can have a similarly good collaboration as we have had in ALFA."

Copenhagen is Absalon's own city

Copenhagen, capital of Scandinavia's oldest kingdom, was founded 825 years ago by Bishop Absalon.

He built a bastille in 1167 on the same spot where Christianborg castle stands today. This now houses the Danish parliament. In 1416 Copenhagen became Denmark's royal capital and in 1478 the city's university was established.

Copenhagen is Scandinavia's largest city, with a population of about 1.5 million inhabitants.

The heart of the city lies around "Rådhusplatsen" (the Town Hall Square) and Kongens Nytorv. The well-known shopping and pedestrian street, "Stroget," runs through this area, in a mixture of Renaissance architecture from Kristian IV's time to 1800's classicism. Here you will find, among other things, Scandinavia's largest department store, Magasin du Nord. Continuing north you come to Kastellet. Further on lies Nyhavn. There, at Langeline in Nyhavn, sits H.C. Andersen's famous Little Mermaid, sculpted by Edvard Eriksen in 1913.

Another part of Copenhagen is the much talked about Christiania, a free city that was founded in 1971 on the island of Amager. Vesterbro is also a known area. There you can roam about the big amusement park Tivoli, which celebrates its 150th jubilee this year. Copenhagen also offers several interesting museums, most of which are worth one or more visits.

Taxi driver tangles up tele network

"You're going to Ericsson in Sluiseholmen? It is a wonderful place, you can be sure. You work there? Oh yes, you have been on a customer report at KTAS? I'll tell you a story:

"I live in a house outside of Copenhagen. In the summer I had enough of a huge pine tree in the garden that weighed down on the verandah and I decided to cut it down. There was a big stump left, which I could not uproot. My neighbor helped me with his minicrane.

After some battling the stump came up with an enormous root spread. I saw something yellow, like a cable, tangled up in the root. Oh, oh, KTAS tele cables. Threw it into the earth and called KTAS. Since the pine was there when I bought the house 20 years ago and KTAS laid their cable 15 years ago, there was no problem.

They came and worked half a day cutting and sawing my old pine's roots. It all looked very funny. Finally, they untangled the cables.

Now the ground is all nice again and I don't have to worry about all those pine needles anymore".

EC signals on new rules for telephony

A major breakthrough in liberalization or yet another failed attempt at harmonizing the EC countries' services and taxes for voice telephony.

The views are drawn from the latest signals from Brussels. It is perfectly clear from this that Ericsson and customers in the EC area are going to confront a rough and multi-faceted market all over.

"It is a half step in the direction of liberalization. At the same time developments are moving so quickly in this area that EC laws risk being outdated," says Per Olof (Pelle) Åkerberg, head of Ericsson's EC office in Brussels.

New perspectives open up in the telecom field every day.

In January this year the internal market was officially opened, but there are many exceptions in tele services. Today they talk about "multispeed market." The different countries work toward the same goal but at different speeds. Still, in the summer there was an attempt toward a common approach for member countries.

"A terribly difficult meeting, hard and drawn-out negotiations right up to the end." This is how observers described the June 16 meeting of the EC Council of Ministers. The EC Commission had laid down a proposal that led to facilitating developments toward an internal market for tele services.

Ministers of the 12 member states concerned with tele matters met with different initial opinions. For example, Britain has long worked with tele networks in a private capacity, while countries like Portugal and Greece have a smaller developed infrastructure under state monopoly.

Gradual transition

The result was a common resolution with the stipulation that member states would work for a gradual transition to cost-related taxes and development of services at affordable rates.

Changes in the law will be made so that all services in voice telephony will be competitive in January 1998. This, however, with the exception of Spain, Ireland, Greece and Portugal. These countries will have a five-year respite. Belgium and Luxemburg got two years' extra grace. The resolutions apply to services and not to the physical network.

All of this is still only a manifestation of desire and political signals that will result in changed laws. The commission will put forth completed proposals by July 1, 1996.

It is often the case that the EC suceeds in resolving its internal disagreements. Flexible frameworks with many exceptions to the rules. At the same time they feel they have still budged the issues a bit in the right direction.

"This is, despite the waste of time, still a big revolution, for a couple of years ago it would have been impossible to reach even this level of decision on liberalization," says Helmutt Schmitt von Sydov, spokesman for the EC Commission on tele issues.

One of the arguments that led reluctant member states to hop on the bandwagon was that the longer they waited with liberalization the more they would lag in industrial development. Understood, too, was the form of some pressure: no liberalization, no money from the EC funds for economic development.

Common rules

The EC Council of Ministers has previously made a decision in principle on ONP (Open Network Provision) on voice telephony, a platform for a common ruling on requirements for access to and use of tele networks.

There have been many critical voices against the latter decision. Not least from the big companies. The EC is far too unwieldy to be able to handle these issues, and technical conditions and market developments have leapt ahead of the lawmakers, critics say.

One argument is that more and more tele operators are going across borders to win customers and get around taxes. According to the publication Communications Week International, big companies like Shell, BASF and American Express benefit from directing their European traffic via the U.S. The network operators who under the protection of monopoly charge too high for overseas calls will lose money that could have been reserved for investment in the network when customers opt out of the public services and choose other solutions.

"When more and more users opt out of the national tele systems it would create pressure for increased liberalization," says Helmutt Schmitt von Sydov from the EC Commission.

Invasion expected

If there is now a clear desire in the EC to liberalize and accomplish the internal market, it is felt that there is also a need to save tele networks from an invasion of non-European operators. In Britain they simplified things a bit, first privatizing and then liberalizing. Deregulation there has still not meant that there is free establishing of tele services. Swedish Telia has difficulty in getting a license, while the American Bell companies have bought up networks for cable TV.

In the EC Commission they reason that one should have common rules for mutual approval of licenses related to tele services, where operators in the EC can more easily obtain a general license for the inner market. Operators outside the community, on the other hand, would be forced to obtain a license in each individual country where they want to set up operations.

Ordered retreat

Another aspect of the EC's cautious move toward a more open market is that despite internal objections there is common interest in obtaining an ordered retreat of monopoly companies. Market forces are enormous in this area and it is a matter of using the occasion as long as their is negotiating room for politicians.

"It is an exciting time for us now, but developments are also hard to predict. Technical developments are moving so fast that politicians have a hard time keeping up.

Customers, the "old tele administrations" that operate under monopoly are changing in these times of deregulation. The relations that were built up with customers earlier will also look differently in the future. For Ericsson it is crucial to keep up with developments in the individual countries.

"Ericsson has managed well under the conditions that existed earlier in the market, we are now entering a transition period, where we have to be very watchful," says Pelle Åkeberg.

Apart from the services themselves in the tele network a major issue remains concerning the EC's common policy for infrastructure.

ECTEL, the European supplier organization has again presented the industry's viewpoint on the issue of an open market for tele equipment. There are at present three EC debates on infrastructure, and in this context ECTEL accounts for harmonizing and unifying conditions on the market.

The commission has been assigned by the Council of Ministers to come up by January 1, 1995, with a proposal for policy on infrastructure, a Green Paper. The debate deals with financial and qualitative aspects on how tele networks function today and the consequences of market suitability. Cable TV networks are also part of the discussions.

According to spokesman Schmitt von Sydov the discussions do not deal with detailed rules but rather on devising common rules of the game.

"Our aim is to define general guidelines, the necessary frameworks. We must assure that everyone has access to common services in the network and that quality is maintained at a high level. There can be no talk of regulating more than certain cross-section limits. Afterwards the responsibility for technical solutions lies with organs like ETSI".

Public negotiating

An important issue for all suppliers is naturally the possibility of participating in the huge investments being made in tele networks around Europe. For many small and medium-sized suppliers public negotiating on the inner market can in practice be very complicated. With the exception of Spain and Greece there are EC directives for public negotiating in the tele area starting this year. In certain cases they also cover orders from the private sector.

Contracts worth less than 600,000 ECU are exceptional. Tenders must be published in the Official Journal of the European Communities and in the data base Tender Electronics Daily. Procedures in the context of contracts differ a lot among various countries.

In the present situation, where the EES agreement between Sweden and the EC has not come into full force, it is demanded that equipment must be produced in the EC for a supplier to be able to satisfy rules for negotiations. When the EES agreement comes into effect, hopefully by the turn of the year, Swedish suppliers will have the same rights as competitors in the EC.

"The EES agreement is a huge step forward. It gives entry into the internal market but membership in the EC is even more important since Sweden then can be part of and influence the the path to, say, common research projects in information technology," says Pelle Åkerberg.

Text: Jacob Schulze

An EC glossary

- **Council of Ministers**: The EC's decision- and law-making body, is made up of ministers of member states' governments.
- **Commission**: The EC's bureaucratic body, responsible for budget, preparing proposals for law enactment by the European parliament, whose members are elected directly by the electorate in their own countries.
- **Directive**: Law common overall in the EC.
- **Maastricht treaty**: The base for European Union, unifying the further development of the EC and its 12 members, with certain exceptions; acommon currency, defense collaboration and closer political association.
- **EES agreement**: Sweden, Norway, Finland and Austria have agreed with the EC to be part of a borderless internal market. Free movement of capital, workforce, services and goods. Will first come into effect at the turn of the year.

Green Paper on mobile telephony

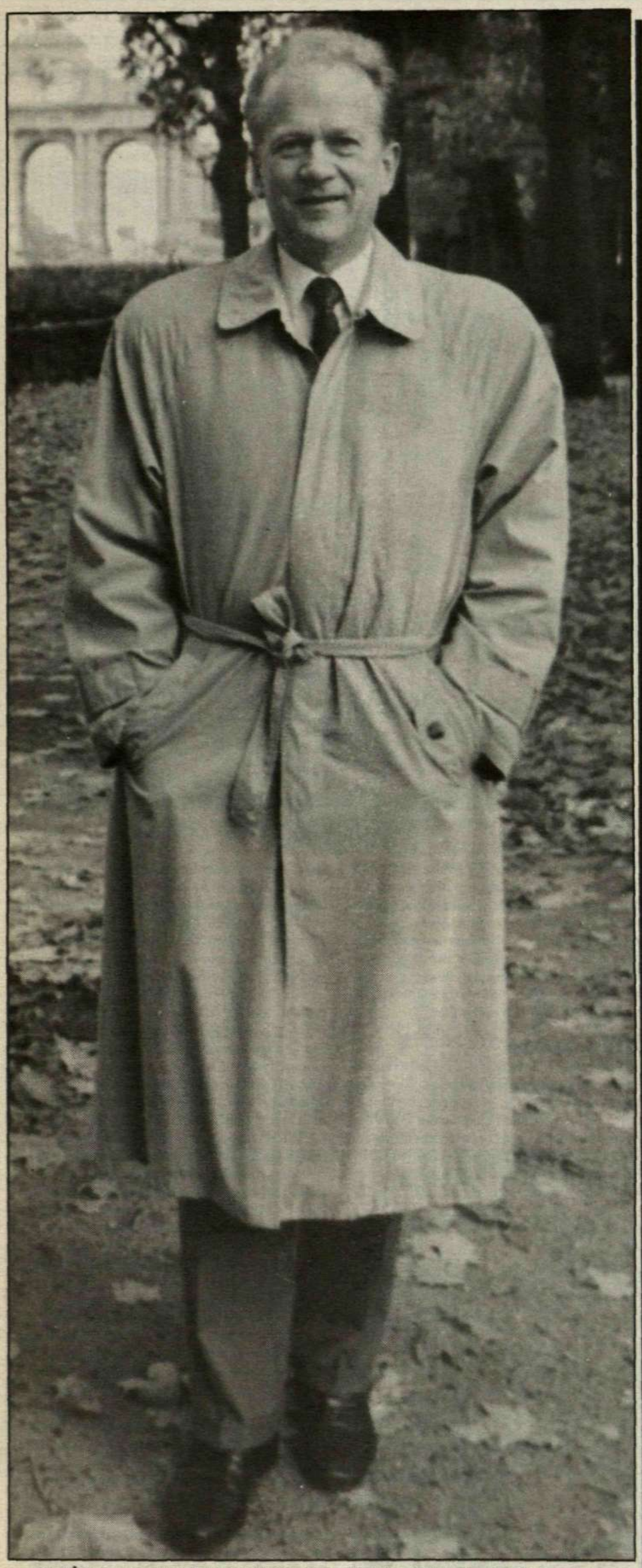
In 1988 the EC took the initiative to create a forum for standardization, ETSI, where tele operators and suppliers have set up conditions for pan-European communications business.

An example is the GSM system in mobile telephony, which is rapidly gaining ground. However, a Swedish traveler on a visit to Brussels still faces a problem when he tries to call home on his GSM phone. "No operator" comes up on the display text. In Europe's capital, as Brussels is called, the state-owned Belgian tele monopoly lags behind in development.

Already before the turn of the year the commission will put forward proposals for a common EC platform.

What then is there to add, now that GSM is already a fact?

"We want to lay down definitions in GSM and highlight things like health problems and other things linked to electromagnetic fields. Another question that comes up is security-related problems. Encryption is so good that it is impossible to tap into the system, which regrettably is necessary sometimes in police calls," says Schmitt von Sydov.



Per Olof Åkerberg assists Ericsson in contacts with the various EC agencies.

Ericsson's man in Brussels

Like all major suppliers and tele operators Ericsson has representatives that monitor and communicate with the various EC agencies. For three years now, Pelle Åkerberg has been in Brussels.

Ericsson's EC office is located at 12 Avenue Tervuren, a stone's throw from EC headquarters. Per Olof Åkerberg's task is, among other things, to coordinate and assist in contacts between Ericsson and the EC Commission, report on important events and to promote Ericsson's views in various contexts.

The EC Steering Group is, as the name implies, a committee that sees to it that contacts between Ericsson's different activities and the EC function effectively. All according to the priorities that are determined.

Collaboration helps combat hindrances in export trade

In order to meet the new and very often difficult to interpret decisions regarding export control issues, those responsible in the business areas have formed a joint advisory group, which will primarily devise common routines for all Ericsson companies in Sweden.

Export controls, or rather export restrictions, began with the start of the cold war at the end of the 40-s. The Western superpowers wanted to prevent the spread of high technology to the East.

The trade organization Co-Com was formed in 1949. Co-Com stands for Cooperating Committee for multilateral export control and consists of all the NATO countries, except Iceland, as well as Japan and Australia.

Sweden has now succeeded in having it easier when it comes to acquisition of high technology, but the route to this point has been marked with strict laws and its own export controls.

Responsibility

The new decree, which came into force July 1, 1992, has nevertheless been really difficult to apply since a problem of interpretation continues to bother export companies.

Together with the Customs authorities, Ericsson has tried to resolve certain difficulties, but when it comes to Ericsson's own manufactured products, a great deal of these are made internally.

These products then are classified according to the Swedish list of goods, which is linked to "the decree in the ban on certain exports."

There are further changes on the way and it is believed that Sweden will have its own licensing authority during 1994. Complemented with the Customs, which serves as a real supervisory authority. The change should facilitate matters for companies, which should then receive more support from the authorities.

Instructions

The newly formed advisory group now has as its main task to develop common instructions and with training (Ericsson-adapted courses) see to it that all concerned, that is to say responsible for products, sales people and others, are made aware of what is involved. The instructions will apply at the company level.

In addition, the group will see that information and experiences are exchanged among business areas, that common routines and forms are devised and that Ericsson in these matters can present "a unified front."

Solutions for different problems will be sought so that they can be used throughout the company.

The group will also chart constructive paths when it comes to accessing current information.

Money risks

"Knowing about and conforming to export restrictions is not so much a matter of *earning* huge sums, but rather it could *cost* if we make a mistake," explains Sigge Lundberg, coordinator of the advisory group.

"Unfortunately the issue of export control has a tendency to be overlooked when one is doing business. But he who fails to see in good time that he has "clear papers," could be faced with disastrous delays when it comes to delivery.

This can cost money and even the entire business deal."

For Ericsson it is also vitally important to see to it that access to high technology components is not blocked.

Business area

In every business area there is an organization for export control matters.

Business units in the business area then has its own responsible people (which is indicated in the respective business area publications).

Their task is to be able to find the possibilities within the framework of the rules that apply.

Finally, a relatively unknown detail: there is actually current information on the U.S. rules in NYTT. Under 12, where you punch in 12 TDO.

The information is accessible to everyone and updating is done once a month at Ericsson in the U.S.

Lars Cederqvist

Some of the members of the advisory group. From left, Leif Johnsrud, Components; Sigge Lundberg, Radio Communications (coordinator); Pär-Erik Nordin, Public Telecommunications, as well as Leif Åkesson and Monica Nilsson, from Business Network. Absent from the picture are Lars A. Stålberg, corporate responsible; Leif Ericsson, Public Telecommunications, and Sven Lindberg, Defense Systems.

Upward for BusinessPhone

The travel agency or mail-order company that greets its customer with a busy line often loses that customer. In today's tough competition good telephone service is all the more important.

In order to satisfy this need there is the BusinessPhone Call Center from Ericsson. Here small and medium-sized companies are offered the chance to build up a cost-effective and flexible system of receiving calls.

– This is the pace with wich we have increased sales of Call Center-systems, says product manager Christian Lintrup.

Good telephone service means happy customers

"Previously, systems with these possibilities were much bigger, costly and complicated specialist plants," says Cristian Lintrup, product manager for BusinessPhone Call Center. The trend shows that more and more small companies are demanding this type of service. Since last year we have been involved in an effort to launch the concept of Call Center, where we describe how one can use technology and organize activities with the help of it.

"Our customers are very often no experts in technology, but they know what services they need and which communications problems they must solve. We strive a lot to speak the customer's language and put a lot of care into customer-adapted sales material."

All companies that do a great deal of their business over the phone are potential Call Center customers, above all those with comprehensive incoming traffic, for example order placements or inquiries. A Call Center is not used for calling up a certain person but rather a certain product or service. Most companies that offer customer services by phone can be more effective with this type of system.

No call is lost

To set up a Call Center you start with a BusinessPhone 150, which has a built-in program block for automatic call distribution (ACD). The ACD service itself is the key to the Call Center concept. More than 40 call receivers can be connected to the ACD service, among which incoming calls are distributed in a steady stream.

The system seeks out the receiver that has been free longest and connects the call there. All those who receive calls thus have fair job distribution and thus avoid the haphazard choice that one often has with a simpler system. If all the call receivers are occupied the call is placed in line and an integrated voice support function informs about it as well as how long the waiting time is.

"The aim of the voice support is that even if you have to wait you will not be abandoned but made to stay on the line," Cristian Lintrup points out. It is the Alpha and Omega of good telephone service that a call is always taken care of. At the same time the queue function helps to make the system maximally productive for with a queue "to graze on" the receivers are always involved with new calls.

If you want a more comprehensive voice support you can connect an external system to the switch, Voice 100. It gives significantly greater possibilities than just leaving a message for those who call up. If the phone queue is filled up the call can be directed to a voice system, which allows the possibility of leaving a message. The same possibility can be used when the office is not manned, for example at night time. Moreover the service can be used to permit those calling up to be switched to a desired service, with a speech machine that gives running instructions.

In the ACD system there is the possibility of having eight different queues, each with a different telephone number. To increase the service you can list the services you offer in different categories – sales, claims, information, etc. Then to each category is connected a call receiver. This makes it possible to directly guide the call to a receiver that is specialized in the service that is required.

"Compare this with calling a company switchboard where you explain the message to be then connected to the right person later. You cannot handle telephone services this way now," says Cristian Lintrup. With a Call Center it goes directly to someone in a group who has the knowledge to take care of just that problem or message.

The system also allows the possibility of prioritizing different categories of calls. For example, if a travel agency in the first place wants to take care of bookings, the system can prioritize such calls. Those who call to inquire about departure times may be made to wait a bit longer than those who want to book a trip. There is never a water-tight situation in the ACD system. With unequal distribution between types of calls or with extreme worktops they can go in and help each other.

Good examples

"Cellbes mail order in Borås is a good example of how you can organize your Call Center for maximum productivity," says Cristian Lintrup. They have divided their Call Center into two-groups: one that accepts only telephone orders and the other that in the first instance deals with mail orders but functions as a backup for the first group. The system automatically connects the call to someone in the other group when all receivers in the first one are occupied. This possibility makes for good preparedness and flexibility with high work loads.

In order to adapt the system after needs it is important to know as much as possible about your telephone traffic. The integrated base system in BusinessPhone 150 makes it possible to get out simpler statistics on traffic, but those who really want to trim the organization invest in the added service MIS (management information system). MIS is a PC-based program package that is connected to a switch and that monitors ACD traffic in the smallest detail, both in real time and in the form of reports.

"Often you do not know so much about your telephone traffic and your needs before the system is installed. The statistics can present a lot of surprises," says Cristian Lintrup. With the help of statistics the system can be fine-tuned afterwards. Moreover the statistics show in black and white how many calls were lost because they were not answered in time.

Keen sellers

The salespeople that represent Ericsson are a key resource when it comes to getting the most possible out of the system. The customer does not only need help with putting up his Call Center, he must also have support afterwards for changing and improving.

"The aim is that our sales personnel should be able to help the customer with ongoing change of the organization itself after installation. Our task is to offer a total solution adapted to the customer's needs."

"A Call Center is a business solution, which makes it all the more important to be able to go back to the customer and analyze what the system has accomplished, and then to be able to make adjustments."

One reckons that 50 percent of likely customers manage with a capacity of up to 40 connected call receivers. Ericsson then can address half of a large and growing market with a single product, BusinessPhone 150. Some observers believe the European market for Call Center is growing by 25-30 percent a year.

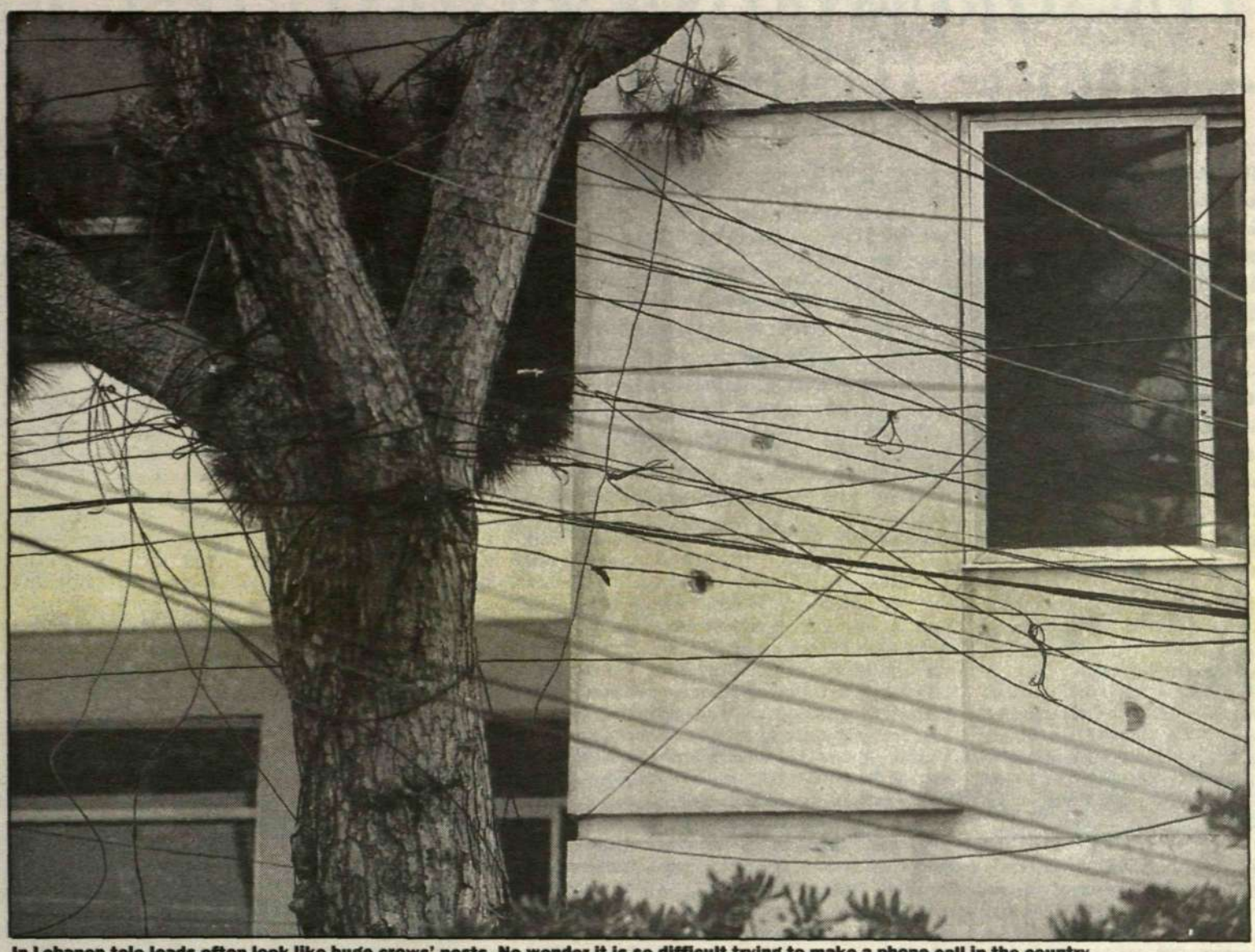
"We have a very powerful offer for the market," says Cristian Lintrup. The main thrust of BusinessPhone 150 Call Center is that it is basically an advanced PBX system, which moreover has a strong ACD packet.

Karl Malmström

DHL increases efficiency with a Call Center

You must adapt organization according to infrastructure found in the system. That is exactly what the courier company DHL did when they closed down their regional office and invested in concentrated central customer service with a BusinessPhone Call Center as its base. Today DHL has a very effective telephone service and handles up to a thousand calls per day at a lower cost than before. Moreover, they know – thanks to running statistics – that service level is very high. The company has succeeded in living up to its aim of having 95 percent of all calls taken care of in 20 seconds.

The war is over. Now it is a matter of rebuilding Lebanon. Ericsson is on site and has just moved into a new office in Beirut. The previous one was blown to bits.



In Lebanon tele leads often look like huge crows' nests. No wonder it is so difficult trying to make a phone call in the country.

CEASE-FIRE!

Ericsson modernizes Lebanon's tele network

It is a stressed Riad Daher who received us at Ericsson's offices in Lebanon's bustling capital of Beirut. There is so much to be done here. The country's infrastructure is badly damaged after 16 years of civil war, and now Ericsson is in the frontline when it comes to rebuilding the country's war-torn telecommunications network.

The company has already received an order to more than double the capacity of Lebanon's three AXE exchanges. Ericsson has also, quite recently, received an order worth 350 million kronor from the Lebanese tele administration and is preparing for a bidding contest for the fixed network and for the GSM network.

Ericsson well liked

"Ericsson has a good image in Lebanon and is well-liked in the country," says Ericsson's president in Lebanon, Riad Daher. Riad was born in Lebanon but he has worked for Ericsson in Sweden for a great part of his life, so he speaks fluent Swedish.

"Lebanon is nothing new for us. Ericsson came here already way back in the fifties."

In 1952 Ericsson set up the large central exchange in Beirut.

"I know that Ericsson has a solid reputation here. People associate the company with quality, prompt delivery and confidence all around."

The paths to Ericsson's multiyear activities in Lebanon are many. In the country there is an abundance of the company's classic black bakelite telephones, here complemented with Arab numerals under the dial plate. According to Riad there are 100,000 Ericsson sets all told in Lebanon.

Office totally destroyed

Since the war started in 1975 tele network capacity has still manage to more than double. Before the war broke out in '75 Ericsson had a 60 percent share of the country's telephony. Ericsson managed to keep operations going throughout the entire war.

"The fact is the tele network was expanded during the war years, but the bulk of it by our competitors so today Ericsson's share is about one-third. Now we shall expand it again."

"I am proud of the fact that Ericsson was able to deliver three digital international AXE exchanges at the height of the war in the beginning of the '80s. They work perfectly, although they have hardly had any maintenance for ten years."

Toward the end of the war, 1989, Ericsson's office in Beirut was totally destroyed by grenades fallout. Also the job climate was difficult all over and the company was forced to shut down operations in the spring of 1989. Riad then left for Sweden to work in Market Operations AAA. But only for a brief period.

In July 1992, Riad boarded a plane in Stockholm for Beirut again to start the rebuilding of a new Ericsson office.

Riad Daher, Ericsson's president in Lebanon, in front of the newly built office in Beirut.

Today, just over a year later, Ericsson has opened its new office in the eastern part of the city. Activities are in full swing. The company's logo lights up in blue on the facade. Ericsson is spelled out in both Arabic and Roman script. Lebanon is a country where East meets West.

Life is slowly on the way back to normal for the Lebanese.

Leads like crows' nests

Still, almost three years after the war, power supply functions only eight hours per day in Beirut. It is even worse outside of the city. It is about equally bad with the tele network.

"Naturally, things have really gone badly, mainly because of bad service and shortage of spare parts. Ericsson's exchanges have not suffered so much from the attacks, but you should see what the subscriber network looks like."

Riad Daher means the crows' nest of leads that are seen everywhere, an anarchic jumble of legal and thief-connected wires.

"I have seen people trying to call for an hour, without success. And of course that is very frustrating. But the Lebanese are accustomed to it, and they are patient."

"I have seen people trying to call for an hour, without success. But the Lebanese are used to it and are patient."

When Ericsson was at its biggest in Lebanon in the '60s the company had 200 employees in the country, of whom 40 were Swedes. Today's work force is smaller: five Ericsson employees and ten subcontracted for field work. All are Lebanese. In addition Riad noone has a Swedish passport.

"It is hard to say how many employees we will need in the future, and I do not want to guess."

Although so much was destroyed by the civil war guns it is still not a practical problem to work in Lebanon. Most things function; it just takes a while. Mail delivery is a good example. Now there will be change. Huge efforts are being put into rebuilding and modernization.

Lebanon's government has presented a plan for reconstruction, Horizon 2000. The governments wants to invest 13 billion dollars over ten years to build roads, schools, hospitals, new city centers as well as tele, power and water networks. So far the authorities have managed to scrape together 1.2 billion dollars in loans and guarantees.

Broad competence

"There is no difficulty at all for foreign companies to recruit competent, native people."

Lebanon has several good well-known universities. One is the American University in Beirut. Many people easily speak English or French.

There is no shortage of comfort and luxury. Department stores and boutiques are filled with consumer goods and the latest fashions from Paris.

"The bureaucracy, of course, is complicated, but it works."

Hopeful for future

The potential for establishing a well-functioning society in Lebanon is huge. Throughout the entire war Lebanon repaid its debts, even if repayments were sometimes very late.

Riad Daher is happy to be back in Lebanon now. Both for his own and for Ericsson's sake.

"Lebanon has many problems, but it is a country that people like. It is like nothing else, and now that the war is finally over I believe in a bright future."

Text: Fredrik Persson with Joséphine Edwall

The market for AMPS – more than just the U.S.

The North American market today accounts for 60 percent of total turnover at Ericsson Radio's business unit RMOA's . But in line with the fact that the American standard for mobile telephony (AMPS/D-AMPS) is being accepted by more and more countries outside North America, RMOA's activities in other parts of the world are growing.

"This is especially true of Latin America, Asia and Oceania," says Sven Christer Nilsson, manager for business unit RMOA.

The fact is that AMPS (analog) and D-AMPS (digital) are the world's most widely dispersed mobile telephony standards and that business unit RMOA is the largest supplier in the world for these systems. Market share is around 35 percent, compared with AT&T and Motorola which have 30 and 21 percent, respectively, of the world market.

"AMPS is very attractive for countries that are just starting to build up an infrastructure for mobile communications. This is because AMPS has a well-proven technology, good functionality and is a system that is relatively easy to install," says Sven-Christer.

Another advantage is that there are a lot of suppliers of cheap mobile telephones for AMPS.

New breakthroughs

Two examples of countries that have recently chosen to issue licenses for AMPS are Russia and China. Ericsson is involved in negotiations, and at RMOA they feel that the opportunities for new market shares are good.

Jan Wäreby is responsible for marketing at RMOA:

"AMPS has also made breakthroughs in many other areas, not least in Asia. In several countries, for example Malaysia, we will deliver a nationwide AMPS/D-AMPS network and in Taiwan we are negotiating a D-AMPS system. We have sold analog systems to Sri Lanka, Vietnam, Myanmar (previously Burma) and Pakistan."

In Australia the current AMPS network is growing faster than ever.

"Growth is at 30,000 subscribers a month, and the same rate is expected for 1994," says Jan.

In New Zealand, Ericsson is supplier of an D-AMPS system, which has been in operation since last December. Latin America is also a strong base for RMOA's activities. Mexico has the region's only nationwide system so far, which continues to expand heavily. Mexico also expects to initiate a digital system soon. Venezuela, Argentina, Brazil, Puerto Rico, El Salvador and Cuba are other AMPS markets served by RMOA.

"Colombia and Ecuador are also expected to grant licenses in the fall for AMPS. The digital system is also expected to be adopted by several countries."

Demand from U.S.

Although the overwhelming proportion of AMPS is found in North America (which accounts for some 30 percent of the world total of mobile telephone subscribers), it is of course important to anchor oneself locally.

With the restructuring of more than a year ago (when business units were formed) RMOA today has an organization that functions smoothly. The number of employees has grown, with some 480 in Sweden.

Local anchoring in the States covers sales, marketing and production, while sales and production for markets outside North America are handled in Sweden.

All system development for AMPS and D-AMPS is done at Ericsson Communications, EMC, in Canada. In Sweden they concentrate on radio development, that is radio base stations.

"AMPS has a well proven technology and is easy to install, says Sven Christer Nilsson, manager at Business Unit RMOA.

"The shift to digital technology calls for an entirely new way of thinking and has influenced everything, from implementing (network planning), design and installation to marketing and sales.

Added to the fact that North America is RMOA's largest market is the fact that the U.S. is the pacesetter when it comes to new market demands. These demands increase in line with deregulation and the entry of new players in telecom markets.

"However, we are well-equipped and will have what is needed to be able to provide the new solutions that markets expect of us."

Personal telephony

Such a market demand applies to PCS (personal communications services) – personal telephony. PCS will offer entirely new types of services, both for private both for private individuals but initially above all for companies.

It applies to functions for video relays, image telephony, computers etc., where radio technology will play an ever increasing role.

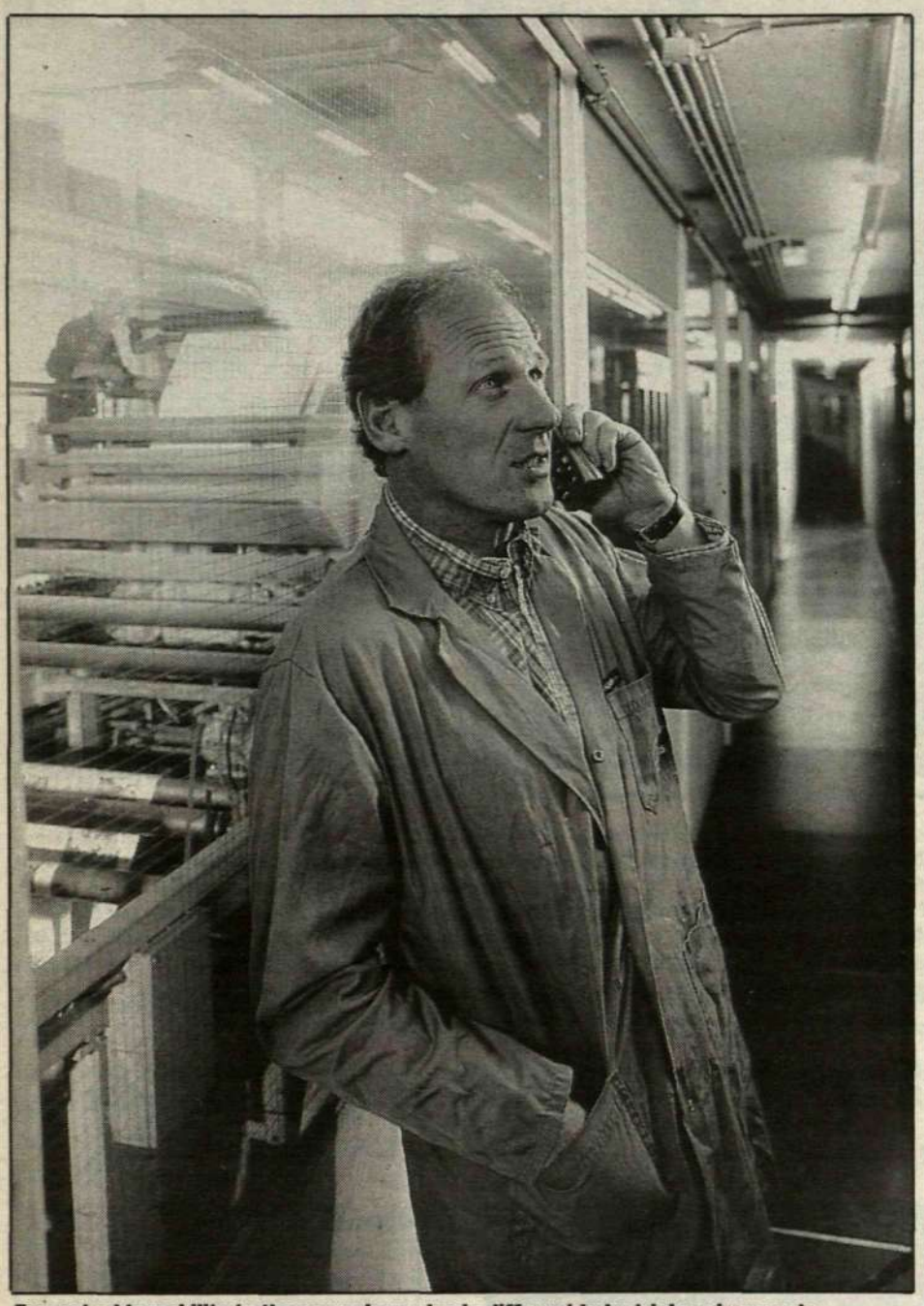
"Radio is a very interesting alternative. Laying cable, as we all know, is quite costly today."

At RMOA they reckon on having the PCS system ready for delivery around 1996-1997.

Closer in time is continued digital expansion in North America. After the order in summer, a D-AMPS system will be ready to go into operation in Dallas in February '94.

Helena Andersson

Freeset first to be approved according to DECT standard



Freeset adds mobility to the co-workers also in different industrial environments.

As first telecom supplier, Ericsson has with its Freeset system won approval for full-coverage cordless communication systems for business switches according to DECT (Digital European Cordless Telecommunications). DECT is the prescribed standard for cordless telecommunications in Europe.

Ericsson's Freeset system is now approved in Germany, where it is sold by both Ericsson and Siemens. It is expected that several other European countries will be signing similar approval.

Freeset was developed by the Dutch BZ company Ericsson Business Mobile Networks (EMN). If the forecasts are on target, the future looks bright. Ericsson figures that the value of the European market for cordless business communications systems will reach 40 billion kronor in the next seven years.

The DECT-based cordless system of this type offers better performance and properties than the older technology.

"DECT-based systems can handle very high loads of users and offers very good speech quality," says Hans van der Hoek, responsible for sales for Freeset at EMN.

The DECT standard is also the only conclusively approved standard for digital cordless telecommunications in Europe and is backed by the entire European telecom industry.

For people on the move

Freeset is foreseen in the first instance for the office and inductry, where people are very much on the move but still have a need to be always within reach of calling or being called. Typical examples of such milieus are offices, factories, warehouses, airports, hospitals, conference and exhibition centers.

The little cordless phone in pocket format can be taken everywhere. You can call or receive calls wherever you are in the workplace. Freeset offers the same functions and, above all, equally good speech quality as a fixed phone.

The cordless pocket phone Freeset makes life a whole lot easier.

Just as easy to use as a fixed phone

Hans van der Hoek is globaly responsible for the sale of Freeset

Neither is there any risk of being bugged. Freeset has inaudible transfer from cell to cell and encryption of all radio transfer.

Lower costs

Calculations show that a company can reduce its telephone costs by up to 30 percent through the use of Freeset. The need for repeat calls is reduced drastically.

These savings, together with increased productivity through more effective communication, means that an investment in a Freeset system can pay for itself within 12-18 months after purchase.

Freeset can be connected to a large extent to any business switch whatsoever. This way you can obtain a business switch system for both fixed and cordless connections.

The system can serve a handful of users to as many as 600, which is the highest possible capacity for today's cordless business switch system.

Thord Andersson

Freeset won the game

Freeset's spirit literally permeated the IT Week 93 in September at the Stockholm Fair in Älvsjö.

Four leading exhibitions participated during the IT week: Computers/Offices/ Environments, Open Systems/UNIX, Systems Development and Nordic Telecom.

Ericsson was part of Nordic Telecom and showed mobile telephone systems and MD110. One of the fair's biggest attractions was the cordless Freeset, which in Sweden is sold by Ericsson Paging Systems AB (PRS).

Sales of Freeset began in earnest in April this year. Already at the beginning of last year the first customer installations were carried out. Several customers are already extending their Freeset plants now.

Lennart Nilsson, president of PRS, whom we met at the stand, is happy with the results to date.

"We are selling more in Sweden than we planned this year," he says. "It is now a matter of idea selling, where we sell availability for customers. Freeset is one method, pagers are another. The aim is to achieve mobility."

Among Freeset customers are Grand Hotel, Digital, Astra and Alfa Laval.

"I have only positive visions of the future," says Lennart Nilsson. It means following up what we do and seeing to it that we always have satisfied customers."

A Freeset in giant formatattracted visitors' stares and held them at the stand.

In the so called "Flex office" there was of course a Freeset phone

Stockholm fair took Freeset

The fair's own Freeset scope cosists of 32 radio base stations. It covers the considerable fair grounds perfectly. The idea behind this is that exhibitors who want to do so can use cordless phones. This way you avoid costly installation costs and you get mobility. Laying cable for a fair is very time-consuming and calls for a lot of planning.

The fair's Freeset system works on the CT3 standard. The full system was still not ready for the IT week. But some of the fair's own workers made good use of the cordless phones, which are heard perfectly regardless of where you are.

If you look around you will see here and there some of the strategically placed base stations.

Svenska Mässan in Gothenburg is also investing in cordless communications and has ordered a Freeset system.

Press manager for the Stockholm fair, Maj-Britt Pella, is one of the happy Freeset users at the Stockholm fair.

Mobitex in the White House

Sales manager Steven Smith shows the Mobidem for President Clinton.

On July 22 Steve Smith was on site when cordless technology was demonstrated for President Bill Clinton at the White House. Steve is sales manager at Ericsson GE Wireless Computing Division. Also at the demonstration were Vice President Al Gore, Trade Secretary Ron Brown and a number of members of Congress.

The demonstration sought to inform government representatives about the technology behind cordless communications and its applicatiuons in the fields of health care, education, rescue services and what cordless communications can mean for tomorrow's information services and choice of workplace.

Ericsson portable Mobidem AT was shown at a health care stand at XcelleNet's demonstration. XcelleNet has developed software that through Ericsson's radio modem can call up patient records cordless. Among other exhibitors were IBM, Hewlett Packard and AT&T.

President impressed

President Clinton spoke of the advantages of cordless technology in the various areas of use. He felt that the new methods could play a key role in the future and lead to increased opportunities.

After his talk President Clinton moved among those attending the demonstration. Steve Smith was there and he took the occsion to show the president a Mobidem and demonstrated cordless e-mail. He also recounted how police in Des Moines, Iowa, used Mobitex as a communications means during the disastrous flooding in the summer. The president thought it was fantastic.

He himself tried the cordless technology by sending a message to Vice President Al Gore with a request "to stop the rain in Iowa."

Steve wrote down his impression of his visit to the White House in a cordless e-mail message:

"I really feel that our cordless technology in combination with politics will bring us new business opportunities in the future."

Coordinated purchasing

As Ericsson's products become more and more competitive the demands on Purchasing increase. Ericsson's share in the finishing process is sinking every year and for mobile telephone terminals it is now less than 10 percent.

"We must keep up with – or better yet keep a step ahead of – today's technology level," says Business Area BR's purchasing director, Jan Tufvesson.

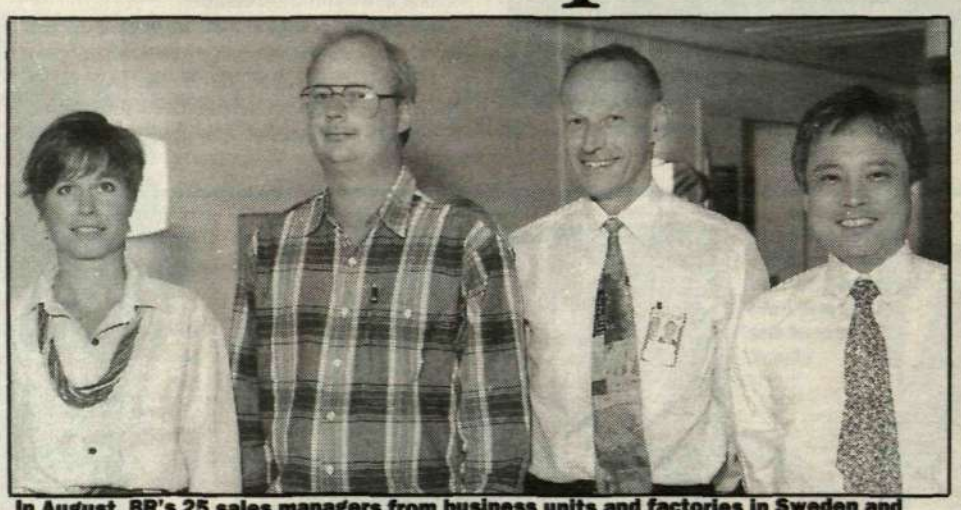
The biggest chance of influencing parts of a project is at the start – before you make a number of detailed decisions.

"The best negotiating strength for Purchasing is before you immerse yourself in certain technical solutions," says Jan Tufvesson.

The complexity of components increases in proportion as more functionbs are integrated in the same component. This means that the demand on suppliers' competence increases, but it also means that technicians, purchasers and suppliers must collaborate more. Long-term relations with suppliers must be built up.

Negotiating strength is also influenced by how much is ordered by respective suppliers. The bigger the volume, the better the conditions. It is therefore also important that in BR and Ericsson purchasing from suppliers should be coordinated. Some guiding principles that have evolved for Purchasing are:

- Strong central guiding (for policies, supplier agreements, coordination, rules and ethics).
- Early participation in project work.
- Cross-functional collaboration.
- Decentralized organization with local authority.



In August, BR's 25 sales managers from business units and factories in Sweden and abroad gathered at Electrum in Kista. From left, Sigrun Hjelmquist, head of the department Components Technology; Dick Hunter, purchasing manager at EGE, Lynchburg, U.S.A.; Jan Tufvesson, purchasing director at BR, and Yoshi Kido, purchasing manager at NRJ, Tokyo.

Large parts of BR's purchasing have been decentralized for some years now and localized in the various business units and factories. There is still on the staff in Kista personnel for guiding, for buying of consultant services, production equipment, computers, etc., for import and export shipping.

"We have built up a strong central organization but with a lot of freedom for the purchasing function in the various business units to work within our common frameworks," explains Jan.

Purchasing work is driven in three areas:

- Long-term strategy.
- Projects.
- Production.

Work with long-term strategy is driven cross-functionally and in collaboration with other business units within Ericsson. This deals with assuring competence and technology concerns in the future. Choice of collaboration partners and important suppliers are part of this.

Coordinating

In projects, purchasers must help designers to choose suppliers as well as seeing to it that the necessary documents are available in time.

In production, Purchasing works with assuring supply of material to factories, a fairly difficult task in the business climate in which BR is working, with huge swings in forecasts and constant introduction of new products.

There are local purchasers both in Sweden and abroad. Altogether, some 25 purchasing managers and Components Technology managers at BR meet twice a year to discuss strategies, goals work methods, etc.

"It is a source of strength to know that colleagues in other purchasing units are striving in the same direction and they have similar messages for our suppliers," says Jan.

In order to manage coordination of the Purchasing function there are various groups with representatives from interested purchasing units. Thses groups are now in full swing in preparing this year's negotiations for 1994 production.

"With a common purchasing system, common data bases and software for negotiating work, we have a good base to stand on," says Jan.

To reduce total costs they are working on trying to reduce the number of suppliers. Today, BR in Sweden has 1,700 suppliers. Of these about 700 are suppliers to factories.

"This work demands close collaboration between Technology, Production and Purchasing, and such collabortaion has been going on for years and is now starting to bear fruit."

Huge investment

ERA and ECS in Sweden have during the first half of this year ordered for about five billion kronor. Material for factories account for about 2.3 billion and material and services for customer orders and development projects for about 2.7 billion.

"It is a big challenge to live up to the expectations that we have of ourselves in Purchasing. Harmony is ideal and there is a lot of evidence among suppliers that we are a professional organization. We are working hard to constantly improve."

Helena Andersson

Mary Ann Dase is very happy with the MD switch from Ericsson. Here she poses smiling with (similarly happy) switchboard operators Rene Cummings and Theresa Rotter.

A switch that works at the university level

CSU in Long Beach – a very happy customer

"When we had to buy a new switch in 1985 Ericsson had the best price and a product that best met our demands," recalls Mary Ann Dase, responsible for telecommunications at California State University in Long Beach.

Today, eight years and three upgradings later, they are still very happy with their MD110 which has the latest version of software and among many other finesses also has Voice Mail and a Freeset addition.

The university is like a city in miniature, whose campus covers an area of more than one square kilometer. There are 28,000 students and 3,000 employees spread out over 65 buildings.

They have their own post office, their own computer network and telecommunications system – yes, even their own police force of 25 persons.

"Ericsson has really come through with its experts to solve our communications problems," says Mary Ann Dase.

She says that many at the university did not use all the services in their telephone switch before but that most people saw their phone as something where you picked up the receiver, got a tone and made an ordinary call.

"But when we installed Voice Mail with digital sound, many were in love with the system and it opened their eyes to new possibilities."

Mary Ann Dase continues to follow courses in how best to utilize the MD's capacity in various ways.

The latest upgrading to BC 6.0 gave a real boost and, she feels, made the MD more reliable and improved connection and sound quality in a notable way.

Moreover they were able to confirm that tele costs have been very stable during the course of the year – over a period of eight years they have had only one rate increase. And all computer traffic runs very effectively.

"In the student dorms we had a Centrex/GTE subsystem, about which we had a lot of complaints about buzzing on the line. We changed this for Ericsson equipment and the problem disappeared."

The police also had GTE equipment that did not always function perfectly and that therefore was recently changed.

For the student dorms they set up a group switch with five LIMs, and Mary Ann feels that Ericsson did a very fine job.

"Everything worked smoothly. They worked on weekends so as to disturb users as little as possible – and it went just as well with the installation.

"All the promised schedule times were held to during an eight-month period, a good mark for the installation people," she says.

Janet Jones, who works with marketing communications at Ericsson in Cypress, helped with the visit to the university in Long Beach. Behind the fountain is the administration building where the bulk of the MD is placed.

First Freeset

The Freeset addition they bought was Ericsson's first in the U.S. It did not take too long before the advantages of Freeset raised a few eyebrows, so much so that they have now ordered an extension.

"Through discussions with other universities that bought other switches I know that none of them has a more modern one than ours," says Mary Ann, who recently had a chance to tell colleagues about Freeset.

She is a member of ACUTA, the Association of College and University Telecommunication Administrators, which organizes an annual congress and exhibition. They wanted her to give a talk on her university's latest added products.

"It was a lot of fun, and during the congress I also learned a lot about speech and data processing," says a happy smiling Mary Ann Dase, who also contributes with user opinions to Ericsson's TQM work.

"Twice a year we gather in a user group and discuss positive aspects, problems and other issues that need to be studied for the future," she concludes.

Alf Öst

Freeset cited as "product of the year"

"For an interesting technical product with cordless telephony as a means for achieving greater freedom and accessibility in combination with simplified installation."

So read the reason for citing Freeset as product of the year. This came in a contest staged by a user organization for offices and computers, Kontorsforum.

For the first time the telecom branch also participated in the contest, which also covered office interiors and office materials.

"I was very surprised," says Lennart Nilsson, "but also quite happy that precisely a user organization honored us. We always focus on what the product can do for customers. A happy customer is the best advertising."

Flowers and a diploma were handed out to Lennart Nilsson by the chairman of Kontorsforum, Leif Örum.

Erica joins the Royal Air Force, RAF

The new sensor system Erica, mostly used in fire alarm applications, is now gradually introduced in the market.

A first order of high strategic significance has been signed by the RAF. RAF will use Erica to protect two big hangars at Athens, Wales. The order was won by Ericsson Ltd, the british MLC.

Installations will start immediately and the system will be in operation by year end.

The agreement with Royal Air Force was settled first after very hard testing of the Erica system.

The trials were carried out at full scale in a building belonging to the Ministry of Defence at Bicester near Oxford. The deal could not be settled before approval by the ministry.

"The Erica trials at the Ministry of Defence are the most comprehensive after the tunnel tests in Switzerland, carried out in collaboration with the company Cerberus more than ayear ago", says Bengt Carlström, product manager for Erica at Ericsson Business Networks.

The trials showed that Erica can meet very high requirements.

CONTACT
Ericsson, HF/LME/A, Room 4313, S-126 25 Stockholm

Baton passes to Ericsson in relay

This year's version of the Lidingö relay was staged in brilliant fall colors and dazzling sun. For the sixth year in a row – and with a full 25 starting teams – Ericsson Radio Systems AB from Mjärdevi (Linköping) took part in the huge folk festivities in Lidingö.

What began in 1988 as a small group of friends joining in the Lidingö relay has grown into an annual tradition that engages all of Ericsson Radio Systems in Mjärdevi.

This year the number of teams from Mjärdevi was a record. No other company matched the number of teams that took part this year. Men and women, young and old, a lot or little trained – all types were represented. With about a hundred starting in the 25 teams, one-third of the total work force in Mjärdevi participated.

Well-earned midday

In all there were 937 registered teams for this year's Lidingö relay. The race was staged together with the junior contests a day before the big Lidingö Run, Sweden's biggest road race.

"We also had a few runners there and for them Saturday's relay was a good warmup," says Sture Berg, the driving force behind the local sports organization and organizer of Mjärdevi's relay trips.

Some of the participants took their families along with them and as soon as all the teams had passed the finishing line the two rented buses headed for Djurgården and the Godthem restaurant. There the day was rounded off with a hearty and well-earned meal for the entire relay team, including their many supporters.

Helena Andersson

Crowding at the pass. Mjärdevi's united colors, however, made the baton passing a bit easier.

Only a short distance left to the pass. Monica Schyldt struggles on the uphill.

...and this is what they do workdays

At Ericsson Radio Systems AB in Mjärdevi they work with software development for mobile telephony. At the moment they are participating in two of the three large projects with digital standards for the Japanese (PDC) and European (GSM) markets. In addition sections of Mjärdevi work on development projects in collaboration with Ellemtel.

Since the start seven years ago they have grown from a mere handful to about 350 employees. There are a lot of female technicians and more than one-third of the employees are women.

Contacts with the Institute of Technology in Linköping are solid and development work is also done with other software companies, among them the Ericsson-owned EPA Data in Karlskrona and Hässleholm.

Håkan Peterson from Mjärdevi among a stream of runners shortly after the start of this year's Lidingö relay.

Changing in the open. Ericsson's Mjärdevi team in their yellow T-shirts and caps warm up for the race in the sun.

END LINE

LARS-GÖRAN HEDIN

A day we'll never forget

After more than twelve month's of tension, the weight was lifted for us at Corporate Relations . It will be a long time before we ever forget Wednesday afternoon, September 22. Phones were ringing everywhere. A news flash had sent out the message that the three captive Ericsson employees in Abu Ghraib prison in Bagdad were being released. And just a couple of hours later it was clear that Christer, Leif and Stefan were out of prison.

The mass media was all over. Those in the proximity of our department that afternoon had no reason to doubt events. Everyone wanted to know if it was true that the guys had been released, then they wanted to interview the families, Ericsson people, etc.

In this situation it is fortunate that the information manager has three mobile phones in his car, in case he is not reachable in his office. And that Ericsson's own switchboard at head office (HF) is well equipped with incoming lines and clever operators.

It took a few hectic days, before calm returned. For it is also true what they say about news: It has a very short lifespan.

It was thought that the three ex-captives would enjoy a little vacation with their family. But so strong was their desire for a normal life again, that within a couple of days they were already discussing their coming job assignments and went to ERA to talk about work.

The Ericsson crisis group could breathe easily. More than a year of intensive efforts was over. Here too, creative abilities were tested to their limits. No stone was left unturned in the bid to rescue our colleagues .

Now, when we can have a little perspective on the whole affair, I can't help but making the obvious reflection: what a fantastic asset the crisis group must be for all of us here at Ericsson.

I am not thinking about the enormous PR value that lies in Ericsson's manner of handling the crisis situation – every Swede knows that Ericsson stands up for employees that get into difficulties. But I am thinking of what it means for all of us as individual employees. Although only a few of the 70,000 of us work in risky desert territory, there are many of us who at some point may find ourselves in difficult straits.

The three had hardly come home when the crisis group was called into action again. The streets of Moscow were on the brink of civil war and in the city there were people working for Ericsson...

Indeed, we live in a world where forward-looking companies cannot manage without a crisis group.