

CONTACT

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New course for Broadband

Ericsson is now focusing on a narrower area in the broadband field. Resources are now being concentrated to prioritize the development of access products and smaller ATM switches. As a result of this, Ericsson can free resources to capitalize on the opportunities offered by development in mobile telephony.

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Al Gore called first

U.S. Vice President Al Gore inaugurated the first commercial PCS network in the U.S. He was the first to test the new-generation of mobile telephony in the U.S. Ericsson played a key role in establishing the system.

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Quality award to Ericsson

The Telecommunication Cable Division within Ericsson Cables won the 1995 quality award in Sweden. Division Manager Lars Renström received the prestigious trophy from King Carl XVI Gustaf at a ceremony in Gothenburg, Sweden.

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New approach at Components

The Components Business Area is reorganizing its microelectronics operations.

7, 9

View of Karlskrona

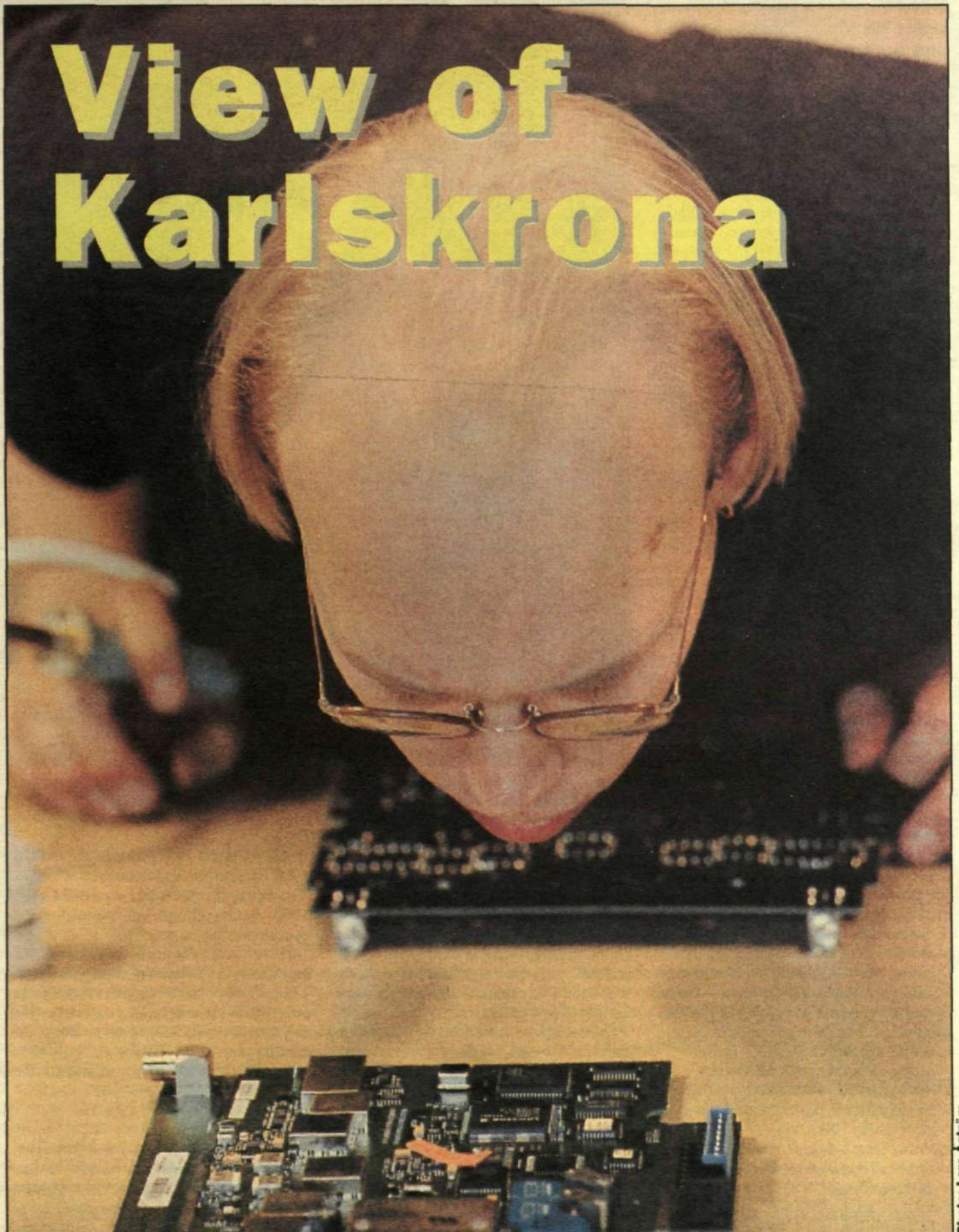


Photo: Lars Åström

After a difficult start of the year, including problems with late deliveries, things are looking brighter for Ericsson's plant in Karlskrona. Join us in a tour of a plant where sales are expected to quadruple during the next three years.

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Technology investments yield continued successes

Ericsson is now able to report continuous quarterly growth over four consecutive years. I regard this as clear evidence that we acted correctly in continuing to invest heavily in research and development in areas judged as having the best potential for the future. This is particularly true in mobile telephony, where the increase in order bookings for systems and terminals during the first nine months of the year amounted to a full 75 percent, with a 50-percent growth in net sales. Ericsson thus strengthened its already strong position as the market leader.

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Mobile telephony is the main operation in the Radio Communications business area, which now accounts for 60 percent of Ericsson's total order bookings. It is especially gratifying to report that we were very successful, not only in systems but also with respect to products that are more consumer oriented, that is, mobile telephones.

Increase in market share

The demand for digital phones for GSM (Global System for Mobile tele-communications) continues at a very high level, with no change in price levels in sight. Volumes increased as planned, and a significant increase in Ericsson's share of the global market for digital pocket phones is now expected.

Continued rapid expansion of mobile telephone systems is of course a prerequisite for increases in terminal sales volumes. By June 30, 1995, there were a total of 68 million mobile telephone subscribers worldwide. Of these, there are slightly more than 38 million subscribers in AMPS (Advanced Mobile Phone System), the world's largest system standard, which is now in use in the U.S. and some 50 other countries.

TDMA global standard

With regard to digital systems, it is now evident that GSM systems based on TDMA (Time Division Multiple Access) have become somewhat of a global standard. Major new GSM countries include India. In China, GSM will be introduced in all provinces. In all, 99 countries have adopted the GSM system standard, and by October of this year, 96 GSM networks had been taken into operation in 52 countries. Nearly half of the world's 11.6 million GSM subscribers are connected to Ericsson systems, a result in which we have every reason to take pride.



"Ericsson is currently experiencing a period of rapid growth, with significantly greater opportunities for expansion than previously anticipated," says Lars Ramqvist.

Photo: Victor Lenson Brott

The most rapid subscriber growth in mobile telephony is currently occurring in Asia. Japan's PDC (Personal Digital Cellular) system, which is also based on TDMA, is now the world's second largest digital system, with some 2.3 million subscribers. Ericsson is a leading systems supplier in this market and has received extensive new orders.

Growth of the American digital system standard D-AMPS (Digital Advanced Mobile Phone System) is proceeding according to expectations, with systems now in operation in 15 countries. Once again, Ericsson is a leading systems supplier, with networks serving 1.1 million of the 1.7 million total D-AMPS subscribers in October 1995. In the U.S., D-AMPS systems will provide coverage for an area containing 114 million people. Digital systems, however, are viewed with some caution in the U.S., pending decisions now being taken regarding PCS (Personal Communications Services), the new personal telephony system.

Ericsson is the principal supplier of the first commercial PCS system in the U.S.,

which is being inaugurated. This PCS 1900 system is also based on TDMA. According to the North American PCS 1900 Action Group, an association of operators who support this technology, TDMA-based systems will provide coverage from the outset for a population of 126 million people. Complete nationwide coverage is, of course, the objective. We can thus note that TDMA technology, including both D-AMPS and PCS 1900, is now a firmly established standard for the new PCS networks in the U.S.

World leader

Overall Ericsson is the world leader in mobile telephone systems, with more than 40 percent of the global market measured as the number of subscribers connected to existing systems. For the new digital systems, Ericsson's position is even stronger.

Ericsson's next largest business area is Public Telecommunications, in which the successful AXE system is the main product.

Ericsson has now sold more than 100 million AXE lines in 113 countries, ma-

king this the most widely installed system from an international perspective.

Price pressure

The market for conventional narrowband telephony is characterized by continued price pressure, while the market for broadband telephony continues to develop at a relatively slow pace. Public Telecommunications is therefore implementing an extensive program of measures intended to meet increasingly stiff competition. Resources are being concentrated to core operations, and delivery processes for AXE systems are being streamlined. A new joint development effort for the SDH (Synchronous Digital Hierarchy) transport system was initiated with Italy's Marconi. Investments in broadband systems continue in the form of participation in field trials of ATM (Asynchronous Transfer Mode) switches in Sweden, Germany, Italy, Spain and France. Ericsson is also delivering to cable-TV networks in a number of countries.

Staff reduction

It was previously announced that the number of employees in the Public Telecommunications business area would need to be reduced by 6,000 persons. While this is occurring, recruitment needs are even greater in the Radio Communications business area. Extensive relocation of personnel within Ericsson has taken place and is still in progress. This causes difficulty for both the employees and the units affected. The total number of employees within Ericsson is increasing.

Mobility is an increasingly important factor in the Business Network business area's product offering. Freeset, Ericsson's system and terminals for mobility in the workplace, was successfully launched, as was the Consono concept for business communications. This was reflected in increases in both order bookings and net sales.

The Components business area is important not only for our supply of strategic components in microelectronics; favorable results were also noted in the markets for cable and power systems for telecommunications.

In the Microwave Systems business area, which was formerly Defense Systems, defense electronics projects are stable activities. A clear increase in interest in products for civilian applications has also been noted. This applies in particular to radio links for mobile telephony, an area in which Ericsson has now become the world leader.

Share issue

Ericsson is currently experiencing a period of rapid growth, with greater expansion possibilities than previously anticipated.

The new share issue approved by the extraordinary general meeting in September was fully subscribed, thus providing Ericsson with additional equity amounting to SEK 7.8 billion. This increases Ericsson's ability to continue to expand, particularly in mobile telephony.

In summary I can conclude that 1995 to date has developed very favorably for Ericsson. I foresee that pre-tax income will continue to develop favorably during 1995, in agreement with prior forecasts.

Lars Ramqvist

First PCS system in commercial operation

The U.S. operator American Personnel Communications (APC) became the first to place a PCS system in commercial operation. The system, designated Sprint Spectrum, is installed in the Washington DC-Maryland-Northern Virginia area.

The system is based on the Ericsson PCS 1900, a personal telephony system based on GSM. Ericsson delivered the switches, base stations and other equipment, installed and placed the system in operation.

Fire at Mölndal plant

A major fire broke out at the Mölndal plant in early November. The fire, which occurred during a heavy snow storm, destroyed two floors of the plant. The damages, aggravated by the fire department not being able to respond as promptly as usual due to the weather conditions, are estimated at SEK 50 - 100 million.

Award for best tele research

On November 6, Ericsson received an award for the best research project in the EU's RACE program. The project, entitled Multi-Wavelength Transport Network (MWTN), has involved ten companies and universities in Europe. It involved development of new technology for a network with broadband services.

Ericsson's contribution to the project involved opto-electronic components, software for network control, network modelling and demonstration of optic relaying in experimental broadband networks. The Stockholm Gigabit Network is one example of such a network.

Other participants in the project were BT Laboratories, Telia AB, Pirelli, Italtel and France Telecom.

Radar order from Germany

Ericsson Microwave Systems in Mölndal has received an order from the German company STN Atlas Elektronik in Bremen for radar intended for the German Army's new lightweight anti-aircraft system, LeFlaSys. The value of the order, which involves the Hard anti-aircraft radar system, was not disclosed. This is Ericsson's first export order for this system, which in Sweden is a component of the RBS 90 anti-aircraft system.

Hard is included a new generation of advanced radar which are nearly impossible to jam or detect as a radar target. It is a so-called 3D type, which means that it provides information on the target in three dimensions: direction, distance and altitude.

Increase in mobile tele strengthens earnings

The stock market reacted bullish to Ericsson's nine-month interim report. Profit in the first nine months— SEK 4.8 billion — was somewhat higher than analysts projected. A strong increase in order bookings reinforced the positive indicators.

Ericsson's order bookings for the first nine months of 1995 increased 31 percent to SEK 78,548 m. (SEK 60,111 m. in the corresponding period in 1994). Net sales rose 23 percent to SEK 66,901 m. (54,574). Pre-tax income for the period improved 38 percent to SEK 4,810 m. (3,492), including SEK -22 m. (211) in net capital gains/loss. After actual taxes and deferred taxes, and after full conversion, income per share was SEK 3.75 (2.60), up 44 percent.

The continued strong increase in order bookings is due mainly to the successes in mobile telephony in the Radio Communications business area. The business area posted a 60-percent increase in order bookings and accounted for 60 percent of consolidated order bookings.

The increase in net sales is also largely attributable to Radio Communications. All business areas contributed to the increase in order bookings and net sales.

In the third quarter, order bookings rose 30 percent and net sales were up 31 percent.

The U.S. is Ericsson's largest market, with 11 percent of net sales, followed by Sweden at 10 percent and Great Britain, China and Italy, each with 7 percent. Combined, the ten largest markets account for 60 percent of consolidated net sales.

The total number of employees at September 30, 1995 was 82,992, an increase during the past 12 months of about 8,000. In the third quarter alone, the number of employees rose by 2,337 persons, of whom 1,546 in Sweden. Recruiting activities have focused mainly on the expanding operations within Radio Communications, which for the first time is now the business area employing the highest number of persons in Ericsson.

OUTLOOK

Pre-tax income will continue to develop favorably during 1995, in agreement with prior forecasts.

BUSINESS AREAS

RADIO COMMUNICATIONS increased net sales by 42 percent as a result of major volume gains in mobile telephony. The strongest rise was noted for mobile telephones, where Ericsson clearly increased its market share.

The U.S. continues to be the business area's largest market, while the fastest-growing markets are China, Great Britain, Sweden, Australia and Spain. The business area's even sharper rise in order bookings is attributable mainly to the U.S., Japan and Germany.



The growth in mobile telephony has become a boon for Ericsson. The Radio Communications Business Area now accounts for 60 percent of consolidated net sales. Photo: Lars Åström.

PUBLIC TELECOMMUNICATIONS posted an increase in net sales of 11 percent. During the period, the business area implemented a concentration of operations to two operative units, narrowband and broadband, concurrent with the start of a restructuring of operations, with substantial personnel reductions as a result. The narrowband operations with the AXE system reported a profitable and favorable development, but it is not sufficient to cover satisfactorily the investments in broadband and transport network products. In order to provide a more complete product range more quickly in the transport network area of SDH (Synchronous Digital Hierarchy), Ericsson has signed a cooperation agreement with Marconi of Italy. This also contributes to having reduced technical development costs somewhat. The results for the business area as a whole remained weak during the third quarter.

BUSINESS NETWORKS reports, after a strong third quarter, an increase in net sales of 9 percent. It is primarily the business communication area that is increasing. This, combined with a number of major network projects, accounts for the even stronger rise in order bookings.

COMPONENTS increased net sales by 21 percent. The most rapid growth was noted in the electronic components distribution area. Order bookings also rose notably, after a strong third quarter.

MICROWAVE SYSTEMS increased sales by 17 percent, as a result of continued successes, particularly in radio link operations. Order bookings rose somewhat.

FINANCING

Ericsson's cash flow remained negative as a result of expansion and subsequent inventory build-up and investments in fixed assets. The equity ratio was 33.4 percent (33.4). The proceeds from the new issue of shares, approximately SEK 7,800 m., were received in October and, consequently, did not affect the third quarter.

CAPITAL EXPENDITURES

Ericsson's investments in property, plant and equipment amounted to SEK 4,152 m. (3,593), of which expenditures in Sweden totaled SEK 2,388 m. (2,169).

Stockholm, November 15, 1995
Lars Ramqvist

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GSM network ready in three months

It's impossible! This was the reaction when it became known that the next major project for LM Ericsson A.S. in Denmark was to install a GSM network in Lithuania in just three months.

The first phase was scheduled to be in operation already in October, according to the contract signed with Mobilios Telekomunikacijos, a consortium comprising Tele Danmark International, US West and the Lithuanian telecom Telekomas.

Nevertheless, what was considered impossible by all was accomplished, within the prescribed time.

Installation personnel from Ericsson in Denmark were already in the country when the contract was signed. They had just completed installation of an AXE exchange in the port city of Klaipeda and were familiar with the work condition in Lithuania. Their involvement was key for rapid installation.

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

Relays outsourced

Ericsson Telecom AB is selling the relay manufacturing unit at the Huvudfabriken in Stockholm to the Japanese electronic company Anritsu Corporation.

Sale of the relay manufacturing to another company is part of the business area's ongoing restructuring program.

Selection of Anritsu was easy. Ericsson has manufactured relays on license from the Japanese company for many years.

It is intended that Anritsu will establish a new company to be located in the Stockholm region and that about 70 persons who work with relay manufacturing will be offered employment in this company.

AXE to Krasnoyarsk

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

The contract runs for a five-year period and installation will begin next year.

Swedish quality champions

Lars Renström, head of the Telecom Cables Division within Ericsson Cables, was moved and delighted when he accepted the Swedish Quality award from HRH King Carl XVI Gustaf. Lars and his 500 colleagues in Hudiksvall are the 1995 Swedish champions in quality!

The Swedish Quality Award was presented for the third time on Monday December 4, 1995. This is the most prestigious quality distinction a Swedish company can receive and only a few companies have been honored to date. In 1994, LM Ericsson Data was one of two winners. This year an Ericsson company was again on the winner stand, as the only recipient of the honor.

A unanimous jury, headed by Mauritz Sahlin former CEO of SKF, chose the Telecom Cable Division in Hudiksvall as the best of eleven companies applying for the award.

"Within Electrolux, we have not yet applied to be considered for the award, since we do not as yet feel that we are fully prepared," admitted Leif Johansson, who held a speech in conjunction with the award ceremony. If an-



His Majesty, king Carl Gustaf, applauded Janne Sjöden and Lars Renström from Ericsson Cables.

anything, this confession reflects the level of performance required to seek – and then win – this honor. Janne Sjöden, president of Ericsson Cable, and Lars Renström, manager of the Telecom Cable Division, accepted the award certificate from the King. In his thank you speech, Janne pointed out that Ericsson Cable's quality efforts are being carried out within the framework of the global TQM program – Total Quality Management – which is an Ericsson hallmark. He extended appreciation to SIQ, the

Swedish quality institute, for its professional handling of the award.

Lars Renström provided an overall view of how work is carried out to realize continuous improvements and to keep the customer in focus in Hudiksvall. There were many leading representatives of Swedish industry in the audience. They were clearly impressed by the results which were achieved: 98-99.5 delivery precision, a doubling of sales per employee and a 30-percent reduction in lead times.

"Another result of our improvement efforts was that profitability has risen during the past several years. They are well above the expectations of our owner," Lars related. Lars Renström concluded his comments with a thank you to those who continually drive the improvement effort forward:

"To all our demanding, and at times impossible, customers, we say thank you! You are the driving force behind our efforts to become better and better!"

Lars-Göran Hedin

Al Gore inaugurated first PCS system in U.S.

November 15 was an historic day for Ericsson in the United States. With a telephone call from U.S. Vice President Al Gore in the White House to the Mayor of Baltimore, Kurt Schmoke, the country's first PCS system was inaugurated. For Ericsson, who had delivered the equipment, it was also the first mobile telephone network installed in the nation's capital.

It was just nine months ago, in February this year, that American Personal Communications, APC, one of Sprint Telecommunications' jointly owned companies, ordered a PCS system from Ericsson. Based on GSM, the PCS 1900 is of major strategic importance in the selection of a standard for personal telephony in the U.S. The system, which in the first phase will cover Washington and Baltimore and the major highways between the two cities, is dimensioned to handle about 150,000 subscribers. APC is launching its PCS system under the name Sprint Spectrum. Currently, the Wash-



Vice President Al Gore.

ington-Baltimore area is covered by two overloaded analog networks.

"With our system now in commercial operation, the eyes of the entire American mobile telephony world are focused on us. We are the first supplier to show a functioning PCS system in the United States. It is my hope that the attention we attract can be used not only in other parts of the U.S., but also globally," says Mats Dahlin, responsible for Market Operations, North America at the Mobile Telephony - European Standard business unit,

within Ericsson Radio Systems.

Mats also notes that the DCS 1800 personal telephony system, which British operator Mercury One-2-One purchased from Ericsson, was a significant reference.

New base station

Despite being based on Ericsson's GSM platform, much of the PCS 1900 system is newly developed, in terms of both hardware and software. This is the first time the new RBS 2000 base station has been installed on a full-scale basis and this is being regarded as the big commercial test.

The telephone, an Ericsson PCS CH-337 model weighing just 193 grams and featuring the smallest battery, is also new. During the summer, APC also placed an order for Ericsson telephones for its PCS system worth SEK 122 million.

"The installation and start-up of the system is a major assignment and during the most intensive period up to 350 people were engaged in the project," recounts Thomas Knutsson, responsible for the implementation of the project in North America. This is a turnkey project, which means that Ericsson is accountable for everything except the

acquisition of the sites where the base stations are to be located. Approximately 300 base stations have been delivered, of which 250 are already in operation.

Next stop California

While APC and Ericsson are now discussing how to expand the system, work is also under way to install the PCS system ordered by Pacific Bell Mobile Services (PBMS) in June. This system is intended to cover most of the adjoining states of California and Nevada, including the cities of San Francisco, San José, Oakland, Los Angeles, San Diego and Las Vegas. The order is estimated to be worth slightly more than SEK 2 billion.

Now, at the beginning of December, the United States' Federal Communications Commission (FCC) is starting to offer licenses for the so-called C Band. A total of 493 new licenses will be auctioned and many of the speculators will be very interested to see how things go for Sprint Spectrum in Washington-Baltimore.

This particular stretch is in itself historic, since the nation's first telegraph line was installed between these two cities and inaugurated in 1843.

Gunilla Tamm

Broadband accelerates

Ericsson's efforts in broadband system are now entering a new phase. They are being focused on areas where the market is really beginning to accelerate - smaller switches and access products. "In this manner we are taking a major stride forward within broadband concurrent with releasing resources in order to capitalize on the large business potential in the radio segment," says Lars Ramqvist.

The trend in mobile telephony continues to exceed all forecasts. This creates good business opportunities for Ericsson's Radio Communications Business Area. Currently, there are 70 million subscribers in the mobile networks. By the end of the decade, there are expected to be more than 350 million, or more, if this forecast is also exceeded!

Shift in emphasis

At the same time, the market for broadband systems has not developed as projected several years ago. For the large tele systems, it will be yet some time before demand gains pace.

This is a trend predicted by Ericsson's senior management in the quarterly reports this year and which is the underlying reason for the shift in emphasis now

under way in Ericsson's development activities.

"I have previously noted that 20,000 Ericsson employees will have to take on new work assignments," says CEO Lars Ramqvist. "It now appears that it will be even more.

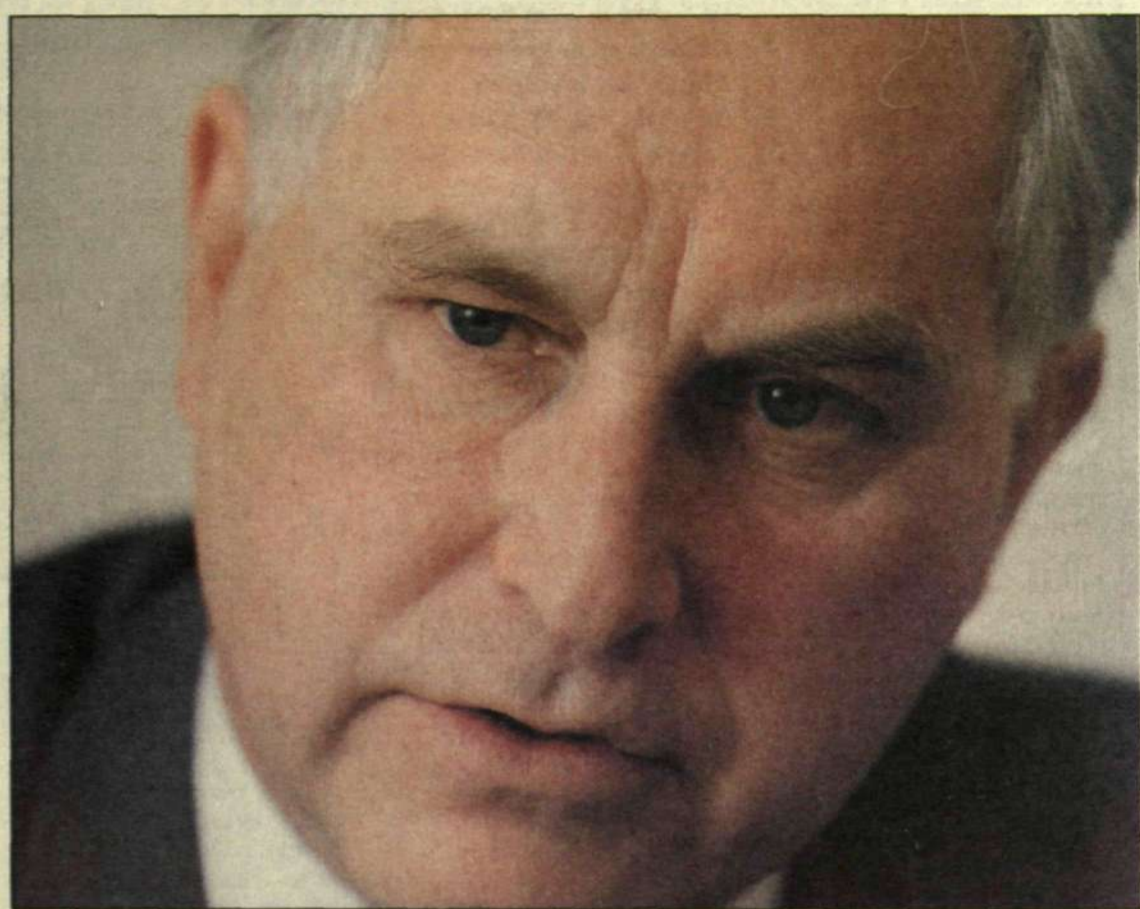
"We would have been in a very troublesome position if we had not had such a large pool of skilled resources which we can release. These are available in the areas that require some time before the market actually gains pace."

Lars Ramqvist speaks mostly about broadband technology. In this area, the market for smaller switches for data communications and access products has started to gain pace. This is the background to the realignment of Ericsson's broadband development efforts now under way. Through delaying efforts to develop large systems while work accelerates to develop ATM products for access and for smaller networks, resources can be released to strengthen continued development of AXE10 and to cover needs in the radio area.

High competence level

"Efforts to develop ATM switches for the large telephone systems have given us know-how and experience from which we can benefit in the new concentrated efforts in broadband."

"We have established a high level of competence in the ATM area and parts of what we have developed can be used when we focus on the rapid development of ATM products for access net-



"By waiting to develop the large systems in the broadband field, Ericsson can focus on the segment for smaller back-bone switches and access products, where the market is developing much faster" says CEO Lars Ramqvist.

Photo: Anders Anjou

works. In this area, several new competitors has entered the scene, but with this focus of efforts now under way and the resources we command, we expect to establish a leading position also in this field.

"The next step will be to develop products for the large telephone systems, for backbone and transit. We have time to accomplish this, since there will be a delay until the market is mature

for these solutions. Until that time, we must use our money and our skill resources where they are best needed."

Strengthens us

"One of the reasons for Ericsson's successes to date has been our ability to rapidly adapt to market trends. Now, when mobile telephony is the most expansive segment in the market, we are at the top of this area.

"The shift in emphasis we are now implementing in the broadband area - and in the entire Public Telecommunications Business Area - is a further example of this flexibility. Our employees and our shareholders can be pleased that this is something that further strengthens Ericsson's position as a leading international systems supplier in telecommunications."

Lars-Göran Hedin

New priorities for ATM products

Ericsson's focus on broadband systems is moving ahead, but with a new set of priorities. The first products to be generated by development efforts in ATM are access products and smaller ATM switches. These are the areas that are now growing the fastest.

Anders Igel, head of the Public Telecommunications Business Area, is now taking the next step in the major restructuring which he has designated the "BX Turnaround." Now the focus is on how to proceed with efforts in the broadband segment.

"We have reviewed the broadband segment thoroughly and decided on the areas within ATM in which we will cooperate with other companies and what we will be doing ourselves in the future. In our efforts to be a world leader in wireline telecommunications, it is important to develop a strong position in ATM, which will subsequently become an increasingly significant area," Anders explains.

"In the broadband segment today, there are mainly two areas that are already ac-

celerating rapidly: traditional cable-TV systems, which can be upgraded to interactive broadband communications, and data communications between companies. In general, the ATM market is developing in such a way that the most immediate needs will arise in the access network.

Increasing demand

"Demand is currently increasing in the access area as well as for smaller systems for transport networks featuring ATM technology. Consequently, we are refocusing our broadband efforts toward products for cable-TV systems and ATM solutions for access networks.

"This means that we are changing priorities in our ATM development. Now are aiming first at development applications for access and thereafter at the large systems for the backbone network."

Under one roof

Anders Igel provides a more specific description of the priority areas. The focus will be on two areas.

"Top priority will be on ATM for access and "small backbone" networks. We will be accelerating this project through combining all those involved in ATM development under one roof. This will ensu-

re a more focused efforts for these systems. Development efforts will be very market-driven. We must develop the products in demand on the market!

"Naturally, these new systems are based on the development work carried out at Ellemtel and in the Broadband Business Unit. We will be combining these activities within the framework of the business unit's operations."

Home use

The second priority area is complete systems for what is known as residential interactive broadband (RIBS), that is, systems that will make it possible for households to gain access to on-command video, multi-media entertainment, home shopping and other concepts which will be household words in several years.

"This effort is based on Ericsson-Raynet's products for access networks and ATM products already developed by Ericsson. This system will be the solution for the first RIBS to be placed in operation," says Anders Igel.

Strong AXE trend

"The market for broadband systems is currently in a very dynamic phase. New devices in the network may also be possible,

such as Internet-type system solutions. Normal voice will also be transmitted in ATM systems in the future. Our new products must also be compatible with these solutions."

The focus on broadband also releases resources to further reinforce development efforts in the AXE area.

"In such a way, we can best capitalize on the possibilities of further developing the AXE system in a collected fashion."

Best in the world

"We view AXE as an important element in our future broadband solutions. The world's best switching system will play a significant and decisive role in the broadband network of the future. With the new division of responsibilities that is now being implementing, we can also increase the synergies between AXE and broadband solutions.

"The investments we are now making are entirely within the framework of our focusing on the business area's core business."

"The aim is to become even stronger and that Ericsson will be the leading supplier of both mobile and wireline networks!," concludes Anders Igel.

Lars-Göran Hedin

Texas Instruments
wishes everybody at Ericsson
a happy Christmas and
a prosperous New Year.



Texas Instruments
önskar alla på Ericsson en
God Jul och Ett Gott Nytt År.

EXTENDING YOUR REACH™

 **TEXAS
INSTRUMENTS**

Components being reorganized

The microelectronics operations of the Components Business Area is now facing its greatest challenge. Effective January 1, 1996, all activities will be combined to form a totally new, commercially oriented business unit.

"The importance of microelectronics is increasingly considerably among all our customers and the very best companies have fantastic potential. But the only real contenders are those who can offer the most commercially competitive products and services.

Bert Jeppsson comments on the new Microelectronics business unit

"That's why we are forming a new base. We are restructuring, investing and implementing a very tough and highly aggressive approach. To be successful, we need a cultural change and the cooperation of everybody involved," says Bert Jeppsson, manager of Components Business Area.

The new business unit, Microelectronics, will be formed through the merger of Microelectronic Access Devices and the core unit, Microelectronic Systems Technology.

The manager of the new Microelectronics business unit is Sigrun Hjelmquist.

Broad-based participation

"Many people at Ericsson Components have been involved in this restructuring over a rather long period. The initial suggestions for a new structure originated during the ESP program, then continued during the budget year and have involved even more people in recent months," explains Bert Jeppsson, president of the Components Business Area.

The main work was conducted within a management group led by Bert Jeppsson, Christer Jungsand, Sigrun Hjelmquist, Kurt-Ingvar Engde, Lars Rydberg and Susanne Lithander.

This development is very aggressive and entails highly substantial investments. It is based on a platform underlying the company's strategies and visions.

Cultural change is required

"We are sharpening the competitiveness of our products and services and adding to the commercial aspect of our customer offer. We have been encouraged by the successes in Radio, where our working method, which involved a more commercial approach, was very warmly received. Business with external customers has also developed positively.

"Ericsson Components offers enormous expertise in research, development and production. Following many analyses and meetings with customers,



"A natural stage of the new organization is that we develop our range of plants," says Bert Jeppsson, shown here at the hybrid plant. The Components Business Area has a number of plants. A bipolar plant, MOS plant, opto-plant, modular plant, hybrid plant and the latest investment, the VLSI plant. Photo: Anders Anjou

I am convinced that few companies have superior potential for a combined microelectronics team than Ericsson Components.

"But it requires a cultural change towards a highly customer-oriented and a strong commercial approach. A totally different way of working, understanding, supporting and serving. A totally different approach when it comes to flexibility and a totally different focus in terms of time.

"Prompt decisions, rapid product development, promptness in handling customers, and speed in establishing new project groups to get results in well ahead of our competitors. And we need to promptly establish crucial skills in our unit and in cooperation with our partners to secure results.

"Old methods do not work in new markets, so we cannot work according to the familiar pattern."

First-class company

"We must ensure that there is a trend reversal as early as 1996. By this stage we must have succeeded in recovering the investments which we are now conducting in future competitive products to achieve the required volume in invoicing."

The objective is that as a result of development through 1999, Ericsson Components' microelectronics unit will be regarded as a first-class company by internal Ericsson companies, external customers, employees and owners.

The company will have a complete product and services program in microelectronics and optic-electronics, ranging from components and subsystems to applications in the communications area.

Major challenge

"What we are creating is a microelectronics company which, instead of relying on Group financing, wants to offer commercially competitive products and services. But to succeed in this endeavor, we need the commitment and support of everybody and a real chance to get involved and tender for contracts, plus reliable feedback if we lose the bid.

"If we succeed, we will meet the Group's strategic requirements for a commercial and competitive approach. This is a major challenge which – if it succeeds – will provide a tremendous return for both the Components Business Area and Ericsson.

Inger Björklind Bengtsson

What do you think of the changes in microelectronics?



Per Karlsson, fiber-optic systems

"Generally positive. The current financing model has made financing difficult for basic technology and research. This move means that there is a basis for smoothly functioning operations. The important point is to ensure that synergistic gains are not lost in the product-line organization, especially in terms of approach."



Ivar Hamberg, process development

"It is good that a decision has been reached regarding a definite direction. Many people have been waiting for this. There is a definite involvement and willingness to do something positive with this and I feel I can contribute. The major challenge is to cope with increased production and more rapid development. Our performance must not be inferior to that of our toughest competitors."



Jolanta Norén, manager of the micro- assemblies and properties

"This was expected. My basic reaction is that it has taken so long. Many of us feel that it is positive to base technical development on products. It entails a complete chain."



Nils Kristensen, lithography in submy plant

"It is liberating and positive that we are now focusing on this and that there is a definite vision. It is exciting that everything will be located under the same roof and we will see what will come of the whole thing and how we attain our goals."



Staffan Robertsson, sales, micro-circuits

"This is a natural development. Our competitiveness increases in the new organization as a result of increased development and production resources, and because we will work together with our customers on the basis of a comprehensive perspective. The combination of all expertise under the same roof makes a stronger business partner and supplier."



Torbjörn Randahl, line- circuit designer

"We feel there is a need for coordination in the areas of CAD support and methods. Product orientation is only natural, but it is important to distinguish between what is required in the immediate future and what is important in the long term, so that we don't miss our priorities."



Krister Gumaelius, yield-optimization, production at submy.

"It's great to be a part of a commercial organization. Obviously, microelectronics should be unified to capitalize on all opportunities."

Ericsson and Marconi to cooperate on SDH

On October 7, at Telecom 95, Ericsson and Marconi announced a strategic cooperation agreement. The agreement entails that both companies will have exclusive rights to market a joint SDH portfolio.

"Marconi is one of the very few suppliers to have delivered and installed stable, high-volume cross-connectors. It has actually happened that the cross-connectors have been offered to the same customer by four or five different suppliers, all of whom had acquired them from Marconi," says Dirk Uhlemann, in charge of the SDH program at the Broadband business unit, in the Public Telecommunications Business Area.

"From now on only Ericsson and Marconi will offer the product to operators"

Top of the list

Ericsson started to look for an SDH partner in spring 1995. When the various options had been evaluated, Marconi was left at the top of the wish list.

The agreement with Marconi runs for seven years. During that period, Ericsson and Marconi have exclusive rights to marketing, sales and distribution of the joint SDH product portfolio.

The agreement also means that Marconi guarantees Ericsson license and manufacturing rights and that Ericsson will manufacture Marconi's products in its Norrköping plant during 1996.

Players in the SDH industry have realized that the market is



The agreement gives Ericsson and Marconi exclusive rights for marketing the joint SDH product portfolio. Ericsson will begin to license manufacture Marconi's products in its Norrköping plant in 1996. Photo shows Yvonne Ferin checking the manufacture of transport network products to confirm that all components are attached properly to the printed circuit assembly. Photo: Björn Larsson

not expanding as fast as expected in the 1990s. It is difficult to attain sufficient profitability, while research and development costs are high. This has given rise to a number of corporate acquisitions and cooperation agreements, which in turn have resulted in concentration and reduction of the market players in the SDH area. Recently, for example, AT&T acquired parts of Philips, thereby creating a strong SDH supplier.

The development of a comprehensive broadband portfolio is very costly and takes a lot of time. The market for broadband is unstable, with rapid fluctuations in demand. Nevertheless, it is important to always be able to offer products to the market – both to make money and avoid losing potential business. Accordingly, the ability to quickly introduce new products on the market and offer them in volume is decisive.

Partnership

To compete in this market, Ericsson's strategy is to use partnerships to satisfy customer demands for complete solutions. The agreement between Ericsson and Marconi is just one example of how this strategy is applied.

The agreement with Marconi strengthens Ericsson's transport network architecture (ETNA) with a new generation of products and Ericsson now has one of the market's most complete SDH ranges.

For its part, Marconi gains access to Ericsson's global market presence and the major potential to market Marconi's products offered by Ericsson's marketing channels.

"This cooperation agreement is attractive for both Marconi and Ericsson – this is the spirit in which the agreement has been signed," explains Dirk Uhlemann.

Monica Villot-Berlin

High-tech industry concentrated to Norrköping

All operations in Norrköping are conducted under the one roof. The manufacture of broadband products and the Customer Deliver Center (CDC) are located in one single building.

The building was previously a textile warehouse, which Ericsson took over at the beginning of last year.

In the past, order processing, manufacture, customer deliveries documentation and other activities were spread throughout Norrköping and Stockholm.

Total renovation

The building has been totally renovated to suit high-tech industry. Today, 630 people are engaged in the manufacture of transport network requirements, (PDH and SDH) access products for broadband and Ericsson's ATM-based broadband systems. All operations from order reception via purchases of components, manufacture and the assembly of products to complete systems, to the preparation for delivery are now conducted under the same roof.

"During my six years as market manager at the Scunthorpe plant at Ericsson in Great Britain,

I learned to cut costs by moving operations into the plant which were traditionally done during installation, final assembly, cabling and system testing," says Ian MacLure, in charge of the production unit for broadband in Norrköping.

"This is a new way of thinking. When we planned broadband unit production in Norrköping, we decided that the activities affecting customer deliveries should also be as close as possible to manufacturing."

The Broadband unit's customer delivery center has clear objectives – delivery of complete networks to satisfied customers, while simultaneously reducing lead times and tied-up capital.

Monica Villot-Berling

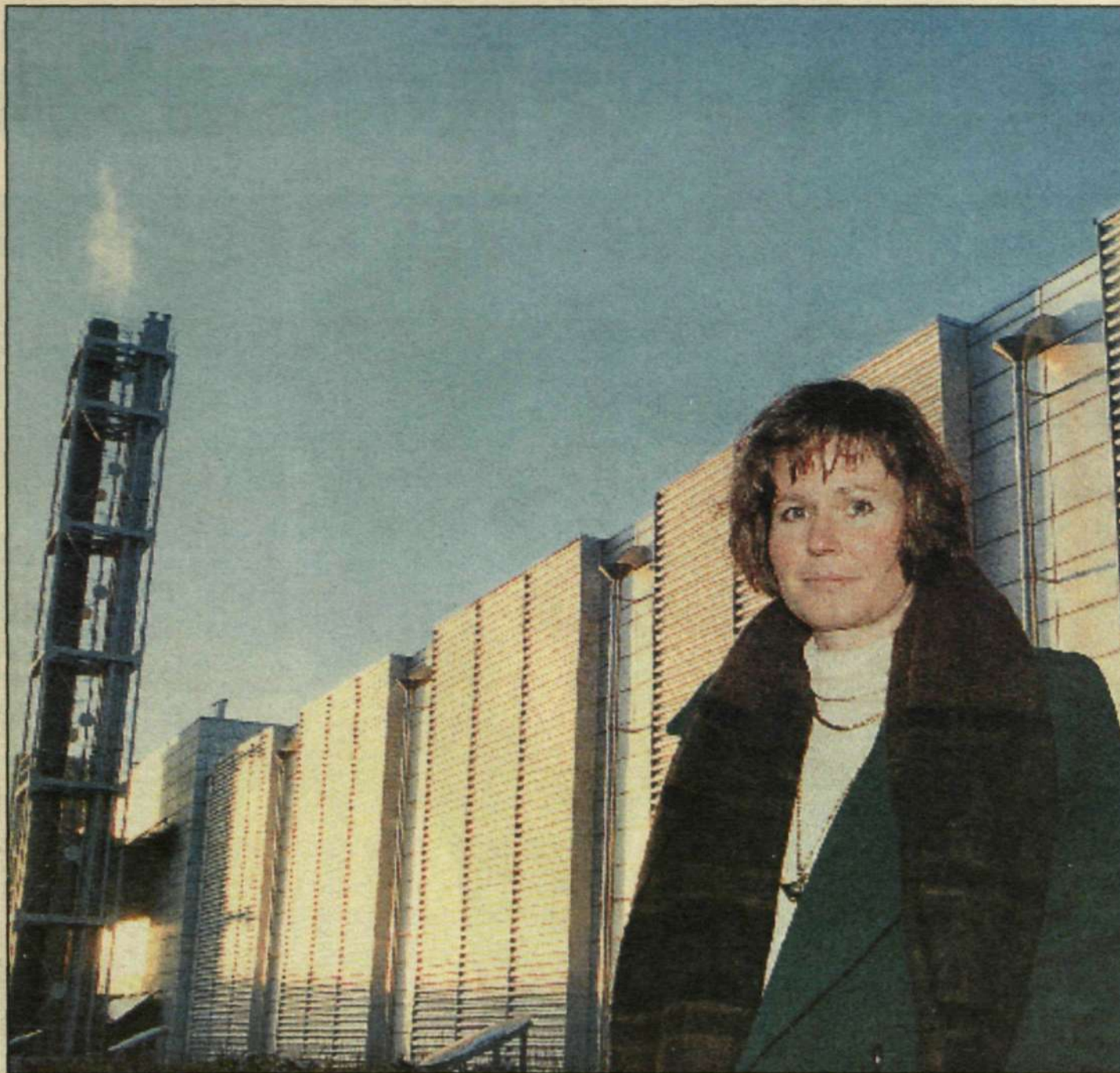


The agreement with Marconi was signed officially in Santa Margherita Ligure in Italy on September 27. Seated, from left: Roberto Orland, Commercial Director, Sandro Gualano, President of Marconi and Björn Hemstad, in charge of the Broadband business unit at Ericsson Public Telecommunications Business Area. Standing, from left: Massimo Rugai, Contract Management, Luciano Maciotta, Marketing Director, Dirk Uhlemann, responsible for the SDH program in the Broadband business unit and Lars Risby, responsible for Product Management at the Broadband business unit.

Marconi in brief

■ Marconi has its head office in Genoa, at the foot of the Apennines. Marconi is a multinational company with 6,000 employees in 23 countries in Europe, US and Asia.

■ Marconi's main operations are in public telecommunications, with SDH and PDH - equipment as an important operation.



Sigrun Hjelmquist, 39, is manager of 1,300 persons in the new business unit within microelectronics at Ericsson Components.

Sigrun becomes head of microelectronics unit

Sigrun Hjelmquist becomes a new top executive within Ericsson when the resources within the microelectronics operations at Ericsson Components are combined into a new business unit, with 1,300 employees.

In this era of focusing on technology, microelectronics plays a decisive role. Increasingly, the competitiveness of system products is related to the microelectronic solutions, and these products contain more and more microelectronic components. The system is built into the silicon.

Accordingly, Ericsson Components is sharpening the focus of its microelectronics operations and creating an entirely new unit based on the former two units, the core unit Microelectronic Systems Technology and the Microelectronic Access Devices business unit.

The new operations, Microelectronics, will be a business unit that will survive on the sharply growing commercial invoicing of products and services.

Combined skills

"An important task is that all personnel in the new business unit become customer- and market-oriented. All the operations which were contained in the former units will have a natural place in the new business unit," says Sigrun Hjelmquist.

As of January 1, 1996, she will be the manager of 1,300 employees, of whom all have a position in the new unit.

"Within Ericsson Components, we have a multitude of combined skills. Individually, neither of the two current microelectronic units are capable of capitalizing to a sufficient degree on the business opportunities being offered. Together, we complement one another and now we will grasp these opportunities in a joint business unit."

Increased capacity

"Our goal is that we shall be very distinct in our total undertaking as microelectronic supplier.

"There are customers within Ericsson as well as the external market. We compete on market terms with other external microelectronic suppliers and we believe that in many cases we can offer added value due to the skills present within Ericsson Components.

"In recent years, we have increased our production capacity and productivity substantially, and we intend to improve this development further," Sigrun Hjelmquist continues.

VLSI plant included

The new operations will be located mainly in Kista and comprises research, development and production. The new VLSI plant is included. In the U.S., frequency amplifiers for radio base stations are developed

and encapsulated at the Morgan Hill unit in California. There is a development center for application specific circuits in Swindon, England. In addition, there is a sales team active worldwide.

Major challenge

"I am aware that this is a heavy responsibility and a major challenge to deal with all these people in a new, important operation. However, the greatest challenge lies in merging the different cultures and work methods that exist within the operations today and to create a customer orientation and commercial behavior required to be a first-class microelectronics company," relates Sigrun Hjelmquist.

"It will require hard work in all quarters, but I contend that it is, in fact, the differences which provide a good platform for success. I am highly confident since there are so many skilled people from all units who will contribute."

Sigrun is becoming one of the few female top executives within Ericsson, but sees no specific advantage of being a woman in this respect.

"I do not see any advantages or disadvantages. It is also important that there is a mix of personalities at the senior management level. Naturally, my personality is affected by the fact that I'm a woman and as a woman I may draw more attention. This can be good and bad."

Inger Björklind Bengtsson
Photo: Anders Anjou

'Now, is the right time'

The new joint microelectronics business unit within Ericsson Components represents a golden opportunity, says Christer Jungsand, head of Microelectronic Systems Technology.

"The new business system that we are now seeing is the result of a natural process which has been developing for some time. The two former microelectronic units and the former X division were already involved in the joint development of ESP 95 in the early spring.

"Based on common product areas, each unit contributed know-how and experience. The results were promising and led to the establishment of a joint project and a preliminary budget for 1996. Given the demands being made on Ericsson's microelectronics, it wasn't difficult to reach the conclusion that the best situation would be for us to reorganize operations into a single unit.

"Many competitors are currently mobilizing their microelectronic resources. The potential in the market is

tremendous. We have to be there now and capture market share. It is therefore essential that we find an effective new method of working!"



Christer Jungsand, head of core unit Microelectronic Systems Technology.

Investments needed

"Investments are required in the marketing and production areas. We can only succeed if our customers are successful. Only an organization that is genuinely customer-oriented can create the necessary scope for technological development and long-term planning.

"During the past two years, Microelectronic Systems Technology has gradually advanced its commercial focus. Our brief from the start has been to assume responsibility for technological development within several of the Group's core areas of business. Many of the prerequisites were established by the Public Telecommunications Business Area."

The Radio Communications Business Area has almost tripled its sales during the past two years. We have also achieved a breakthrough within the terminals area, which means that the microelectronics field is driven to a large extent by the trend of consumer products.

Upholding core skills

"But to carry us through 1996, '97, '98 and even further into the future, we have to safeguard our existing core skills. Our two microelectronics units complement each other extremely well and will contribute to making this a highly effective organization. However, if we wait another year, it could be too late. Now is the right time to start-up a joint business unit."

Norwegians take calls personally



Svein Harald Rognås likes UPT, despite a few inconveniences.

One number, one operator, one invoice, one subscription – with a single number you can place and receive calls wherever you are in the world! In a mountain cabin, on vacation in Italy or on a sailboat, you can use your personal telephone number.

Norway first with new global telephony technology

This new service was introduced in Norway in May. Now Norwegian subscribers can get an Alpha number, the name chosen by operator Nortel for universal personal telephony (UPT).

"An Alpha number signifies the first number, which is the only one you need," says Telenor's Olav Henrik Kjørstad.

"Our vision is that customers will be freed from the constraints geography and able to use any network, wherever they are, and any available terminal, whether mobile or fixed.

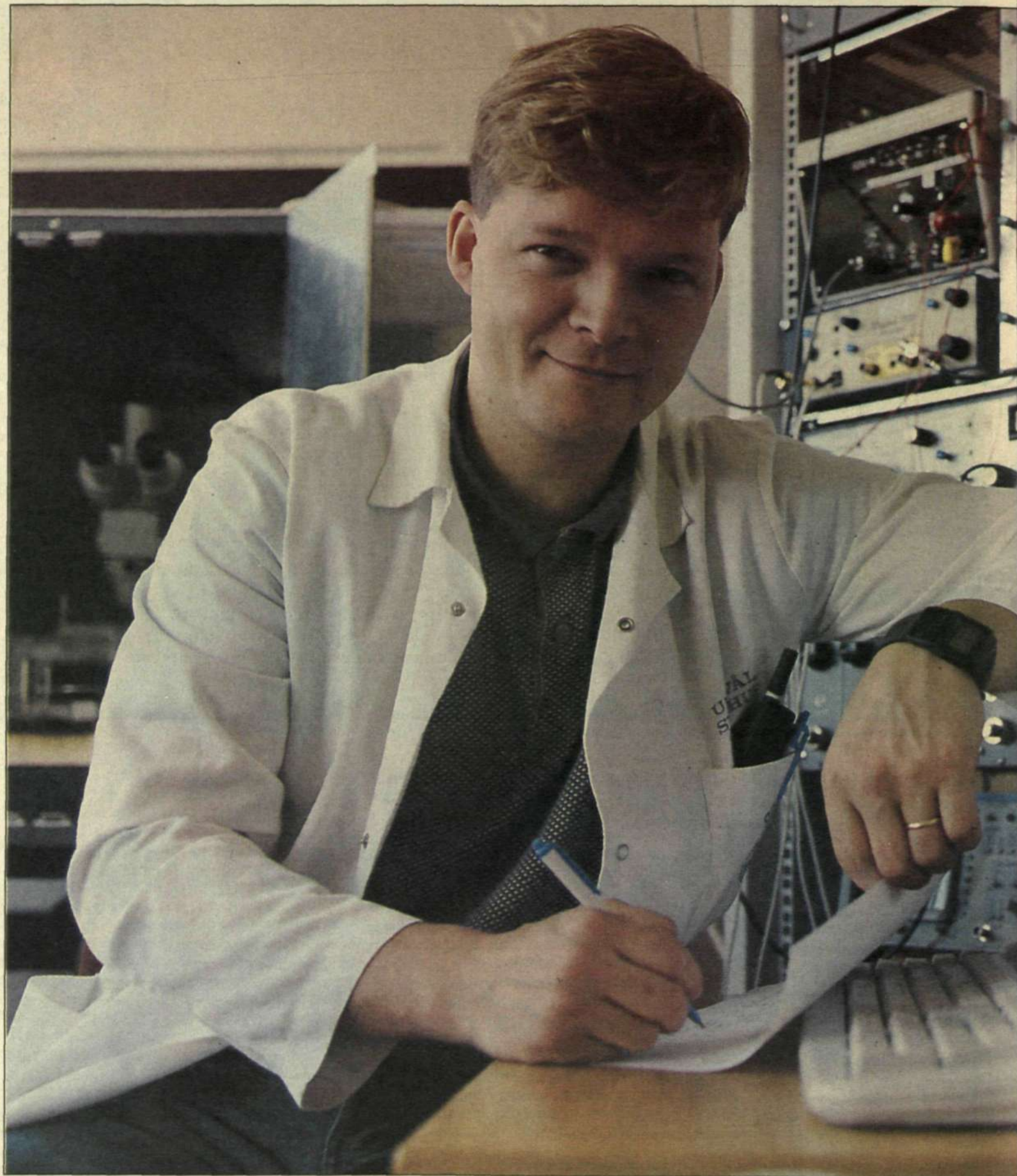
"UPT is a new global and completely unique system," says Ericsson's Sören Wallinder, at Public Telecommunications Switching and Network Systems business unit.

First out with UPT

UPT is a central service that links together different telecommunications networks to enhance the ability to receive and make calls in two important ways. UPT makes the call receiver accessible anywhere in the world, regardless of location.

It also allows calls to be placed from virtually any telephone and charge them to a single UPT account.

Ericsson is the first supplier to provide the technology that oper-



Svein Ove Semb, physician and researcher at the Institute for Experimental Medical Research in Oslo, finds that it is practical to be able to give one telephone number to family and friends.

ators need to be able to offer UPT, and the first operator out is Telenor.

Mountain vacation

For this article, we interviewed two people who were among the pilot group selected by Telenor in 1994 to test UPT before it was introduced in the market as Alpha numbers.

Svein Harald Rognås is a product manager for computer systems at IFS, and Svein Ove Semb is a doctor and researcher at the Institute for Experimental Medical Research in Oslo.

"The only real disadvantage with Alpha numbers is that they

are a little cumbersome to use," says Svein Harald.

"I was on vacation in the mountains and wanted to use my Alpha number when making a call. I was forced to enter 800-88-00-8 to access the Alpha number, then my account number and finally my PIN code. Twenty numbers in all!"

Help is on the way, however. A small card that looks like a credit card or a telephone card, eliminates all these numbers. By placing the card against the telephone's mi-

crophone and pressing a button, the user can play required numbers which are registered by the telephone as tones, just as if but-

“With a personal telephone number, I don't have to worry about money, telephone cards or radio coverage”

tons had been pressed on the keypad.

The advantage of having an Alpha number is that you do not

have to carry coins to make calls from pay phones," says Stein Harald. "I often visit customers, and it is sometimes difficult to use my mobile phone, due to variations in coverage.

With a personal telephone number, there is no need to be worried about change, telephone cards or coverage. You can just pick up the nearest phone, enter your code and place your call, which is charged to your regular bill.

No money needed

Svein Ove Semb also travels extensively in his work. He attends conferences outside the country,



Photo: Nina Reistad

and at home his duties, apart from being an experimental medical researcher, include serving as a visiting doctor.

During the pilot project, most of his phone calls were private.

"Because I so often am on the road, it was very convenient to be able to give friends and colleagues a single number. UPT/Alpha is a great way to increase availability. Mobile telephones often do not work. The Alpha number is especially useful outside the country, because it allows me to phone from hotels and pay phones without money."

Users can control availability in several ways. One way is to

enlist the help of an operator to set up a time schedule for direction of calls on different days and times.

Time schedule

You may for example decide that your home telephone should start taking calls from 7 a.m. Then between 7:30 and 8:00 a.m., you may want calls directed to your mobile phone and thereafter, between 8 and 5, to the office, from 5 to 5:30 p.m. to the mobile phone again, from 5:30 to 11:00 p.m. to your home and finally, from 11:00 p.m. to 7 a.m. to an answering service.

Controlling calls

People do not always live by the clock, however, and when call redirection cannot be scheduled, it is possible for the user to enter information manually so that calls are automatically forwarded to a mobile telephone or a voice mailbox available in the network for occasions when no answer is received from the number at which you have indicated you will be available.

Otherwise, instead of making a schedule, you may simply pick up the nearest telephone and enter your number to indicate that all calls should automatically be forwarded to that location.

"Remembering to enter a number when you deviate from the schedule is somewhat inconvenient," says Svein Ove.

What does it cost?

The cost of an Alpha subscription is a NOK 495 (approx. USD 75) entry fee and NOK 33 (approx. USD 5) per month. The monthly charge includes the voice mailbox, message notification, recording and retrieval of messages, as well as a card, an account and a code. But who pays for the calls?

The person phoning to an Alpha number pays the normal rate for a long-distance call. If the Alpha subscriber elects to receive call on a telephone or a fax connected to the Norwegian public wireline network, there is no additional charge. If calls are forwarded outside the country, the subscriber pays the difference between an international and a long-distance call.

Personal numbers

The Norwegians will soon have company. Mexico and Colombia have already purchased UPT technology from Ericsson. Trials are already underway in China.

"This is a dream come true for everyone in the telecommunications industry that subscriptions are now linked to people not terminals," says Paul Fjuk at Telenor in Oslo.

"This is just the first step, however. Much remains to be done to make UPT even more attractive and easy to use."

Isabel Werner



Sand and more sand under the burning sun in the Sahara. Soon millions of liters of water will be pumped out of the desert.

Moment of truth at hand in Libya

During the past few months Gert Hedén has commuted between a temporary project office in London and Ericsson Business Networks' office in Sundbyberg. Gert is the project leader for the Network Engineering Division's major network undertaking in Libya and is now in-country to take command of the project on site.

Ericsson has been contracted to deliver and install customized communications and supervisory networks for phase two of the water supply project known as the "Great Man-Made River Project" (GMRA). Ericsson's portion of this 65-billion Korean project is valued at SEK 750 million.

The aim of the project is to extract underground water from the middle of the Sahara Desert. A total of 486 wells are being drilled. Twin pipelines, each with an inner diameter of 4.25 meters will supply two and one half million cubic meters of water daily to the capital city of Tripoli and surrounding areas.

"Some 15 persons from different countries have been at work in the project office in England," relates Gert. "Their work includes design coordination for the entire project as well as procurement and quality issues. Two men are employed full-time to deal solely with quality issues in accordance with ISO 9001."

Customer visit

In early December, representatives of the Libyan customer, GMRA, are scheduled to visit Sweden to perform a Quality Audit at Ericsson Business Networks. According to Gert Hedén, Ericsson is well prepared for this audit and the involved units in Sundbyberg and Nacka Strand are expected to perform admirably.

This extensive Network Engineering project also involves products from the Business Communications Division, including five Consono MD110 switches.

When this publication goes to press, Gert Hedén has just arrived in country and is getting settled at the Ericsson camp in Bin Gashir, 20 kilometers south of Tripoli. For more than a decade, Ericsson has had its own housing facilities at this site which has been used in conjunction with several previous network construction projects in the country. Several years ago there was a plan to sell the "camp" to another foreign company. This plan was never realized, which today is fortunate when it is needed for this new project.



Gert Hedén is a veteran "network fox" who can handle just about any climate. Now he's moving to Libya, where he'll be in residence through 1999.

A new office is now being built at the camp. It is a prefabricated, ready-to-assemble unit purchased from a company near Luleå, Sweden. It will house a multi-national team of 30. The built-up phase of the project is now under way and will continue through until late February/early March 1996, with the major installation work scheduled to start soon thereafter.

A working camp is located some 600 kilometers south of Tripoli in the middle of the Sahara, which will serve as a base for some of the installation work. There is another affiliate office in Benghazi, which is also the site of the headquarters for the main contractor for the entire project, Dong Ha of Korea.

250 persons needed

Four subcontractors are involved in Ericsson's portion of the project: two Korean, Korea Telecom International (KTI) and Yoo Shin Data; one Norwegian, NERA and a French company, Bristol Mecis S.A.

When everything is in full operation and installation is at its peak, Gert Hedén estimates that about 250 persons from Ericsson and the subcontractors will be working on the project. The project is scheduled to be completed in July 1999 for turn-over to the customer.

Thord Andersson

The opportunities presented by the world of communications appear endless. Today, customers are equally as dependent on the know-how and skills of their suppliers as they are on technology and products. Hand in hand with the technological revolution comes the deregulation of the telecommunications market. From having been a closed world administered by a few select play-

A master at customized solutions

Karl Alsmar – systems integrator to all of Ericsson

"My target group consists of customers who are in need of turnkey solutions," says Karl Alsmar, head of the Network Engineering and Construction Business Unit within the Business Networks Business Area.

"The trend is clear. We are seeing an increasing number of customers who know exactly what they want to achieve in their business operations, such as the successful sales of various telecommunications services, but who seldom know in detail the type of technical solution they require to make this possible. Basically, any customer who comes to Ericsson should only have to say, 'This is what I want to do'."

Corporate-wide

Based on specific customer needs, Network Engineering and Construction has the competence to customize a solution and assume full responsibility for its implementation – right up until the facility has been placed in operation.

"We work across all Ericsson product areas. The total-solutions concept is gaining increased focus within Ericsson, but often such solutions tend to be total only from the supplier's viewpoint, rather than the customer's," notes Alsmar.

An individual business area does not always have the necessary range to provide its customers with customized, optimal solutions. Simply stated, a coordinating agency is needed to handle the Ericsson's various specialist skills and to ensure that they can be used in an optimal manner as pace-setters for each other.

The all-embracing concept, "engineering," means just about everything – from planning, design, systems integration and project engineering through installation and implementation to the placement of complete network solutions in operation – all based on meeting customer needs. Active customer support in the financing area also fits in, here. It certainly doesn't just mean "laying cable." Conversely, it does have to do with knowing which type of cable should be used, where it should be laid

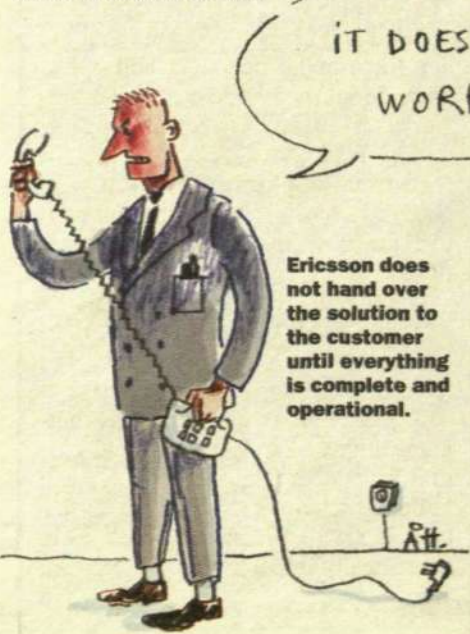


■ Karl Alsmar was born in 1949. He began working at Ericsson in 1973 after taking an engineering degree with a specialty in telecommunications at the Royal Institute of Technology in Stockholm. After several years working as a systems engineer, Karl Alsmar spent nine years working on various overseas assignments for Ericsson, primarily in Saudi Arabia and the U.S.

■ He returned to Sweden in 1988, becoming manager of the Project Management Division at Ericsson Telecom AB. From 1990 on, he held corporate management positions, including a period as head of the Project Management corporate management function.

■ In 1993, Karl Alsmar became manager of the Network Engineering and Construction Business Unit within the Business Communications and Networks Business Area, as well as manager of Z Division within Ericsson Business Networks AB.

Photo: Peter Nordahl



Ericsson does not hand over the solution to the customer until everything is complete and operational.

No bits and pieces

"The various solutions available within Ericsson can hardly be delivered to the customer in bits and pieces. Moreover, very few customers purchase "black-box" solutions any more, because they cannot handle them. The technology involved is too complex and the choice is too extensive. By regarding us as a sales channel, a number of Ericsson's business areas can reach even greater portions of the market," claims Karl Alsmar. "To achieve the greatest possible customer benefit, it is essential that we within

and who should be commissioned to do it in the most effective manner.

Access networks, the links between the local stations and subscribers, are currently one of the hottest segments in the industry. New technological solutions are being produced on a continual basis. There is a great deal to choose from within Ericsson's total range, from wireline to cordless. Since this particular part of the network constitutes a major portion

of the customer's investment, it requires a supplier with an holistic approach, one who can also combine different technologies to provide the best solution to a specific problem.

Ericsson can agree about how to handle cooperation between ourselves, to provide the customer with the best possible cost estimate."

Many components from various Ericsson units are often included in a network construction project. In terms of smaller-scale projects, these are delivered on a transfer-price basis. Larger deliveries can be handled as independent sub-projects directly with the end-customer.

Led by its AXE flagship, the Public Telecommunications Business Area often plays a significant role in network construction projects throughout the world. An agreement in principle has been in effect for the past couple of years, which describes how – depending on business content – the work should be handled. If, for example, exchanges and other AXE equipment account for the greater part of the order value, Public Telecommunications assumes full responsibility for the project as a separate and complete transaction. Normally, the business areas engage in joint estimating and project-engineering work, with each taking responsibility for "its" special area within the framework of the overall project.

The enormously enhanced effectiveness that Ericsson derives from this type of corporate-wide cooperation is particularly apparent in the field of mobile telephony.

"We are seeing an increasing amount of fiber and microwave solutions for long-distance transmissions to different mobile telephone operators," says Alsmar. "Europolitan is one example, in the domestic market, where we have supplied transmission facilities in the form of microwave links. Another, is the Thailand mobile operator Shinavatra, where we supplied the fixed transport network and the Radio Communications Business Area supplied the radio base stations and other infrastructure items."

A resource for local companies

The machinery making up Karl Alsmar's operations is becoming increasingly sophisticated. The reorganization at the beginning of the year has turned out well. Three units are cultivating export markets, with the task of monitoring specific markets and drumming up business. The units have total responsibility for the business they generate, right through to project completion.

A crucial factor for the profitability of a project, both for Ericsson and for the customer, is the avoidance of any unnecessary delays. In addition to the sales and marketing organization, there is a project support organization, which assists with preparing tenders in such ways as estimating its own project organization costs, in-

ers, the telecommunications services market has been transformed into one of the world's most open and liberal sectors. Established and new operators fight for customers, who themselves are looking for competitive and cost-effective solutions, ready to be placed in immediate operation.



Finding the right piece of the jigsaw puzzle from the enormous range of telecom products demands thorough knowledge of the sector plus creative skill in mixing and matching. The customer who attempts the task without help often finds that the pieces of the puzzle don't fit together, or that some are missing. Ericsson can supply a customized total solution to meet the customer's needs. Illustrations: Åsa Harvard

struction urgently needs more project leaders and employees trained to provide total solutions – solutions managers who also possess marketing ability.

The necessary basic qualifications include knowledge of telecommunications and network functions, and familiarity with Ericsson's product range. It is also essential to combine knowledge of products and technology – the building blocks – with the innovative flair required in order to build something with them.

"We have plenty of people at Ericsson who know all about our products and can explain how they work," notes Alsmar. "But it's not so easy to rise above the product level, to the point where you can translate customer needs into a complex total solution."

"You can't acquire that type of skill just by studying. It takes on-the-job experience

of tenders, project work, coordination and implementation. Anyone who thinks he or she can contribute to our operation is welcome to apply!

"Given the emphasis we place on designing systems and solutions, it is only natural that we end up working extremely closely with the customer throughout the business dialogue," continues Alsmar.

"This means we are exceptionally well placed to influence the content of our communications solutions. We select our sub-suppliers, set time schedules and choose the best possible technical solutions."

"Ericsson's comprehensive product range, combined with our constant efforts to ensure the maximum content of Ericsson components, guarantees business for many Ericsson companies when we bring home an order."

Karl Malmström



This is not the way to do business today. The customer should not need to be a technical expert to be able to purchase communications solutions. Most customers are experts in entirely different areas and are prepared to pay top dollar for the supplier's expertise.

Future business prospects lie with the new operators

The telecom industry is changing rapidly and demand for communications systems continues to grow. The market segment generally referred to as "new operators" is expanding steadily, especially in the western industrialized countries, but also in such regions as Southeast Asia. This is where Karl Alsmar expects many future business opportunities.

When an operator decides to focus on a new market, it is vital to act fast.

Network Engineering and Construction is the natural choice within Ericsson to take charge of these often complex packaged solutions.

The business unit has an equally clear role to play in the expansion of basic telephone systems.

Many countries have extremely low telephone densities and require vast expansion of their infrastructure.

When investment decisions are taken, much of the purchasing typically relates to complete, "turnkey" telecommunications networks. Such

transactions often involve major projects comprising more than 100,000 lines and taking several years to complete.

Other promising areas include the expansion of cable television networks, coupled with the increased use of these networks for telecommunications services and other broadband applications, as well as customized network solutions for special purposes, for customers such as oil companies, power companies or the armed forces.

Many long-established telecoms are self-sufficient in terms of resources, and do not always need the expertise available through Karl Alsmar's organization. Telecom operators in various markets purchase Ericsson technology and products, but handle system and network integration themselves. Many operators have substantial resources of their own for planning and executing projects, as well as an established tradition of performing their own installation work.

But it is no longer taken for granted that these major operators will opt to plan, design and build their own networks. Even such established operators as Telia purchase complete solutions from suppliers such as Ericsson, partly as a means of applying competitive pressure to their own organizations.

The trends are clear. It is a guiding principle in all business endeavors to concentrate on core operations. The telecom operators' most prominent core operation is providing telecommunications services to end-customers, rather than designing and building networks. Know-how in this area is set to become an even more strategically important commodity for Ericsson.

KM

'Chips' spare environment

"Naked" chips on which a maximum number of functions are crammed have the least impact on the environment, according to technicians at Ericsson Radio who have just published the world's first life-cycle analysis of integrated circuits.

"More compact patterns on semiconductor chips and circuit boards result in lower current requirements, an absolutely critical factor in reducing the energy consumption," says Arne Tolvgård, who headed the project.

The main purpose of a life-cycle analysis is to determine how a product affects the environment over the long term. Which component has the greatest impact? What can be done to remedy the situation? The analysis covers the entire cycle from "cradle to grave" — up to the final stage where the used product is disposed of.

Maximum number of functions on minimum surface

Arne Tolvgård and Jens Malmödin in the American Telephony Standard business unit are conducting a pioneering program involving life-cycle analyses of Ericsson Radio's products. A year ago they completed a basic analysis of two generations of radio base stations used in mobile telephony. This was followed by an analysis of a radio modem and, most recently — in cooperation with Ericsson Components — by a comparison of conventional integrated circuits and so-called ASICs, custom-tailored circuits.

Göran Mälhammar at Ericsson Telecom has made comparable analyses of circuit boards, as well as a comparison of two exchanges.

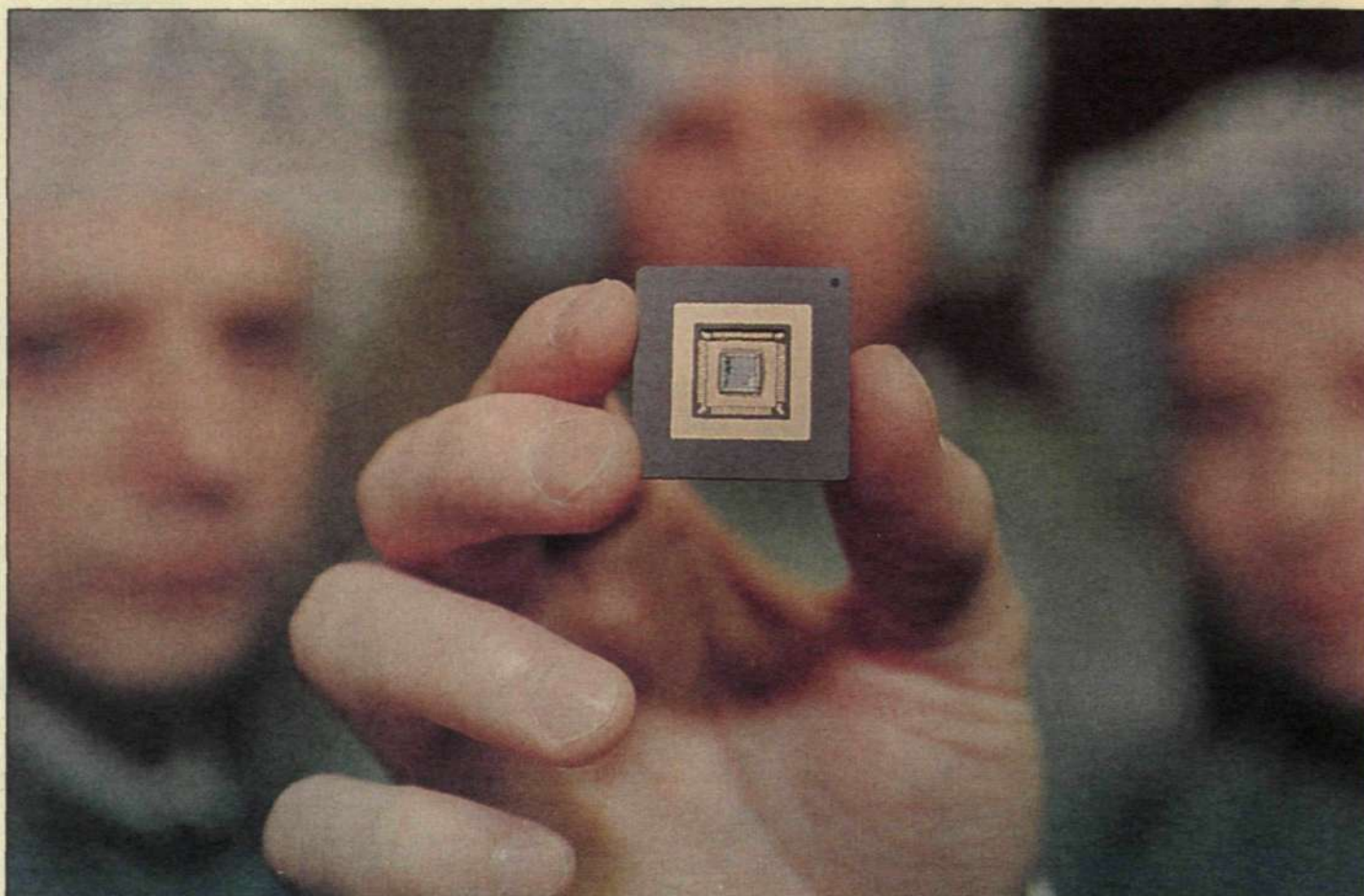
Energy and capsule

All analyses conducted to date show that the energy consumed when a product is used has by far the greatest impact on the environment. But the analysis conducted by Tolvgård and Malmödin shows that encapsulation of a chip also has a major impact.

"It is a matter of reducing the consumption of materials and energy," says Jens Malmödin. With the microchip method of construction, one obtains a more compact pattern in which less chip surface is required for the same function. It is then possible to produce more chips per silicon disc, with a resulting reduction in environmental impact per chip. Energy consumption is also lowered when the number of power-consuming components in an optimally integrated ASIC is reduced.

The encapsulation problem can be dealt with by either using so-called "naked" (unencapsulated) chips or by placing a number of chips within a capsule, creating multiple-chip modules. These methods also make it possible to press chips together, thereby reducing their overall size.

"Much remains to be done to reduce the consumption of energy," Göran Mälhammar explains. "The field is still largely unexplored and a measure such as reducing the voltage for components from 5 to 3.3 volts can save substantial amounts of energy. Another possibility involves introducing a 'delay period' — at the cost of somewhat longer response times — but in



The micro method of construction is environmentally compatible, since more chips per silicon disc can be produced, resulting in less environmental impact per chip. More compact patterns require the use of less material and energy, factors of critical importance.

such a way that it would be virtually undetectable by users.

"A slight reduction in performance can thus yield major environmental gains," Göran says. "Reduced energy consumption will also benefit customers financially, since energy is expensive."

Recycling

Recycling is also an important factor where environmental impact is concerned. Under terms of the new law governing producer liability that is expected to become effective formally at the end of the 1990s, producers will be responsible for handling a product at the end of its life cycle. In the case of chips, this would mean "from silica sand via integrated circuit to dust."

The ability to recover material and parts from a product will then be critical. Plastics that contain fire-preventive substances, for example, will have to be reduced since they cannot be recycled. But the recycling of gold, copper, silver and other metals will have to be intensified. Gold can be replaced by aluminum, a commonly used metal that has a smaller impact on the environment.

Another concept that affects the "impact ratio" is the so-called yield — the percentage of fault-free, approved products in a process. The higher the yield, the less waste and nonproductive but environmentally damaging work. High quality thus requires "good" life-cycle figures. In their report, Tolvgård and Mälhammar have used an average figure of 75 percent for the various products studied.

The environmental impact of a product relative to its performance is calculated in the same manner. A transmitter unit that has twice the average call capacity thus has half the impact per call.

Bold assumptions

The life-cycle analysis, which is geared to certain base values (environmental index) is still a fairly imprecise instrument. This is because there are a number of valuation systems and because it is difficult to know how far back in the chains one should go,



Jens Malmödin of Ericsson Radio (right) has conducted the first life-cycle analysis of integrated circuits. The study was carried out jointly with Ericsson Components, where Jesper Rundström, manager of internal encapsulation, and Mariann Sonesson, environmental engineer, among others, noted that encapsulation of chips causes a relatively high impact on the environment.

and how limits should be set. An analysis involves being willing to make bold assumptions — and even guesses — that could turn out to be wrong in the future.

Overall picture

Each analysis is now being "fine-tuned;" basic values are being adjusted, the number of references is being increased and the figures are providing more and more information. Above all, a life-cycle analysis (LCA) provides a good overall picture (rather than evaluating emissions, waste, packaging, etc. individually) and indicates corrective measures that can be taken to improve production processes and products.

"An LCA is also a very valuable competitive instrument since it shows that a company can handle its environmental problems," Arne Tolvgård points out.

"We have 'hung out our wash' and are, as far as we know, the first company to

quantify the environmental impact of our processes," says Mariann Sonesson, an environmental engineer at Ericsson Components.

"But we have to remember that the report is based on fairly rough generalizations and that the figures are not absolute, but rather primarily of use to us so that we can make comparisons with future measurements.

"One specific problem, for example, involves identifying the amount of a chemical, water or air that is used to produce a chip, since we work with a number of different processes other than silicon at Ericsson Components."

The full effect of the life-cycle analyses will become apparent initially in future processes and development projects, since a process is a system in which it is possible to change details, but not the basic parts.

**Text: Lars Cederquist
Photos: Kurt Johansson**

Unisource now offering virtual private networks

On October 2, 1995, Ericsson put its first International Virtual Private Network (IVPN) into commercial operation for Unisource. With this network, the operator now offers one of the most advanced and internationally most dispersed "private" networks for providing services to its global business customers.

The network covers 14 European countries, including the Netherlands, Spain, Sweden, Switzerland, Germany, France and the U.K.

Ericsson, with its complete product portfolio, was able to supply a complete network solution, incorporating standard hardware and software products for the IN platform. A platform based exclusively on standard products was also a Unisource requirement. Together with Unisource, Ericsson then worked to implement the various custom IVPN services specified in the order.

Overall responsibility for the project was delegated to Ericsson Netherlands, where Ron Dikhoff

is the global manager responsible for Unisource. Development of the IVPN services was handled by the Global Product Line, Management Network Intelligence business unit.

Designers and test engineers from Ericsson companies in Norway, Finland, Sweden and the U.K. worked under great pressure over a period of eleven months on various aspects of the project.

Close collaboration

"We formed a project group with representatives from both companies that discussed and evaluated all discrepancies from and modifications of the original specifications that emerged during the project," relates Martin Sjöstrand, who was the project manager responsible for developing the IVPN services for the Unisource network.

"This was vital, given that all changes affect the delivery plan," says Martin. "We all had a common goal, which was to put the network into service on October 2."

What is VPN?

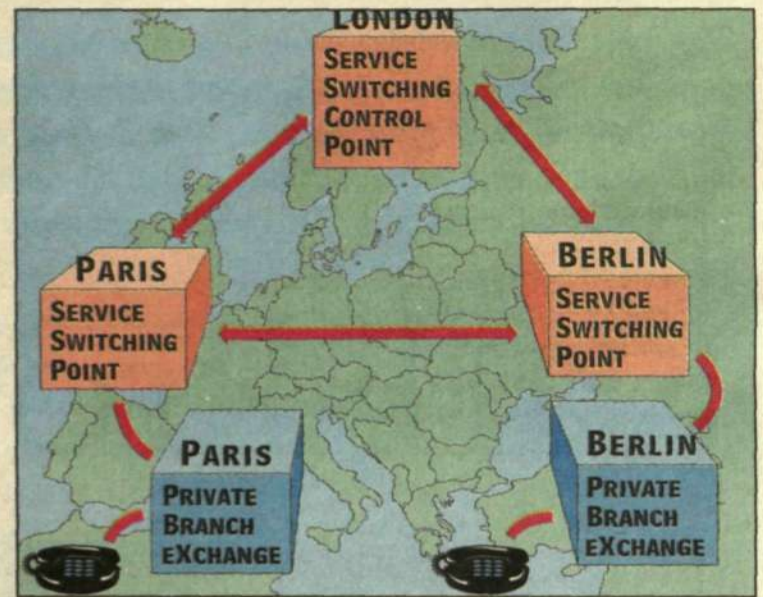
A Virtual Private Network is a service network for data and telephony based on intelligent network (IN) technology.

"A virtual private network gives the subscriber greater control over the telecommunications network in several respects," explains Einar Olstedahl, product manager for VPN. "Customers may have their own numbering plan, such as the 719 xxxx series used by Ericsson Telecom in Stockholm, which supports speed dialing. Special discounts and contracts often significantly reduce calling costs."

For business customers, VPN offers private numbering plans in the public network. To reach a colleague in the same network, end-users may then use an abbreviated number, instead of the often much longer real number, in manner similar to Ericsson's ECN numbers. VPN also permits interconnection of several offices or companies regardless of geographic location. This is the private aspect of VPN.

Benefits

Until now, private networks have consisted of leased lines for which companies pay the operator a fixed rate regardless of how much or how little capacity is actually used. With VPN, the company has all the benefits of a private network's services but pays only for the capacity used. This is the virtual aspect of VPN.



Virtual Private Network (VPN) is a service network for data and telephony based on intelligent network (IN) technology. A virtual private network gives subscribers greater control over their networks in several respects. Customers may use a private numbering plan and abbreviated numbers.

Illustration: Björn Hägglund

"Our customer's customers who need a VPN solution are primarily companies, both large and small. The common factor is often that they are geographically dispersed with operations in several locations," relates Martin.

In addition to the benefits mentioned above, VPN also meet other need, particularly with respect to availability and security. A private network often entails a fixed cable or line. If it is inadvertently severed during road construction, what happens to the company whose business depends on always being available to and being able to reach its customers? VPN minimizes this risk, because the public network

can be compared with a road network with many alternate routes between two places.

International VPN

An international VPN (IVPN) has the additional advantage that it is provided by a single operator. This means that a company with international operations only needs to deal with one operator, instead of the present situation where contracts must be negotiated with different operators in different countries. For the global operator, this means being able to follow customers as they expand and thereby retaining them as customers.

Marie Håkansson

New packaging for mobile phones aids environment

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

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

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

Environmental concept

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

"Beginning with product development, we should consider designs that can enable us to reduce the total volume of packa-

ging, including packaging that is to be stored and transported.

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

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

"Sweden also has a comparable system, REPA, with differentiated charges depending on the material used – although it is not as explicit as the German system," Thomas notes.

Automatic packaging

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

"We have a carton that snaps together, locking its sides, and we don't have to



glue it together. The entire system is designed in such a way that packing can be handled automatically by machine, which saves manual labor," Thomas notes.

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

Important "Rs"

"At present we are buying the new fiberboard from Assi Domän Porpac, which is located in Lindsberg, close to Kumla. But we are naturally keeping track of what other companies can offer," Thomas says.

Developments in the field are occurring rapidly and Thomas, as a packaging speci-

alist, is the chairman of a technical committee in Packforsk, an industrial research institute that promotes studies in the field.

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

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

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

The road from a shipbuilding to a technological community has been a difficult one for Karlskrona. Ericsson has been active in the city since 1957, when the company moved into the old snuff manufacturing plant of the Swedish Tobacco Monopoly. The past few decades have been tough ones for Karlskrona, with the closure of its shipyards, followed by unemployment and depopulation. Ericsson's operations in Karlskrona also have found the going tough. Activities peaked in 1975, and have since declined. Over the years there have been temporary bright spots, followed by difficult periods, with the

Karlskrona targets new objectives

There are many new developments at Ericsson's Karlskrona plant – a new division manager, new personnel manager, new products, a large number of new, young employees, a new organization and, as a result, new confidence in the future.

"We will be the top plant in Ericsson," promises Ronny Nilsson, the new plant manager, who is not afraid to stick his neck out. But there is a basis for his optimism. After major difficulties in meeting delivery times during the spring, most indicators now point upward. The production pace is up, delivery reliability is improved and Karlskrona has been selected as the site for manufacture of promising new products.

Ronny Nilsson was appointed production division manager at Ericsson Business Network AB in Karlskrona in spring and left RIFA AB in Kalmar – a company which was previously owned by Ericsson – where he was vice president. He has also had to shoulder the responsibility for production coordination throughout the entire Business Networks Business Area, meaning operations in Austria and China, and for the four logistics divisions, which in addition to Karlskrona, are located in Netherlands, Australia and Mexico. In addition, he has also been the purchasing manager of the division for a number of months.

"It may appear to be a lot but all the parts fit together and, with a responsible organization, a functioning flow can be created from specified customer orders to accepted delivery.

Record output

At the Vedeby plant, output of printed circuit doubled in 1995, using five shifts seven days a week. Meanwhile, at Verkö, they have reached levels of 3,000 telephone sets daily – their objective is 4,000. Assembly, which required 220 minutes per set ten years ago, is now down to nine minutes, and production records were also set for the Consono MD110 modules during the autumn.

"We will quadruple revenues in three years, from SEK 1 billion last year to slightly more than SEK 4 billion in 1997," forecasts Ronny Nilsson optimistically.

Hopes are pinned on core business – the Consono MD110 – and on new products which are expected to be major sellers and for which Ericsson has decided to concentrate manufacture to Karlskrona. This involves products based on DECT, Digital European Cordless Telecommunication, a European standard for cordless telecommunications. Products and systems based on this standard are being developed at the business area's Dutch company, Ericsson Business Mobile Networks.

The DECT area offers various applications. One of these is Freeset, a system for mobile telephony. A Freeset system is based on three elements – cordless telephones, base stations, which act as the link between the cordless phone and the switch, and a central unit which links up base stations with the company's exchange.

Another application, referred to internally as DRA1900, can simply be described as a



"We will be the top plant in the Ericsson Group," promises Ronny Nilsson, the new plant manager, who is not afraid to stick his neck out. Ronny Nilsson became manager of the production division within Ericsson Business Networks AB in Karlskrona in spring and left RIFA AB in Kalmar, which was previously owned by Ericsson, where he was vice president.

system which replaces cable laying between switches and telephone sets. A base station with ECT signaling is located centrally in a housing area and has radio contact with the units mounted on the outside walls of each building.

Manufacture of the Freeset base stations has already commenced in Karlskrona and components of the base stations and complete transmitters/receivers for DRA1900 will also be manufactured there.

Strengthening of skills

Other confirmation of the focus on Karlskrona is that a center for production expertise is being developed there. This offers the potential to assume responsibility for production rationalization and quality improvements in the plants, since design responsibility for released products will gra-

dually be moved from the development departments at Ericsson Business Network's head office in Nacka to Karlskrona.

It will also be possible to provide active support for other production units in the Business Networks Business Area. A number of engineers have moved from Nacka and few others have been newly employed.

Since May this year, about 180 new employees have been added to production, almost 80 percent of them younger than 25. A high-school diploma is currently the minimum educational requirement. Earlier this year some 100 employees were laid off, a painful but, according to management, a necessary rejuvenation and change in skills. However, there will not be any new major employment opportunities for either salaried employees or production personnel.

Instead, increased production will be

achieved by outsourcing the production of older products which no longer form part of core business to subcontractors, a process which has already commenced. In addition, a reorganization of skills enhancement and development programs will make work more effective.

"A basic idea is to divide up production into four product workshops: MD/Consono, telephones, transformers and DECT," explains Ronny Nilsson. "They will function essentially as four separate companies, with all their own resources such as qualified engineers, personnel, planning and order receiving – manufacture will be immediately customer-oriented".

The advantages of the new organization are many, simplified planning and reporting, shorter total lead times, more flexible production, higher delivery reliability and,

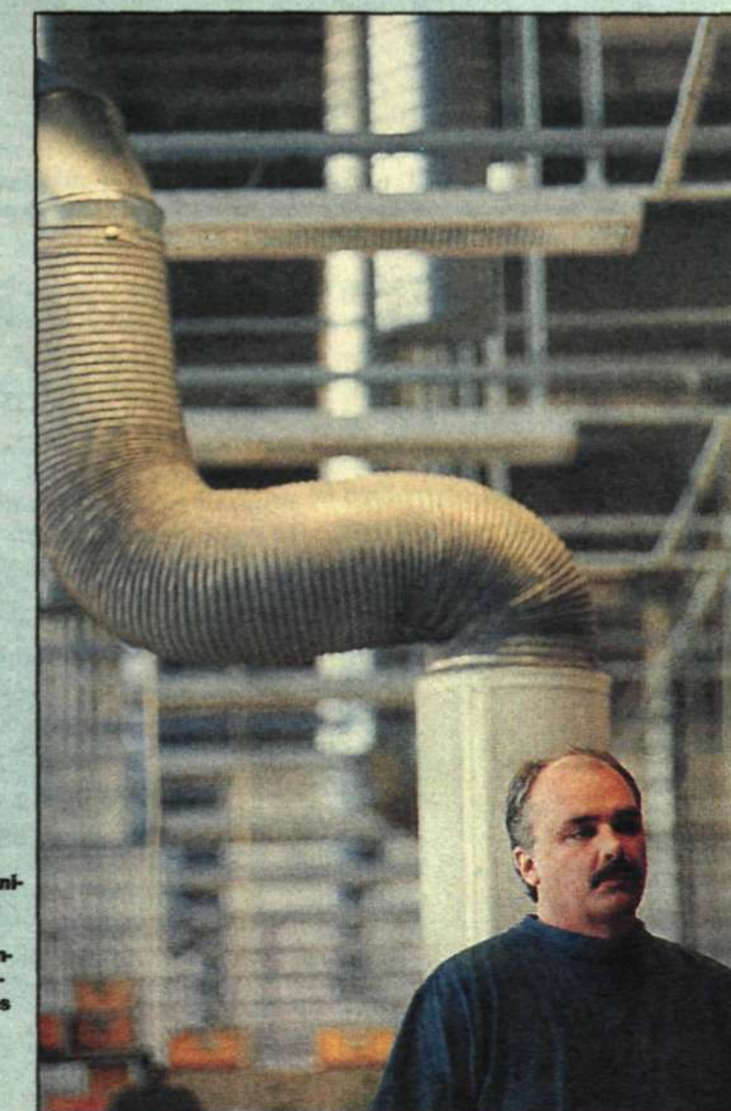
company compelled to lay off personnel on a last-in first-out basis. Nevertheless, despite the fluctuations, the company has a favorable average employment period, and thus a high average age within the company. Ericsson currently has some 1,000 employees in two plants in Karlskrona. One of these, at Vedeby, will focus exclusively on transformers, while the other facility at Verkö, completed in 1993, is responsible for the manufacture of system telephone sets, Consono MD110 switches and, quite recently, DECT products.



"I work at the cabling department and I have been employed at Ericsson for the past eight years. I have always enjoyed it but there has been a certain amount of uncertainty due to redundancies. I have been in the danger zone several times but at the last moment I found out that I was to stay," says Gull Carlsson.



"At the moment, my job feels secure since we have so much to do but that varies all the time and I don't really know how things will work out in the long run." Photo: Thord Andersson



"The new organization will be immediately customer-oriented. Four separate workshops will function essentially as separate companies."

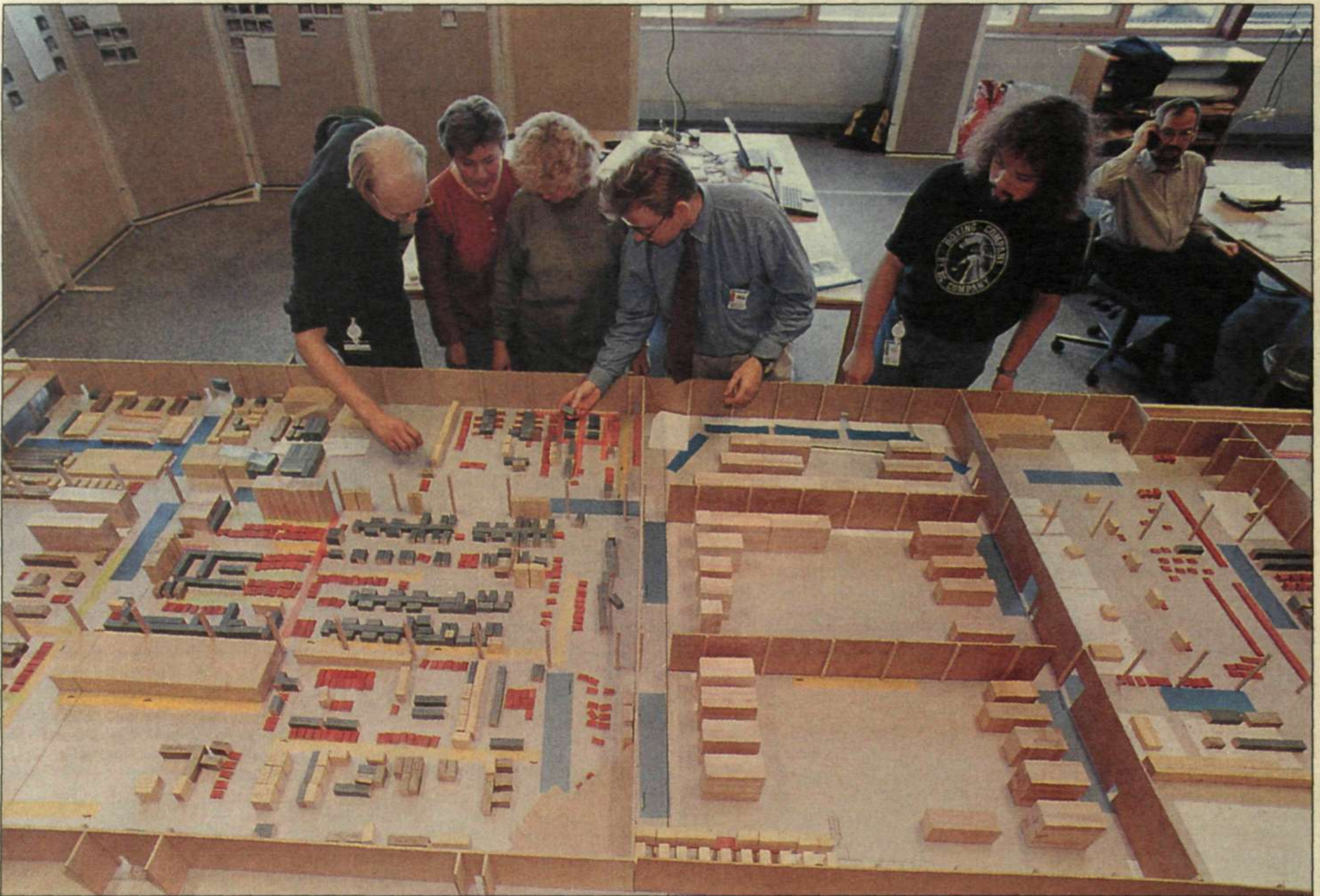


Paul Stiel, Personnel Manager.

"We must create involvement among employees, everybody must accept responsibility for their own area. This dialogue requires time and energy."

Lena Granström
Photos: Lars Åström

A development project for everyone



A wooden model of the Karlskrona factory features different sized wooden blocks which symbolize work benches, shelves, etc. The employees start by designing and building their work stations as they are now, and then create their dream, their ideal work conditions, with the objective of creating the most practical and effective work situations as possible.

A new day dawns at Ericsson's plant in Karlskrona, Sweden. Work on the Aurora development project has just begun, and the company's plan is to have all employees take part in some capacity. The objective is to stimulate involvement and enthusiasm for the job and to capitalize on employee know-how and skills.

"Aurora" is an ambitious development program started this past autumn in cooperation with Ifa, a consulting company that works with corporate development. The good ship Aurora, which was christened in an internal company contest, has several symbolic meanings, including Goddess of Dawn, and stands for the dawning of something new and revolutionary, a suitable name for the vehicle that represents a project characterized by change.

"The basic premise for Ifa's work is to create effective production and attractive jobs," says Lars Björkeson of Ifa, project leader for Aurora. "Four important factors are essential to the achievement of our

All employees take part in creating the "new" factory

goals: trust, respect, influence and cooperation."

Changes needed

The company's young new employees have high hopes and expectations for the Aurora project. They feel that changes are needed and the project looks sound. Some of the older employees have a different attitude, "Yeah, sure, another change..."

In concrete terms, the development program calls for the establishment of several work groups that will discuss areas of particular interest today, such as work organization, layout, competence and skills, and information (IT) systems. An operations coordinator and one other person from every group comprise a development group that collects opinions and viewpoints.

One example of how a work group actually functions is the question of layout. In this field, Ifa is using wooden models of the factory, with different sized wooden

blocks that symbolize work benches, shelves, etc.

Initially, the different groups design and build their work stations, and then create their dream situation, the ideal conditions for the ideally functional and efficient work situation. Then work begins to combine their wishes with those of other groups.

"The method takes advantage of the employees' knowledge and experience," explains Bertil Rosqvist of Ifa, who has used the method on projects with several different companies for many years. As the project progresses, insights and understanding are also created for the working conditions of other people and provides a much better overall view.

Learning organization

To get as many people as possible involved in the project, participants in the work groups, in turn, are members of different reference groups from the production

plants. They meet regularly in brief sessions to discuss three or four questions at a time, a simple model is used for notes to ensure the discussions are productive and not washed away in the sand. Production managers have direct access to the ideas generated during the meetings.

"One of the reasons for Aurora was that it presented a means of taking advantage of the continuous improvements that we always lacked at the microlevel, the fine details," says Lars Björkeson.

Another reason is that it represents a natural means of getting production managers to work with future development concepts; our objective is to create a learning organization. Or, as Ronny Nilsson expresses it:

"The intention is to drydock Aurora in a few years, we can't have consultants around here forever."

Ericsson in Karlskrona faces a new situation and every effort is to be made. Clearly defined directives have been issued by Ragnar Back, head of the business area, stipulating that Karlskrona is going to become Ericsson's best factory. The future holds the answer.

Lena Granström
Photo: Lars Åström

Window on 'tele' world

Users are becoming involved in projects much earlier these days when new services and products are being developed. Efficient "user interface" is essential in the competitive telecom world where speed is the key word. The new platform for telephone (switchboard) operators that enables the latter to work with simple, easy-to-grasp windows on a terminal screen is one example of Ericsson's success in creating such an interface.

Users help plan new 'interface' for operators

In the new, deregulated world of telecommunications it is increasingly important for operating companies to be able to offer good service – and rapidly. Switchboard operators play a key role. And when Ericsson a few years ago developed a simple, user-friendly window for operators' screens, it meant millions of kronor in added revenue to the companies.

Each second saved when making a connection is critically important in an operation that, in Telia's case, involves 45 million calls a year.

Two thousand operators

"Manual" operators still play a decisive role in operating companies. While they have in many cases been replaced by automatic systems, Telia in Sweden still has approximately 2,000 such operators throughout the country.

Directory information is a typical service that is growing rapidly despite higher prices. Customers are prepared to pay for service. The increasing number of services and the growth in mobile telephony are contributing factors.

"What we have done is provide an optimally simplified system to facilitate the work of switchboard operators," says Johan Sandberg, manager of Interactive Network Services (INS). These are services in which the caller communicates with an operator or a computer via messages or by pressing keys. Ericsson's products are the ES 201 and OPS/OTN platforms.

Unique feature

"The unique feature of our interface is that we have placed both the telephone segment and the work segment in the same window," Johan Sandberg says.

"The display is divided and the operator does not have to switch between two windows. The name of the person being called and other information appears at the top of the screen; the routing, duration of the call and debiting information are shown in the lower portion."

The objective in developing the system was to achieve speed, clarity and simplici-



The telephone operators' new interface is being developed in close cooperation with Ericsson's customers. Liselott Norrenge from Telia's training center in Kalmar and Ericsson's Joachim Bergström review some new functions (including debiting and call-logging) in the next product release.

ty. The system had to be easy to learn, easy to use – and it had to work.

Deliberately colorless

"Our interface may look a bit dull, but we made a deliberate choice to work in black and white plus one color," says Joachim Bergström, who developed the present system. "Too many colors and too much information can be tiring.

"We have tried to avoid complicating things and, instead, give users as little information as possible. There is an advanced debiting function, for example, but the operator sees it only if she (or he) chooses to call it up. In this way we have been able to shrink the control window to a minimum without being forced to develop new windows – a new typeface for the text, as an example.



"There will be more services that will require interactive resources – telephone operators or computers that can communicate with a caller," says Johan Sandberg, manager of Interactive Network Services at Ericsson Telecom.

A specially designed keyboard with 122 etched keys for the most common operator functions also makes the work easy.

Mouse is too slow

The system is optimized for operations employing a keyboard since it takes longer to work with a mouse. The operator can act immediately, without having to go through a number of steps. At the same time, the system should not be so fast that the operator doesn't understand what she (or he) is doing.

One way to increase speed is to cut the connection time of the various services' databases. This is done by connecting the database when the call comes in, before

the operator has even answered. This saves a second or two and, as noted, every second saved adds up to millions of kronor.

Cooperation with customers

The platforms have been developed in close cooperation with customers, notably Telefonica in Spain and Telia in Sweden. This cooperation has taken place on a number of levels, ranging from senior managers to users, but there is a tendency to work more and more closely with the end users – the "switchboard" operators.

"It's not easy to reconcile all viewpoints," Johan Sandberg says, "but after a while you find certain important matters, such as the time aspect and speed, that you can focus on. The cooperation will probably be formalized to a greater extent and we will have telephone operators participating in the work right from the start. Telephone operators are taking part in the testing of our new product that we are introducing in November. And in future development projects we will set up (special) groups in the bidding stage. Only then will we be able to cover all aspects of the system, including ergonomics."

New demands continuously

But what do the operators themselves think of the system?

"It's a good system but there is always more to be desired," said Ylva Carlsson, Liselott Norrenge and Marita Björk at Telia Telerespons AB in Kalmar when they participated in a functions test of the new product release in the beginning of November. New services are being developed continuously and this is leading to new demands.

Telephone operators, who are now serving as specialized advisors, tested both the new functions and the old ones – which

may have been affected by the change – at Ericsson. They will then conduct acceptance tests of the revised program software before the new product is tested in traffic on the island of Gotland, which is known as "Telecommunications Sweden in miniature."

Moving forward slowly

Finally, a few words that show that development work often has to proceed slowly, step by step. Telefonica had required that the new system be similar to the one it was already familiar with, a wooden box of a special design.

"We struggled to make our system look like the box, but when we had complied with Telefonica's wishes the company was willing to accept other solutions, such as a smaller control window and normal Windows functions," Joachim Bergström reports.

Lars Cederquist
Photo: Kurt Johansson

Competitive system

■ The ES 201 system is a modular platform that switches contacts between telephone operators, databases containing various services, and the public network. Telephone operators reach the ES exchange via a local area network (LAN). The telephone operators and databases may both be far removed from the exchange. The operators' work stations are ordinary PCs with Windows software. The operators serve as a common resource responsible for all services. The modular architecture enables a telecom operating company to customize its network and gradually add new services.

A perfect marriage of telecom and I.T.



In April 1993, Hewlett-Packard acquired 40 percent of Ericsson's former Telecommunications Management Business Unit. The intent was to create a software company which would combine Ericsson's know-how in administration of large networks. "Hewlett-Packard is a leader in the development of open systems," says Eric Buatois, who currently is a member of the Business Support System Unit.

Ericsson and Hewlett-Packard – a couple that fits well together

When Ericsson Hewlett-Packard Telecommunications (EHPT) was founded it was the first joint venture between suppliers from the IT and telecom industries. The merger has not been without friction - but now the positive effects are rapidly becoming apparent.

flexible Open Systems computing solutions.

First time for both

Eric Buatois, who today is a member Ericsson Hewlett-Packard's Business Support System Unit, was Hewlett-Packard's representative at the time the cooperation venture was established and one of the company's "founding fathers".

"For Hewlett-Packard this venture is of great significance. Normally HP prefers to do things by itself. This is the first large joint-venture that involves both people, equipment and finance."

"This solution is also an unusual one for Ericsson. Normally Ericsson enters a joint venture to gain a local presence on a market, or as a step in a future acquisition of a company. This cooperation is something completely different."

Service as a business

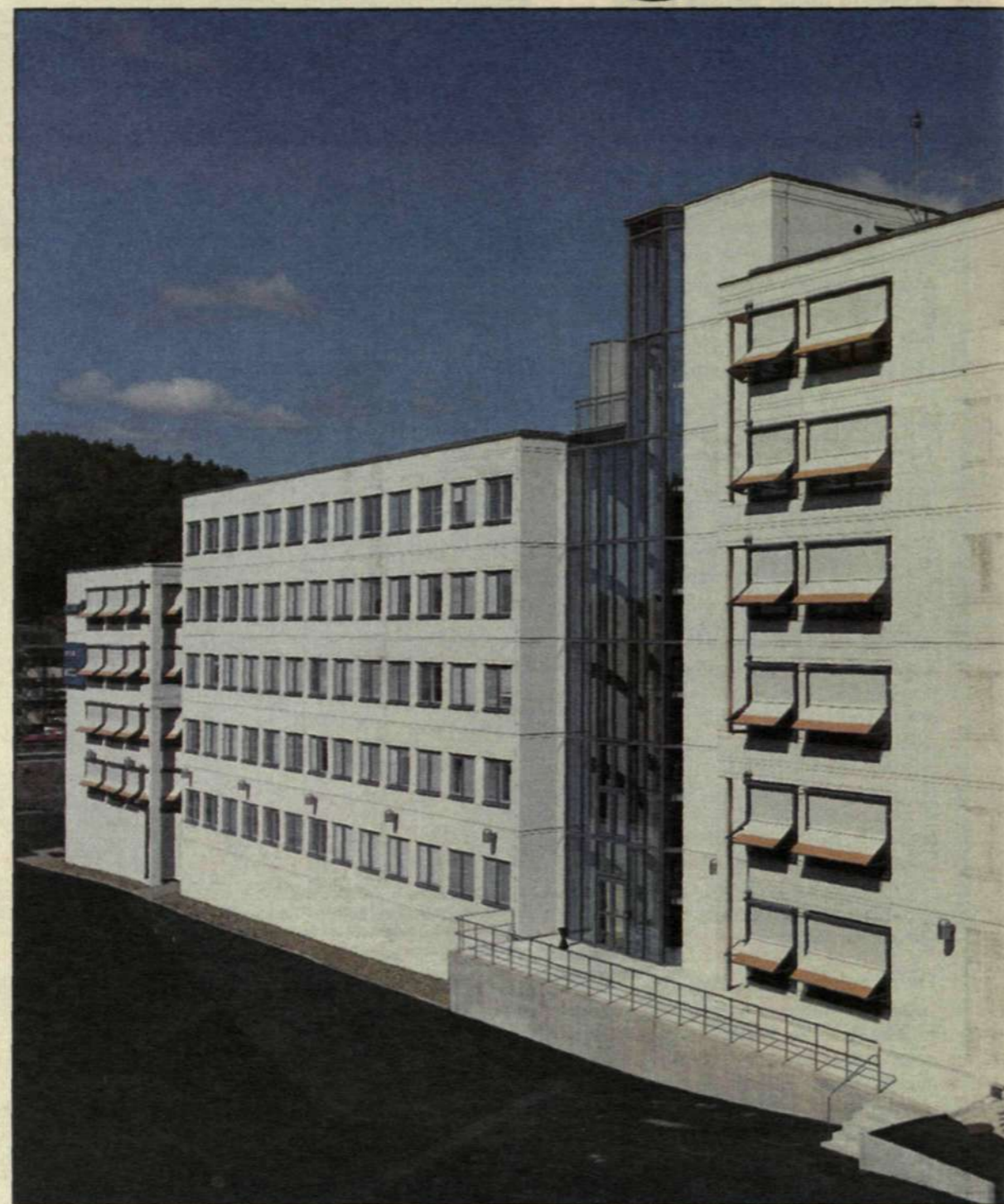
Hewlett-Packard brought specific skills to the new company.

"Hewlett-Packard is a leader in Open Systems thinking," says Eric Buatois. "Today's customers expect all parts of a telecom solution to be competitive – both in price and performance. And with our open solutions, we can pick the best parts available."

"In addition, Hewlett-Packard has introduced the concept of seeing service and support as a business in itself. In the computer industry, customers have always bought products and service separately. Now, the concept will also be introduced to the telecom industry."

Ericsson's contribution to the new venture emanated from its years of experience in the telecom industry.

"Especially the experience of managing large and complex projects during very long cycles," says Eric Buatois. "And of course the general telecom



Ericsson Hewlett-Packard Telecommunications has operations in Stockholm and Gröndal, Sweden, and in

knowledge and experience of a world leading telecom supplier!"

Market success

The new company develops software for Operational Support Systems (OSS) and Business Support Systems (BSS). The largest product so far is TMOS (Telecommunications Management & Operations Support), a system that handles all management and operations support functions in public networks.

"TMOS can increase telecom operators' profitability by running their operations and networks more efficiently, and by enabling them to offer additional services. The system has turned out to be a veritable market success. Up till today we have installed 180 systems in more than 40 countries," says Eric Buatois.

Another important product is the BIP (Billing Information Processor) which, among other things, helps the customer to control the revenue stream by automatically sending all billing information from the switch to a billing system. The system was acquired from TELI and is offered

as a complement to TIMS, an integrated service system for customer care and customer information developed by the company.

Booming demand

Since the customers are still linked to the installed base of Ericsson's telecom systems, the majority of the business is run through Ericsson's sales channels. However, Hewlett-Packard's share is increasing.

"Our largest customer categories are the traditional PTTs and, of course, the mobile operators where we are part of all Ericsson's installations. A rapidly increasing segment is also the new fixed operators, such as cable operators and long-distance providers. The demand from mobile operators and new fixed operators is booming."

Ericsson Hewlett-Packard can take advantage of Ericsson's and Hewlett-Packard's well-established sales channels worldwide – a great advantage in an industry where the market channels are becoming increasingly crowded by the day.

"We can benefit from the market presence of our parent companies and interchange between Ericsson's and Hewlett-Packard's channels, depending on the business concerned," says Eric Buatois.

Different cultures

The greatest problem when merging companies is often their different company cultures. Since Ericsson and Hewlett-Packard have strong identities, you could expect problems.

"Yes, there were problems," admits Eric Buatois, "especially in the beginning. We were afraid of a collision between the American and Swedish mentality, but it was rather the different business cultures in the two companies that caused the problems."

Impatience

"The main difference is the speed. In the computer industry, the business cycles are a matter of quarters, in the telecom business you talk about years. While you often sell a computer over the counter, a sale of a telecom system could easily take two,



Grenoble, France. About 200 persons are employed at Mölndal, near Gothenburg.

three years – a fact that has created some impatience among the Hewlett-Packard salesforce!"

From R&D to business

Ericsson's former Telecommunications Management Business Unit was basically an R&D organization. Since the new company was founded, it has gradually been transformed into a business operation with a new, market-oriented culture. There has been dramatic changes but there is still a bit to go.

"We must remember that we are dealing with the human cycle – which is not as quick as the technological cycle. We just need some more time for people to get to know each other and the new organization – and to see the benefits for themselves."

Multicultural

Ericsson Hewlett-Packard has some 470 employees in Sweden, of which about half work in Stockholm and the rest in Gothenburg, and also some 30 employees in Grenoble, France. The headquarters is situated in Stockholm.

While most of the Ericsson personnel are Swedish, a majority of Hewlett-Packard's people come from abroad. Several, like Eric Buatois, are French, the rest originate from the U.S., the Netherlands, Germany, Spain and Finland. The mix of cultures and nationalities has created an unusually dynamic working environment.

"I think that the cultural mix is a great asset in an international business environment like ours," says Eric Buatois. "You cannot always understand the world through Swedish or French eyes – if you are selling in Spain you better add a pair of Spanish eyes as well."

Attracting personnel

Concurrent with the company's expansion, the interest from job seekers from other leading IT and telecom companies has increased. Lately, a great number of applicants from companies like IBM, Sun, Digital Equipment and Alcatel have been in touch with the personell department.

"We are the first venture between an IT and telecom company,

and I believe this in itself attracts people. Historically, our employees have had an engineering degree."

"Today, we hire an increasing number of people with business administration degrees, and even some genuine entrepreneurs. In a fast-growing, market-oriented company like ours, all these skills are needed. And of course, we also welcome more people from Hewlett-Packard and Ericsson!"

Bright future

Three years have elapsed since Ericsson and Hewlett-Packard decided on the joint venture. After some initial friction, the positive effects are becoming increasingly visible.

"We are a company in the software market – and software is the future of telecom," says Eric Buatois.

"Today we see much more opportunities than we actually can handle. We have a sales of nearly SEK 1 billion and that figure could easily be increased tenfold by the turn of the century."

Jan Kind

A company well positioned for growth

The new president of Ericsson Hewlett-Packard Telecommunications, Mr. Thomas Ivarson, has a hectic period ahead. A range of activities are planned to give the company an even clearer focus.



President of Ericsson Hewlett-Packard: Thomas Ivarson. Photo: Göran Holtzberg

Prior to the summer, an owner review of the company was carried out, and the future strategy for the company was thoroughly discussed. Both Ericsson and Hewlett-Packard are satisfied with the results of the cooperation so far – sales volume and market penetration have been according to plan, and so has the financial situation. But there are still a few weak points.

Clearer direction

One has been the occasional unclear roles in the new company. Accordingly, one of Thomas Ivarson's aims is to give Ericsson Hewlett-Packard a clearer direction, for example, to further distinguish between the company's relationship with Ericsson's business units and its external customers.

Within Hewlett-Packard, there is an ambition that the new company should broaden its operations further towards the open systems technology and emphasize multi-vendor applications, something that Thomas Ivarson also views as a priority area.

Combine resources

The business concept is to be a leading telecom management systems supplier, by combining the strengths of Ericsson and Hewlett-Packard.

"Our aim is to combine the speed and communication skills of Hewlett-Packard with Ericsson's endurance and long-term relations with its telecom customers," says Thomas Ivarson. "And the common characteristics of the two companies, such as openness, honesty and professionalism, shall be even further developed."

"But we have to remember that our organization is still very young, and the marriage of two companies is a long-term process. It may take several years to fully implement all the changes."

Jan Kind

According to Thomas Ivarson, an important challenge is to focus on products rather than projects, and to aim at markets rather than customers.

"We have to start defining products based on a life-cycle approach and to treat groups of customers with common needs as markets segments, and not as individual customers. And we have to start seeing ourselves as an independent company, and not regard the Ericsson community as customers."

New organization

To achieve its goals, there will be some changes in Ericsson Hewlett-Packard's organization. The aim is to make it leaner, with clearer decision paths, roles and responsibilities.

"Among other things, we are creating three product lines that will be independent business entities aiming at different customer segments," relates Thomas Ivarson. "And to further improve our R & D function, we are establishing two separate design centers – one in Stockholm and one in Mölndal. The aim is to further increase focus, simplicity and a results orientation."

Positioned for growth

Thomas Ivarson is confident about the future of his company.

"There is a market out there valued at nearly SEK 100 billion, of which some 25 percent is available to us already today. We are unusually well positioned for rapid growth – either by continuing our focus on OSS and network operation, or entering new challenging areas."

PS 890 climbs to new heights

Flight tests of the first series production version of the PS-890 airborne surveillance radar – also known as Erieye – is in full swing at FMV, the Swedish Defence Materiel Administration. The shakedown flight was carried out in mid-October, with favorable results.

News about the PS-890 airborne surveillance radar was first released in conjunction with the maiden flight which signaled the start of a six-month long series of evaluation flights of the antenna mounted on a Saab 340 aircraft.

Successful flight test in autumn

Since then, personnel at Ericsson Microwave Systems continued work on producing the series production units of the radar. Flights tests of the first unit are now under way, but there have been some detours along the way.

Packed with electronics

The first series structure arrived at Ericsson Microwave in March 1994. In the months ahead, it was packed with electronics – antenna plates and 192 transmitter/receiver modules.

In May of 1994 the nine-meter-long antenna was ready for the first tests on the antenna measurement bed, a so-called verification period. This was intended to verify for the first time whether it was actually possible to achieve the calculated antenna performance. This period was scheduled for four to five months, but was extended to nearly a year.

Condensation damage

Undoubtedly, that was the great setback for us," relates Lars Ström, project leader. "But it was not a result of a fault in the antenna," he points out. "It was simply that we had subjected the antenna to exceedingly high temperature differences, so that a very heavy incidence of condensation damaged most of the cassettes. The highly complex measurement system also required substantially more time than anticipated to attain verification.

The damaged electronics were replaced and the antenna was lifted from the test bed for several months of tests with Saab's power supply system and Ericsson Microwave's cabin equipment.

Complicated measurements

The unit was back on the antenna test bed again in March 1995. The measurements were among the most extensive and complicated ever carried out at the facility and time the PS-890 team was running out of time.

After the rescheduling, delivery had been promised to the FMV Test Unit on August 21.

Concurrent with the antenna measurements, the cabin equipment in the measurement facility test bed by operating the units that would be installed in the cabin



simultaneous with tests of the software. At the end of July, all components – the antenna, cabin equipment and software – were combined in the test bed. The system would now be fine-tuned.

Exceeded expectations

"These two weeks exceeded all expectations," Lars Ström relates. "Everyone performed in an outstanding manner. Some members of the team delayed their vacations and others were on standby should they be needed."

"We had a long list of telephone numbers to summer cottages, to mobile phones and personal pagers."

Major milestone for project

The first series produced PS-890 was shipped to FMV on August 17.

"This was a major milestone for the project," says Lars Ström. "The equipment was sufficiently complete for testing by FMV."

The equipment was mounted on the aircraft and tested. First on the ground.

Checks include ensuring that the radar does not interfere with radio transmissions.

The ground testing period concluded with a so-called shakedown flight to determine if everything is operational while airborne.

Thereafter, the actual flight test phase begins, with one flight a week.

After these results are evaluated, up to four flights tests per week are anticipated. Formal delivery of the system to FMV is scheduled for February 1996.

Until that time, Ericsson stills owns the equipment but the FMV Test Unit is responsible for it as well as for testing.

Ahead of schedule

Work continued at Ericsson Microwave Systems on production of the six radar on order to FMV. As quickly as one antenna leaves the test bed, the next one is mounted.

These verifications have exceeded expectations and were completed two weeks ahead of schedule.

"A great amount of work remains until we have completed this project," relates Lars Ström.

The first complete series delivery will be in February 1997, concurrent with an upgrade of the systems already delivered. Furthermore, Ericsson Microwave anticipates additional design work, since FMV continuously seeks improved interference protection functions, development of tactical functions and much more.

Liss Tänger

Aggressive launch of new radio link



"Interest in the new link is substantial," states a content Per Anders Hainer at Ericsson Microwave Systems in Mölndal. This indicates continued success for Ericsson's family of microwave links.

Ericsson Microwave Systems is investing heavily in marketing the company's newest addition to the series of Microwave links, Mini-Link E. This is aimed at meeting the market's increasing demand for more links.

The Ericsson radio link, Mini-Link, continues to conquer the world. Currently, there are Mini-Links installed in 87 countries. The annual volume increase which has occurred since the first links were manufactured in the mid-1970s, is mainly attributable to the rapid development in mobile telephony. With Mini-Link, customers can rapidly build a telenet for wire or mobile communication of voice and data. In addition, Mini-Link is substantially less expensive than using cable to connect radio base stations.

New generation

Mini-Link E, where the E is a designation for Efficiency, Exceptional, Experience, Extended, Evolution and Ericsson, is a new generation of radio links.

A further increase in capacity, broader frequency coverage and extremely compact design makes it a complement to its successful predecessor, Mini-Link C and it is suited to today's modern mobile telephone networks.

Activities surrounding the marketing of the new link worldwide were initiated early in the autumn, despite the fact that the Mini-Link E is not scheduled to be introduced in the market until the first quarter of 1996.

Increasing market share

"Early announcement that a new link is being developed increases our possibility of increasing our market shares," contends, Per Anders Hainer at Ericsson Microwave Systems in Mölndal, Sweden.

"Consequently, we have decided to be significantly tougher and more aggressive in the launch of this latest addition to the Mini-Link family."

Great interest

As a first step in the launch, more than 50 sales personnel and representatives from 26 Ericsson companies worldwide participated in a seminar at the Scandic Crown Hotel in Gothenburg. According to Per Anders Hainer, interest in the new link was very great.

For two days the participants reviewed everything from link history to how to build a network with Mini-Link. A representative from Mannesmann Mobilfunk was also present, who emphasized in a presentation at the seminar the importance of developing a true team spirit between the customer and supplier in order to achieve the best possible result.

Factory tour

A tour of Ericsson Microwave's link factory in Börås was the main event of the third and final day of the seminar. The second action in the launch was forwarding of a fact-packed press release to a large number of magazines and the trade press. Mini-Link E was officially introduced at Telecom 95 in Geneva.

"Mini-Link E attracted substantial attention and we fielded a deluge of questions from market representatives," reports Per Anders Hainer, who is highly satisfied with marketing efforts to date.

Leading to success

"The intense activity prior to the launch of Mini-Link E has been greater than is normally the case. Results to date indicate that we have broken into a path that should lead to success in the long-term perspective.

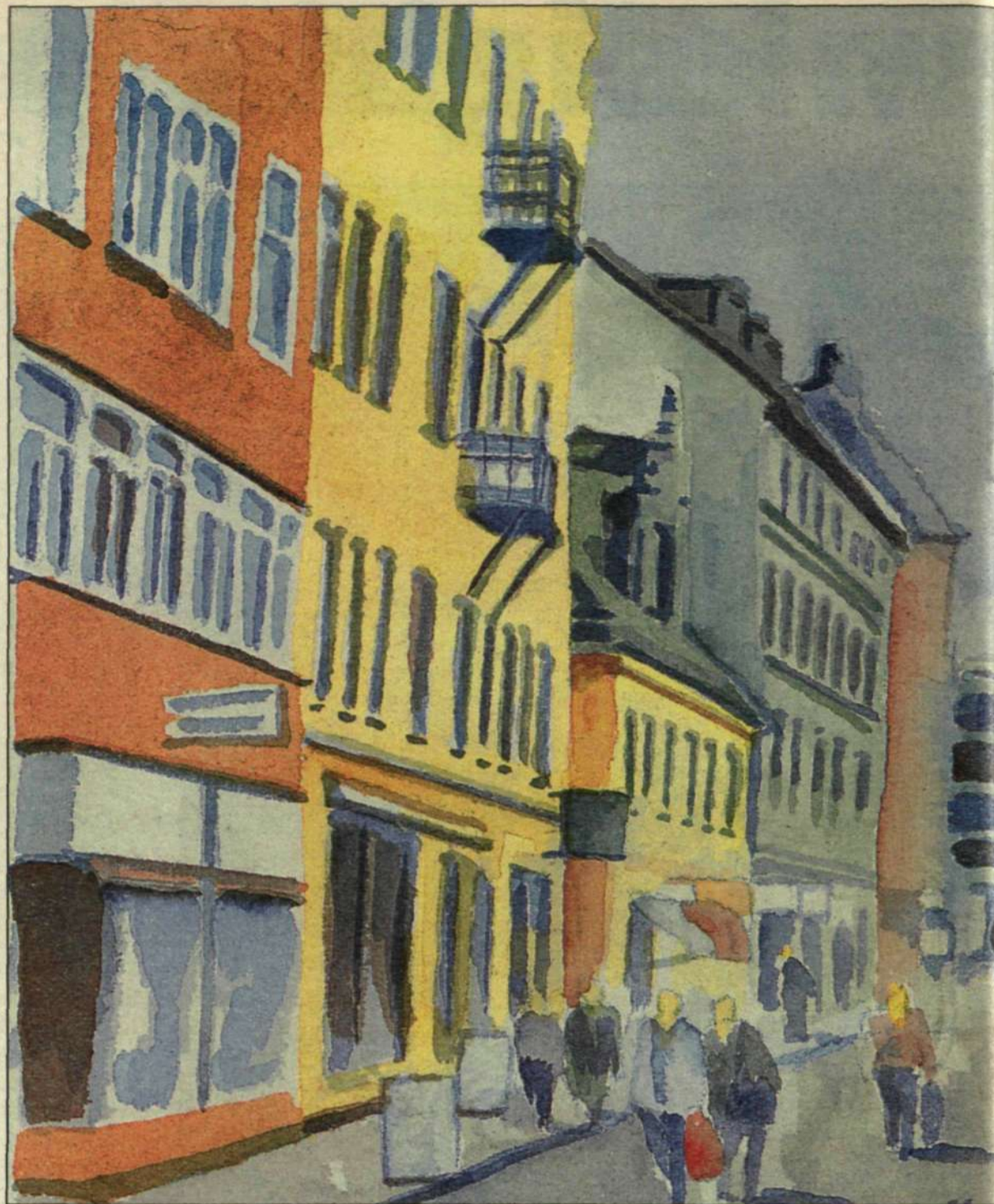
"We have clearly created interest in the Mini-Link E on the market. Now it is the sales personnel's task worldwide to continue along the beaten path."

Cathrine Andersson

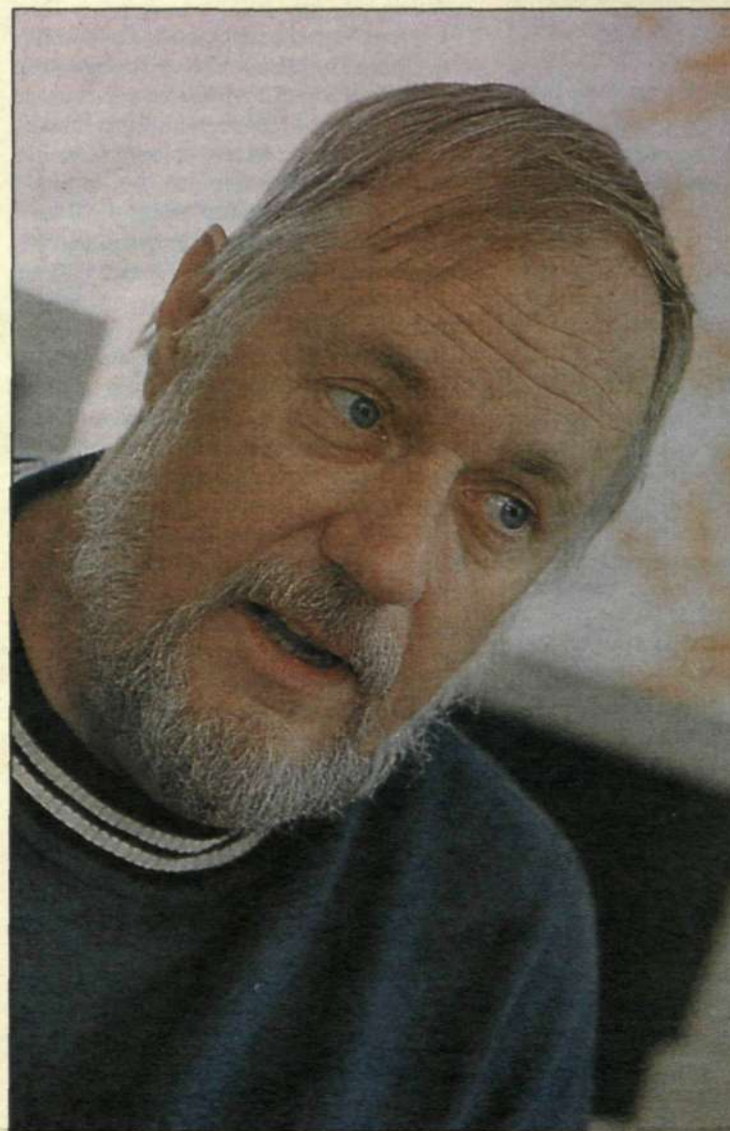
See the future with interactive eyes

"Today's most modern computers will end up in museums in a few years and video tape recorders will be regarded as pure Stone Age artifacts." That's the firm belief of Lars Gauffin, an Electrum researcher. Instead, he says, high-speed fiber optical networks "are the future."

A meeting with Lars Gauffin is a dizzying experience – partly due to his overwhelming eloquence, but mainly because the vision he offers of a not-too-distant future provides a dazzling insight into the possibilities that lie ahead.



Seeing the whole world through your eyeglasses.



Lars Gauffin has visions of the communications of the future. You will be able to do things you didn't think were possible. Photo: Peter Nordahl

Lars Gauffin left Ellemtel about a year ago to join Electrum, the Royal Institute of Technology's research center for telecommunications information technology. He now divides his time between the Institute and DTM Information System AB, a development company in process of formation.

He is, as he himself says, considered crazy by some people and a genius by others. He describes what motivates him in the following terms:

"First, I want to understand what I am working with; second, I don't want to do what has already been done; and third, I want to be the best at what I am doing."

Fast fibers

Despite what appear to the layman to be enormous developments in the data world, this is the area in which the limitations on continuing expansion lie, according to Lars Gauffin. Instead, the potentials lie in the transmission field, in fiber optical networks. The research now being conducted will result in high capacity at low cost, he promises.

The Stockholm Gigabit Network Foundation is currently operating a high-speed fiber optical network for research purposes. The Royal Technological Institute, Ericsson, Telia and others are members of the Foundation. Lars Gauffin was one of the promoters of this test service for Stockholm.

"The total data transmitted in Sweden today amounts to around six gigabits per second," he says. "The fiber speed in our

A person will wear eyeglasses with interactive image surfaces. The glasses will convey images via a camera built into the earpiece. In this form of communication, the receiver of images will see what the sender sees.

planned text network is ten gigabits per second. And the cables will contain hundreds of fibers."

The dramatic increase in transmission capacity will mean revolutionary changes in our ways of exchanging, storing and using information – and, above all, in the way we experience events.

"Grandma will be able to see her grandchild's first steps the same seconds they are taken. And you will be able to accompany a diving expedition a thousand meters below the surface of the sea, or admire the view from the top of the Himalayas."

A display screen on your nose

To make this possible, a person will wear eyeglasses with interactive image surfaces. The glasses will convey images via a camera built into the earpiece. In this form of communication, the receiver of images will see what the sender sees. The eyeglasses will not be clumsy "cyberspace gadgets;" they will be comfortable, lightweight and well-designed. With a

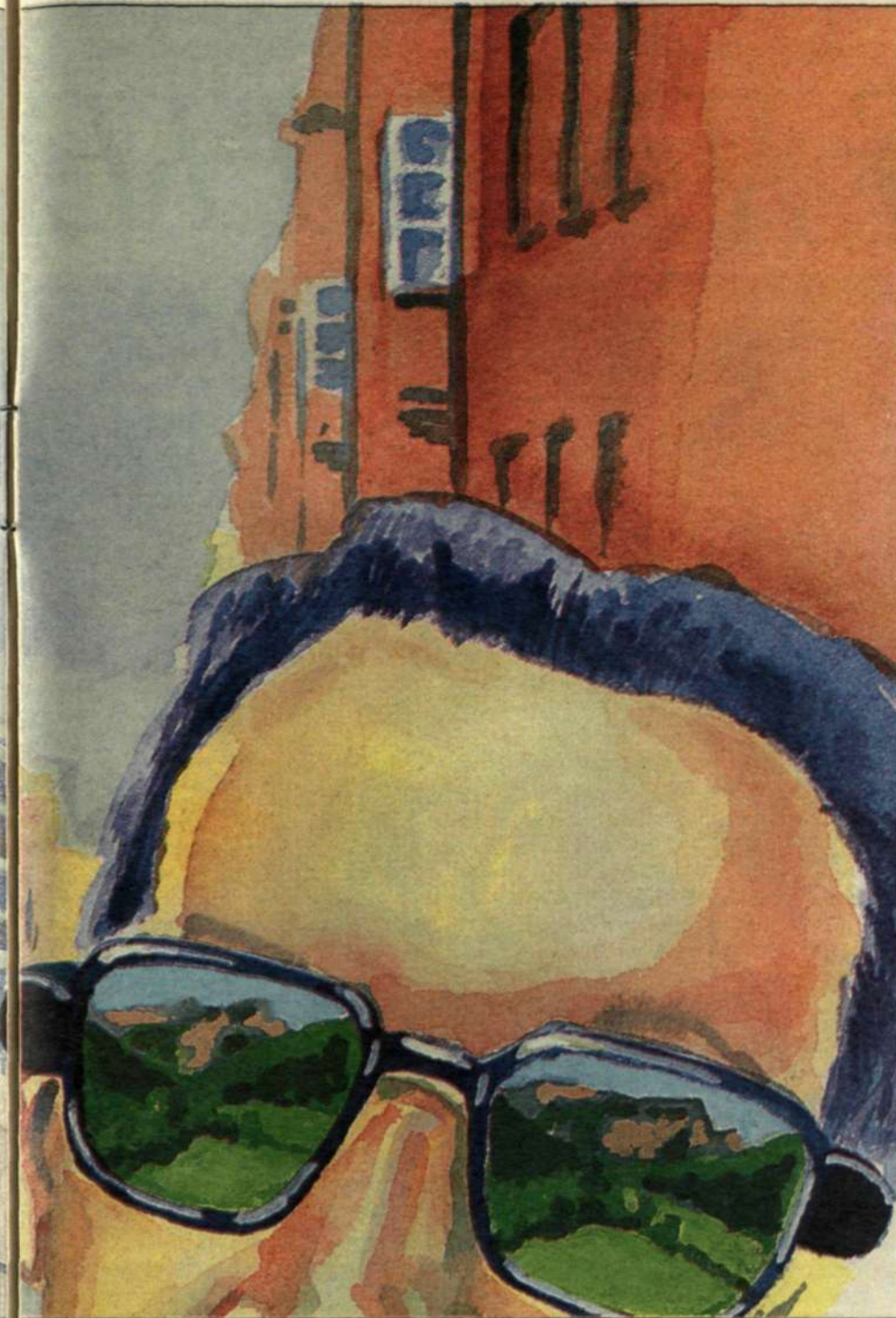


Illustration: Magnus Andersö

flick of the thumb in a sort of hand-held "pointer," a person will control a cursor in the image during interaction.

Today it is too costly to manufacture large, interactive, high-resolution picture screens for walls at a price the average buyer can afford. But such screens can become possible over the long term.

A mobile telephone today already has the capacity of a personal computer; by the year 2000 it will have power equal to that of a Pentium computer. The real computer power will be achieved via networks, at a thousandth of current costs. It will not be necessary to purchase software programs; users will rent them as needed if space doesn't have to be used to store something.

Questions immediately arise as to whether this will be an exceptionally vulnerable system. The questions are insignificant, Lars Gauffin thinks. He is an engineer and will provide the technical solutions. Concepts and ideas for solving the security and integrity aspects of the system are already available.

More "remote" work

Endless opportunities are being created. Forget television transmitted via air waves. You will be able to choose what you want to see from an enormous selection of programs and films. Select all the music in the world without ever having to buy a record. The loudspeaker will be behind your ear. You land at a major airport. Your mobile telephone rings and you are offered guidance in reaching the address you seek.

A picture of the route you are to take is shown in your eyeglasses.

The network will be able to control the heat in all households in an optimal manner, using data supplied by the Meteorological Institutes. Transmission of data in real time throughout the world will be possible. The distribution of a daily paper costs hundreds of millions of kronor every year. Networks will distribute the same amount of information for a hundredth of this cost.

There will be increasingly less reason to "go to work" when most jobs can be performed equally well at home. Rural areas will be more active when people can live where they want to, and when employers who want to see their employees in their workplaces will have to offer such attractions as food and other benefits.

The network can offer nearly everything: the transfer of expertise, experience, time, music, computer power and information. And it can do so at a cost that matches today's telephone bill. The information will, however, cost as much as it does today.

The objective is to give all children who begin school early in the next century access to the network through their own "information eyeglasses." So be prepared! Within the near future you will be able to participate in a new technical revolution. It will mean that you will have to leave today's instruments on the scrap heap; but you will be able to do things you didn't think were possible.

Lena Granström

Intelligent networks for smart services

The telephone network is no longer a place where "A" can place a call to "B." It has become the world's largest marketplace, workplace and entertainment site. Today, the telephone – and the network – are being used in an entirely different manner than before. We are working from remote locations, we are handling our banking business via the telecommunications network and we are ordering merchandise and various types of information by telephone from our homes.

This is creating completely new commercial opportunities that are attracting new operators and imposing major demands for new ways of thinking and flexibility on the part of traditional operators. This, in turn, is affecting Ericsson as a supplier.

"We have to understand our customers' customers," says Carlos Flores, a marketer who focuses on South America.

"When we do this, we can help our customers do profitable deals. We will show how they, in turn, can offer attractive services to their customers. These customers may range from physicians to mail-order companies – or perhaps a minor league hockey team whose members can be tomorrow's subscribers.

Telecommunications subscribers have become a factor to reckon with. They constitute a group with the power to affect the trend of business. With the deregulation of telecom markets, they are able to say:

"If the service I am getting doesn't suit me, or if the services provided by my old telecom operator are too expensive, I will switch to a new, alert company."

"Many operators are now focusing on different market segments or target groups and are profiling themselves by means of new services," says Matts Norén, who is involved in strategic planning at Global Product Line Management, Network Intelligence.

"The new operators, especially the global ones who are focusing primarily

on corporate customers, and the internationalization of services to these customers, are an exceptionally important group," he says.

But product development has to proceed rapidly.

"Time to market" is the key concept. It involves being faster than competitors when new opportunities arise, says Ulf Hellberg, who works on product development at the unit.

One prerequisite is to have a system that permits a quick change of services. So-called intelligent Networks – INs – are the solution.

Ericsson's intelligent networks have proved to be effective competitive tools for many operators. They offer great possibilities to vary the services offered. This is due largely to the so-called SIB concept that was developed as a means of creating services. "SIB," the abbreviation for Service Independent Building block, consists of modules of a special type – symbolized by icons – that are combined in various ways to ultimately form a telephone service.

Operators formerly purchased the IN platform themselves and often elected to create new services with their own resources. But today it is increasingly common for customers to buy "the entire package" – the products, services and expertise required to build an intelligent network structure. This is fully in line with Ericsson's strategy in the IN field.

"IN is a key technology and an expansive sector of the telecommunications industry right now, one that definitely has a future," says Thomas Larsson, product manager.

To date Ericsson has delivered IN systems for both fixed-wire and mobile networks operated by more than 55 companies in nearly 30 countries. It is a world leader in the fields of Virtual Private Network (VPN) services and Universal Personal Telecommunications (UPT) services. (See box.) LG

"Televoting was used a year or so ago in connection with the Swedish final of the European Song Contest. Approximately 160,000 viewers called in their vote during an hour-long broadcast."



Basic services can be varied

In all, there are more than ten basic services that can be modified as needed. Here are some of them.

- Universal Personal Telecommunications (UPT), which offers the subscriber a personal number that can be used for incoming and outgoing calls wherever the subscriber may be. The commercial breakthrough for this service occurred in Norway during the summer of 1995.
- Virtual Private Network (VPN), offered primarily to corporate customers who can use the public network as their own private network, with their own numbering plan, etc. Ericsson has a very strong VPN system that was included most recently in the first IN order received from TELMEX in Mexico.
- Freephone (also known as an 800-number system), where the party called pays for the call. Mail-order companies are typical customers.
- Information services, where information (weather reports, for example) is provided for an additional per-call charge.
- "Televoting," used in connection with both radio and television programs in which viewers and listeners are invited to participate actively by calling the studio.

In three short years, the Cellular Systems— American Standards organization in Stockholm has nearly doubled in size. Today it employs nearly 1,000 people and continues to grow. Despite this dramatic increase in the number of employees with many coming from different corporate cultures and increasingly from different countries, this relatively small or-

DRIVING IN THE FAST LANE

Cellular Systems for American Standards seems to have something for everyone. For the young, the up and coming and the ambitious, there are the long days that end in the company of a cold pizza at one's desk come evening. And there's the "exotic" travel; six months out of 12 to remote corners of the world many miles from a hot shower and a cold drink? Their reward is the challenge and the promise of speedy promotions for a job well done. For the older and more experienced, there's the satisfaction that comes from working in a dynamic environment, side-by-side with the best in the industry; pioneering the world's best radio technology.

This unit is responsible for developing and marketing products within the Radio Communications Business Area based on American standards. With a 36% global market share of D-AMPS/AMPS systems, it is the world's leading supplier of the most widely used standard for wireless communications.

The right stuff

Responsibility for ensuring that the unit comes up with a competitive and profitable mix of products and services for the CMS 8800 system falls on Product Management. Mats Blumenberg, the Director of Product Management says: "We are responsible for making sure that our product portfolio has the highest commercial value possible, i.e. that it is both competitive and profitable. To achieve this we have to monitor and analyze market developments very carefully. By doing so, we can identify new business opportunities early and then allocate the resources needed to ensure the timely availability of these products. The ability to foresee new trends and to satisfy these ever-changing demands, is key to our future success."

Taking initiatives

The unit, while only three years young, is growing rapidly at all levels as D-AMPS/AMPS technology gains new footholds around the world. This makes it a very dynamic and a very busy place to work, and an ideal working environment for learning and advancement. Newcomers find they have to hit the ground running from the very first day. And while people are very supportive, new recruits are expected to take their own initiatives when it comes to enrolling in training and language courses.

While many positions within the organization require a highly specialized knowledge of complex systems, the Sales & Marketing area calls for people with a rather diverse range of competence, not only of the products themselves, but in areas such as law, finance, product management and product development, to name a few.



"You have to be good at creating your own company network both vis-a-vis your local company and the organization as a whole. This means that you have to be a sales person internally as well as externally, says Anna Rättzen, Area Manager Sales & Marketing Eastern Europe



"There are really positions to suit almost anyone in this organization. It's a question of finding the right niche to suit one's particular skills and personality, says Johan Ryne, Area Manager for Sales & Marketing in South East Asia

Sales & Marketing is a fast-paced, result-oriented working environment. It is specially tailored to serve the needs of a small, flexible

market-driven organization. Sales & Marketing people are highly motivated, energetic self-starters with an entrepreneurial style. People who love challenges and who are not afraid to make mistakes along the way.

Because much of their time – between 25-40% – is spent traveling in overseas markets, Sales & Marketing Area Managers need to have an ear for languages and a sensitivity for other cultures and styles of doing business. Area Managers for Area Managers for Sales & Marketing take the pulse of their local markets and communicate local needs to the Stockholm head office.

Positive thinking

This job calls for a good deal of diplomacy. Being able to deal with a variety of personalities and conditions under time pressure. Positive thinking is a big asset," says Michael Kuhner, Regional Manager

for Sales & Marketing for Far East Asia. Michael's quick advancement, which has taken him from Area Manager to Regional Manager in under three years, shows the reward opportunities for a job well done.

Hans Nyqvist, who holds a masters degree in engineering, came to American Standards six months ago from Ericsson Telecom. He's now working as Area Manager for Sales & Marketing for South East Asia, one of the units fastest growing markets. "When I first got here I found there was so much to do I hardly knew where to start. But I found people very supportive and highly motivated. After a 12 hour day, many can't wait to get back in the next morning. This is the most stimulating work environment I have ever experienced."

Johan Ryne, an Area Manager for Sales & Marketing in South East Asia says the opportunities open to people in a growing organization

such as this one are unlimited. "There are really positions to suit almost anyone in this organization. It's a question of finding the right niche to suit one's particular skills and personality."



After spending half a year in the research department working with ASIC technology, Frédéric Aron now works with systems engineering.

ganization has experienced surprisingly few growing pains, and enjoys one of the lowest staff departure ratios in the entire Group. To gain some insight into just what makes this unit tick, we talked to some of the people who work there.

Time with respect to delivery of the system is often a more important competitive factor than price. Operators want the very latest cost-efficient technology available, and they want it yesterday. The Operations unit plays a key role both in costing the project and seeing that is implemented on time. Their responsibilities include support when preparing offers, responsibility for project budgets, preparing of project time schedules, the planning and securing of implementation resources, producing project specifications and compiling monthly reports.

Meeting deadlines

Once the contract is signed, the operations people see that all of the various system components come together on time. Operations are also responsible for providing local companies, in those countries where they exist, with human resources support for installation and testing, cell planning and training etc. The project coordinators and project managers within operations all wage a constant battle against lead times for the delivery of key system components. One lagging component can delay an entire system.

The most unpredictable challenges of all, the ones a project manager's nightmares are made of, are confronted in the field. Often in remote places like rural China or Russia where even the most ordinary item, like a missing bolt or a screw can hold you up for days. Project Manager for Operations, Martin Henriksson explains: "Imagine being hundreds of miles from anywhere on some remote construction site and find that you are short an ordinary tool or a part. You can't just jump in your car and drive to the local hardware store. And even if you could find a town, the chances of them having what you need, no matter how basic, are small. It's got to be flown in at great expense."

Project Manager Magnus Arfors says: "Whenever possible, we try to airlift everything we need right to the site in sealed boxes. Sometimes this isn't practical and we have to hand carry suitcases filled with all kinds of things with us when we travel. Working under conditions such as these and with a wide variety of people, calls for a lot of fast thinking and on-the-spot creativity. You simply have to make things up as you go along. This is really what makes this job so interesting, and enjoyable," concludes Arfors.

The ideal candidate for the Operations unit is someone with an engineering background and a degree in business administration. Language skills and a patient, easy-going, diplomatic manner will serve you well in this job.



Perhaps the biggest challenge we face is making the most of the resources we have and coordinating the work, says Martin Henriksson, Project Manager for Operations.

The global nature of the unit's operations is very much reflected in its personnel who come increasingly from different parts of the world. Many have been working for Ericsson in their home countries for a number of years before being asked to relocate as "expats" to a new foreign posting.

Larry Wood of Texas, a former expert in microwave technology with the U.S. Air Force has been with Ericsson since 1985. Larry started with Ericsson in Dallas where he worked as an instructor teaching our own personnel and our customers the ins and outs of RBS equipment. Since that time Larry has worked in a teaching capacity



Stockholm a very nice surprise indeed," says Larry Wood, Manager, Product Support.

with switching, software design, product management and new product evaluation, all within the context of the D-AMPS/AMPS standard.

Today Larry is based in Stockholm where he is Manager, Product Support. "I enjoy living in Stockholm. I travel a great deal, often to distant markets in the Far East, Europe and to North and South America. Stockholm is a nice place to come home to. It offers a better quality of life than many of the other countries I have lived in before. I don't even own a car. Public transportation is great and I actually bike to my office in Kista from my

apartment in Stockholm. I think expats from other countries will find Stockholm a very nice surprise indeed," says Larry

For Frédéric Aron, who has recently undergone a five month training program in Dallas, site of the unit's U.S. headquarters, the opportunity to work and live in the states was a rewarding experience. "It was quite an intensive learning experience, but very useful. Not only did we get an opportunity to learn a good deal about the technical aspects of my specialty area, which is radio network design, but we also had the chance to get to know a lot of the people working within the organization there. These kinds of personal contacts are very important when it comes to future cooperation."

Frédéric, who is a native of France, has been with Ericsson for two years. After spending half a year in the research department working with ASIC technology, he transferred to this unit to work with systems engineering. He has a Masters of Science from France and a Ph.D. in applied electronics from a Swedish university.

Technical expertise

One of Ericsson's great strengths as a global telecommunications supplier has been its wide range of technical expertise in the areas of switching, radio communications and networking. This broad expertise has been of key importance in the development of RBS 884, the new generation of radio base stations designed to accommodate a wide variety of analog and digital network applications for both indoor and outdoor environments.

Developing RBS 884 into the most cost-effective solution for wireless networks is the responsibility of the Radio Network Products unit. For the past three years, the unit has devoted much time to the development and refinement of RBS 884. This product combines advanced technology with flexible system solutions to ensure flexible and cost-efficient use.

Thomas W. Nilsson, Project Manager for TRX, heads a design group of some 100 engineers responsible for some of the key hardware and software behind the RBS 884. "Among other things, our group has designed the transceivers and some of the other main radio components which go into this new base station. Now that the basic design phase is nearing completion and it enters into series production, our job is to continue to refine it by making it even more robust."

Coordinating the work

Perhaps the biggest challenge we face is making the most of the resources we have and coordinating

the work of specialists at different levels of the design and various production phases.

Martin Shöön, a Ph.D. in microwave electronics, is a specialist working with Radio Design Development. Among his many duties, he is responsible for radio design methodology, building model libraries for CAD, and for teaching new engineers and others how to make the most effective use of CAD tools. In his department, Martin is regarded as a kind of a trouble-shooter when it comes to solving a wide range of questions involving chip level design and PCB design. Martin says there is a growing need for engineers with backgrounds in integrated circuit (IC) design, in mathematics and computers. "We work a great deal with computer-aided test solutions to test power output, data communications and the like," says Martin.

FOTO: STUDIO NILSSON & LUNDBERG AB

Recent developments

■ Today, the D-AMPS (IS-136) CMS 8800 system supports all wireless applications, from traditional cellular to PCS, to Fixed Cellular. It offers the most cost effective digital wireless solution for coverage, capacity and quality.

■ Ericsson launches new "dual band" PCS solution which enables operators to integrate services in both the 800 and 1900 MHz bands and to offer nationwide seamless roaming from day one.

■ AT&T Wireless Services announced recently that Ericsson and AT&T Network Systems would share in the delivery of new network equipment for PCS, worth approximately USD 450 million. AT&T Wireless Services has declared its intention to base its new PCS networks on D-AMPS 1900.

■ Ericsson recently signed several major D-AMPS/AMPS contracts with cellular operators in Argentina. The total value of the orders from the three Argentinian operators is approximately USD 200 million. The Ericsson network will be fully digital (IS-136) providing high capacity, enhanced features and expanded services throughout the country.

■ Ericsson wins SEK 450 million order from Mobikom of Malaysia for the expansion of the Mobifon D-AMPS/AMPS network.

VACANCIES AT ERICSSON

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

For further information about advertising here, contact Anita Wilhelmsson at Ericsson Corporate Relations. Phone +46 871928 14.

IN SWEDEN:

Telefonaktiebolaget LM Ericsson, Ericsson Management Institute

PROGRAMME ADMINISTRATOR

Ericsson Management Institute is a support unit within the parent company of the Ericsson group - LME. The Institute conducts management development activities for senior managers and executives within the Ericsson group world-wide.

We are now looking for a new Programme Administrator, who will:

- be responsible for the administration of some of our General management and Functional Programmes
 - assist in co-ordination of leadership training
 - be the web-master for our home page on Internet
- The work is carried out in close co-operation with the Programme Directors for each programme. You will be one of Two Programme Administrators at the Institute. You should
- be confident in using written and spoken English
 - be service oriented and have the ability to work as a member of a team

- have a sense of responsibility and be able to make your own decisions when required
 - be able to work well with computers (MS-office)
- You should have some years of experience in administrative or secretarial work.

We are offering you a stimulating job in an international environment with many personal contacts both internally and externally.

Contact: Knut Johansen, Manager of EMI, phone 719 0962 or Johanna Busk, Programme Administrator, phone 719 8599. You can also see us on Internet. The address is <http://www.lme.ericsson.se/lmem/>. Please send your application, not later than December 15, 1995 to Telefonaktiebolaget LM Ericsson HF/LME/P Per Svahn 126 25 STOCKHOLM

Ericsson Radio Systems AB, Kista

STRATEGIC MARKETING SUPPORT - ASIA PACIFIC

In market operations Asia Pacific (LN), we have a strategic marketing support function with two new positions. One in the area of pricing and one in business intelligence. Our main areas of responsibilities are; n To support LNs marketing organisation in the tender negotiation and contract activities with information such as; price analysis, price recommendations and competitor information.

- To cooperate with RMOGs central strategic market analysis and commercial support unit, LM/U, and other MO-units.
- To coordinate the business planning within LN.

Applicant should preferably be experienced in marketing and pricing of cellular systems. Alternatively an academic degree in technical marketing. Good verbal and written English.

Contact: Ulrika Andersson, phone 08-757 36 09. Send your application to: KI/ERA/LNH, Carin Kasberg, memoid ERA.ERACASA

Ericsson Radio Systems AB, Kista

Within RMOG we are now establishing a new unit, Support Resource Agency. The units responsibility is to support our market operations units and local companies world wide in their efforts to secure personnel resources within the area

operations RMOG. Today we are two co-ordinators and we are now looking for a

HUMAN RESOURCES CO-ORDINATOR

with feeling for administration.

You will be responsible for our database of personnel and for the order and co-ordinator process. We are in a starting up phase why we are looking for an energetic person who have administrative solutions in order to meet the expectations of high qualities from our customers. You will also help us to build up and support a big contact net world wide. Therefore you have good communication skills and good knowledge in English.

Contact: Lars Ander, phone 08-404 5252 Thomas Eriksson, phone 08-404 5251. Send your application to: Towa Raak, Ericsson Radio Systems AB, 164 80 STOCKHOLM

Ericsson Radio Systems AB, System Support RMOG, Kista

GLOBAL SUPPORT MANAGERS

Within customer services and support, the unit Global co-ordination for Digital System (GSM, DCM, PCS) has the responsibility for global co-ordination of the Ericsson Support Offices. This includes tools, quality, strategies and training requirements.

We are looking for senior people with experience from design and/or supply and support (ESO/FSC management) of software. We prioritise people with Ericsson experience and are working in local companies external of ERA.

Your task will be to manage and co-ordinate our Ericsson Support Office (ESO) which is our second line support organisation. This includes establishing and following up goals regarding lead-time, quality and cost. ESO's are controlled by steering group meetings of which you will be the chairman. You will also be responsible for ESO strategies, guidelines for ESO's, requirements, co-ordination towards design, agreements between RMOG and MLC/ESO's and competence development as a member of the ESO Global management team.

Your mission is to help create a global support organisation that promotes customer satisfaction and is cost efficient. You will have an indirect responsibility for roughly 100 people situated all over the world. In order to execute these responsibilities, extensive travel can be anticipated.

Contact: Sören Ahlstedt tel 08/7570963 Memo ERASA, Neal Hoffman tel 08/7570750 Memo EXTR.QRANEAL or Dag Ribsskog Memo EXTR.QRADRIB. Your CV is to be sent to Charlotta Steen, Human Resources tel 08/4042807 Memo ERACHAS.

Ericsson Radio Systems AB, Kista

SERVICE MANAGERS

RMOA Strategic Service Product Management are looking for Service Managers who can take responsibility for the Service product provisioning and the Supply management.

Operational experience of NMS specific or O&M in general is required for the position. Operator experience is appreciated. Ambition to develop as a Leader is a must. The work entails international contacts and travel.

Contact: Hans Cervin, phone 08-757 2803, Memoid ERA.ERAHACE. Send your application to: Britt Bosrup Ericsson Radio Systems AB 164 80 Stockholm. Memoid ERA.ERABUP

Ericsson Radio Systems AB, Mobile Services Switching Center (MSC), Kista

PRODUCT MANAGER

Business Unit Cellular Systems - American Standards (RMOA) offers products for PCS networks in the 800 and 1900 MHz frequency bands based on the digital D-AMPS standard. Our products are successfully being deployed in several countries in North and South America, Asia and Oceania.

We have a position open as Product Manager for MSC (Mobile Services Switching Center). As such, you will be responsible for both the application and the AXE 10 platform.

As Product Manager you work with consolidation of market requirements, product strategies, sourcing, business cases, life cycle management, and customer presentations.

You have an academic degree, a general telecom background and good AXE 10 and/or cellular knowledge. The work entails international contacts and travel.

Contact: Magnus Isaksson, tel 08-757 2678 (ERA.ERAMIN). Send your application to: Britt Bosrup AH Ericsson Radio Systems AB 164 80 STOCKHOLM Memoid:ERA.ERABUP

Ericsson Telecom AB reinforces and searches for future PRODUCT MANAGERS

Product Management and its responsibilities form one of the cornerstones of our new organization. To secure our next generation of competent Product Managers, Ericsson Telecom will be carrying out a job-rotation program. We are now searching for 15 to 20 candidates for a comprehensive in-house training program. Broad training will be sandwiched with varied practical work experience in Sweden and internationally. The program starts in February 1996 and runs till the end of the year.

You will be employed by one of our Product Management units. This will be your home unit during the program, and afterwards you will continue as a Product Manager. You will have a mentor, most likely belonging to the same unit. Your tasks may vary depending on the responsibilities of your assigned unit, and of course depending on your interests and abilities. There is wide spectrum of work content within Product Managements - it covers the tasks of businessmen, innovators and product specialist, such as:

- Translate customer and market needs into viable products, and develop marketing strategies for these products.
- Handle product requirements and make sure that they are fulfilled in tenders and other sales activities.
- Control and follow up products decisions over the whole product life cycle, from business opportunity tracing, product provisioning until product phase-out.
- Take complete product business planning responsibility by establishing product goals and strategies to secure product profitability.
- Protect our ideas and products by applying for selected patents, and by representing Ericsson influentially in international standardization committees.

Today you work in the Ericsson group, for example within construction/development, marketing/sales, testing or production. You have an expressed interest in working with broad product issues and with a business perspective. You are comfortable with both an overall and detailed perspective, persistent in the present, eager to have new experiences, and you are free from cultural limitations. You should also be representative and skilled in making presentations, enjoy team work and easily take the lead if necessary. As you might have imagined, we will pay special attention to your personal abilities and your interest in personal development.

Do you want to know more? Please contact Jarl Höglund, Project Leader, on telephone + 46 8 681 11 13 (memo EDT.EDTJRLH), Stefan Andersson, experienced Product Manager, on + 46 8 719 49 55 (memo ETXT.ETXSAN), Jens Andersen, experienced Product Manager, on + 46 8 719 63 33 (memo ETXT.ETXJEAS), or Ewa Brandt, Human Resources, on + 46 8 719 82 89 (memo ETXT.ETXEWAB).

We need your application sent to the following address:

Ericsson Telecom AB
TN/ETX/X/H Lena Averin
S-126 25 Stockholm, Sweden

ERICSSON 

Ericsson Telecom AB, BU Switching and Network Systems, GPLM-Switching

BUSINESS MANAGER

Do You enjoy working with the markets and do You want to make sure that BX introduces profitable AXE 10 Systems to our customer? We have two open "Business Manager" positions for the network expansion markets in Central & Latin America, Middle East, Africa, Asia and Eastern Europe.

As "Business Manager" You take responsibility for:
 ■ Business Planning and input to Ericsson Strategic Planning
 ■ Business Strategies: Roll Out Directives, Product Substitution Strategies, Pricing & Product Marketing Strategies etc

■ Business Opportunity Tracing: To define best possible business and products for BX and the markets
 ■ Decisions on new AXE system issues.

You will be working in close cooperation with other Business Managers, Market Responsibles, Product Marketing and Product Management.

You have an M.Sc or MBA (or equal) and you have an entrepreneurial personality. You have experience from marketing or account management and/or product management.

Contact: Magnus Rosenblad, 08-719 0531, memo ETXT.ETXLMR, Business Management Network Expansion or Kerstin Halén, 08-719 2054, memo ETXT.ETXKER, Human Resources.

Ericsson Telecom AB, Switching & Network Systems, Customer Services - Consultancy Services

NETWORK OPERATION

One of the new business ideas at Customer Services is to sell Network Operation to Operators. This means that Ericsson will take care of technical operation and maintenance on behalf of the operator.

This is really a challenge to Ericsson - only a first class performance is good enough! To develop the concept we need product managers who are business oriented and who has experience from network operation of AXE-networks including Network Management Systems as well as Customer Care- and Billing Systems.

As a product manager you must be capable of discussing network operation issues from a technical and business point of view.

You will work in an international environment in close co-operation with sales and marketing people as well as service provisioning and supply units. Our business language is English.

The job position offers you travel opportunities when visiting customers at Ericsson local companies world-wide.

If you find such a job challenging, please give us a call and we will explain what it is all about.

Contact: Ole Jörgensen, telephone +46 8 719 3135, memo ETXT.ETXOBJ.

Ericsson Telecom AB, LDC Systems Design and Integration, TN

PROJECT SYSTEMS MANAGERS for our BM/FM Projects

During 96, we will have several major projects for local and transit applications on-going. Therefore we need to strengthen our organisation.

As Project System Manager you will be part of the system group that is responsible for System Study/Analysis during the Pre-/Feasibility Study of our development projects. The system group is also overall technical responsible during the execution phase.

You will be working in the system management organisation at our unit, where we work with the system as a whole, i.e. the GAS (Global Application System) is the product we deliver.

We expect you to have several years of AXE experience, have worked in large development projects and preferably be familiar with the AM (Application Modularity) architecture. You use English with ease and like to work together with other people.

Contact: Monica Swensson, 08-7194721, ETXT.ETXSWE or Susanne Borg, Human resources, 08-7196575, ETXT.ETXSUBO

Ericsson Radio Systems AB, Kista

Product Managers Radio Access Network

Business Unit Cellular System - American Standards (RMOA) offers products for PCS networks in the 800 and 1900 MHz frequency bands based on the digital D-AMPS specification. Our products are deployed in most parts of the world including north and south America, Asia, Oceania as well as Europe.

We are now looking for product managers to direct the

further development of access network products. You will be working with analysis of market requirements and competitors, definition of development strategies in product plans, ordering of R&D activities in our own organisation as well as at ETX and with external suppliers. Activities are carried out cooperation with our world wide marketing and development organisation.

1. Product Manager - AXE Related Products

You will be responsible for AXE related products in the radio access network including transport network products as well as processors and interfaces in the base station. This position requires experience from AXE and/or transport network products.

2. Product Manager Radio Network Functionality

You will be responsible for the defining of product- and development plans for air interface functions together with our system experts and marketing organisation. This position requires experience from product/project management, system design or similar.

You should have an academic degree and a background from telecom or cellular.

Contact: Ulf Hagström, ERAFLU, 08-757 02 24. Your application should be sent to: ERA/A/AH Britt Bosrup, Ericsson Radio Systems AB, 164 80 STOCKHOLM (Memo:ERA.ERA-BUP)

Ericsson Radio Systems AB, Kista

Project Manager - Product Deployment

The ERA Product Deployment group is responsible for the rapid integration and global deployment of new products into RMOA markets outside of North America. Project managers within the group are responsible for coordinating activities required to introduce new products to non-North American markets, the first office application (FOA) of these products in each of the major market regions and the subsequent global deployment. Project managers work closely with the LMC development project team as well as the technical assistance centers (TACs) located in Mexico City, Melbourne and Dublin.

A minimum of three years technical experience with AXE, excellent written and spoken communication skills in English and the ability to manage diverse activities in many geographical locations are required. Prior project management experience and a knowledge of cellular would be an advantage. You should be able to prioritize and take decisions under pressure independently and you should have a bachelor degree in either engineering, telecommunications or equivalent.

Contact: Glenn Wong (ERA.ERAGLWO), 46 8 404 2740. Please send your application to: KI/ERA/AH Marianne Molin, Ericsson Radio Systems AB, 164 80 Stockholm

Ericsson Telecom AB - Core Unit Basic Systems

TOTAL PROJECT MANAGER FOR THE APZ-ODEN PROJECT.

We are looking for a Total Project Manager for the APZ-ODEN project.

The purpose with the APZ-ODEN project is to develop a new Central Processor for AXE 10 (APZ 212 30). The work will be done in co-operation with some Local Companies (EPA, EED, and EKA) and the time schedule is very challenging.

In order to manage this challenge you must be quick to take initiative, easy to co-operate with and not be afraid of a new way of working.

Organizationally you will be located in the project office within Core Unit basic Systems, but you will be responsible for the project towards the Steering Group.

A Project Manager on Master level, according to MKY, is required for this position.

You are needed now, since the project will soon reach TG2 and we want you to take part in planning for the future of the project.

If you want to work with Project Management on this level, this is a great opportunity that you should not miss. The demand for this product is great and you will work in an organization with a lot of technical competence.

Contact: Bernth Gustavsson, tel. 08-719 1123, ETXT.ETX-BEGU; Mats Bjerlöv, Human Resources, tel. 08/719 9675, ETXT.ETXBJEL

Ericsson Telecom AB, Switching and Network Systems, AXE Provisioning

TOTAL PROJECT QUALITY MANAGERS

You will work in the staff of the total project manager and report directly to him. Your task is to prepare, implement and do follow-up of the project quality plan. This also includes follow-up on the sub-projects quality plan in co-operation with the sub-project quality managers.

You should have a MSC degree in quality engineering or equivalent. Experience from AXE software development, PROPS and quality work in projects is an advantage.

Contact: Mikael Roth ETXT.ETXPMR + 46 8 719 1871 Susanne Borg ETXT.ETXSUBO + 46 8 719 6575 Personnel

CONFIGURATION MANAGERS

You will work in the staff of the Total Project Manager and report directly to him. Your task is to prepare, implement and do follow-up on the project configuration management plan. This also includes follow-up on the sub-projects configuration management plans in co-operation with the sub-project configuration managers.

You should preferably have a MSc in engineering or equivalent. Experience from AXE software development, PROPS, and configuration management in projects is an advantage. It is also an advantage if you have experience from Ericsson administrative systems such as DELTA and PRIM.

Contact: Mikael Roth ETXT.ETXPMR + 46 8 719 1871 Susanne Borg ETXT.ETXSUBO + 46 8 719 6575 Personnel

ASSISTANT PROJECT MANAGER

You will work very close to the design project manager and report to him. The design project management will work as a team and some tasks can be fully or partly delegated to you.

You should have a MSc in engineering or equivalent. You must have experience from project work, which could have been gained from management of small projects.

Experience from AXE software development, our design project development process (MEDAX) and PROPS is an advantage.

This could be an opportunity for young candidates that feels ready for a challenge and the next step in their management development.

Contact: Mikael Roth ETXT.ETXPMR + 46 8 719 1871 Susanne Borg ETXT.ETXSUBO + 46 8 719 6575 Personnel

PROJECT MANAGER

You will lead one of the largest project within the total project. You report directly to the Total Project manager and is also a member of his management team. Your task is to do

all planning, build-up and implementation of your project. You must act as a coach for your management team and for the sub-project managers that reports to you.

You should preferably have a MSc in engineering or equivalent, but most important is your professional background and management skills. You must have project management experience, which could have been gained from sub-project management. Experience from AXE software development, our design development process (MEDAX) and PROPS is a great advantage.

Contact: Mikael Roth ETXT.ETXPMR + 46 8 719 1871 Susanne Borg ETXT.ETXSUBO + 46 8 719 6575

ORDER OFFICE MANAGER

You will work close together with one of the manager at the project office. Your task will cover the whole operation of the design centre. Your task can be specified as:

- establishment of the order office
- implementation and development of the order process
- handling of all incoming assignments
- support all units with opening and closing of assignments
- support in contract preparation of short term loan of personnel
- handling of the design centre's selling of products

You should have 3-4 gymnasium or equivalent. Good PC experience and knowledge of Ericsson administrative systems is a requirement. You must also be able to work independent and take own initiative.

Contact: Mikael Roth ETXT.ETXPMR + 46 8 719 1871 Susanne Borg ETXT.ETXSUBO + 46 8 719 6575 Personnel

Interactive Network & Services (INS)

INS BUSINESS AND PRODUCT MANAGERS

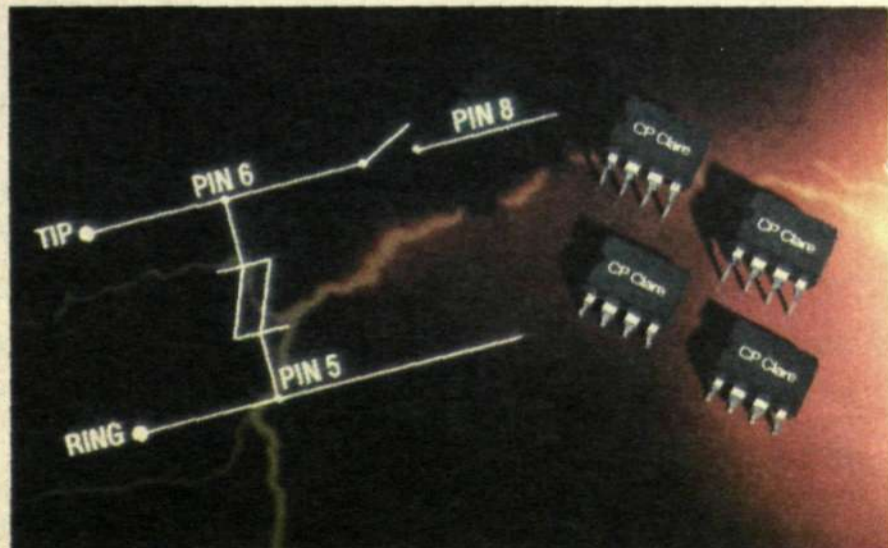
Interactive Network & Services (INS), is looking for individuals that can add value to the work within an international dynamic environment close with customers (external/ internal), products, subcontractors and partners.

- Working with Business Management you will be
 - Responsible for consolidated profit and marketing support to a number of markets worldwide including sales support, presentations and product communication.
 - Developing market plans in co-operation with our sales

CP Clare launches an integrated solid state surge arrester and solid state relay

CP Clare Corporation (NASDAQ:CPCL) Solid State Products, a recognized world leader in the semiconductor and electromagnetic relay marketplace, has released the PLCA110. The PLCA110 is an integrated solid state surge arrester and solid state relay housed in one 8 pin DIP package. The solid state surge arrester is designed for secondary telecom line protection, Meets FCC Part 68 (non-repetitive surges 10/560ms, 100A peak and 800V), is compatible with VDEO433 (non-repetitive surges 10/700ms, 50A peak and 2000V), provides breakover voltages (238-340V) and zero degradation with repetitive surges. The solid state relay provides the hookswitch/dial pulse function with electrical parameters up to 350V, 35 Ohms and 120mA blocking. The PLCA has been confirmed to meet FCC part 68 by Dash Strauss & Goodhue, Inc. Input/Output isolation of 3750 Vrms is available as well as surface mount and tape/reel packaging.

For more info and samples, please contact one of our sales offices:



CP Clare CORPORATION

ASIAN SALES OFFICE
 Room N1016
 CHIA-HSIN Building II
 10/F, NO.96, Sec.2,
 CHUNG SHAN NORTH ROAD
 TAIPEI, TAIWAN, R.O.C.
 Tel. n°: + 886.2.523.6368
 Fax n°: + 886.2.523.6369

EUROPEAN SALES OFFICE
 OVERHAAMLAAN 40
 3700 TONGEREN
 BELGIUM
 Tel. n°: + 32.12.390400
 Fax n°: + 32.12.390419

NORTH AMERICAN SALES OFFICE
 601B CAMPUS DRIVE
 ARLINGTON HEIGHTS
 ILLINOIS 60004
 USA
 Tel. n°: + 1.708.797.7000
 Fax n°: + 1.708.797.7023

channels including sales forecast and activity plans for the markets you are responsible of

■ Managing market solutions on products and services including the initialising of market specific design, verification and support activities.

Or working with Product Management you will be.....

■ Responsible for parts of the INS product portfolio regarding profit, opportunity tracing strategies, product plans and customer presentations.

■ Project sponsor responsible for product requirements, interface to our development organisation as well working with business cases for new products and services.

■ Interface towards subcontractors, partners worldwide and other product management organisations within Ericsson in order to effectively support necessary products and services.

In order to succeed in this job you must have.....

■ Good knowledge of Telecom and/ or Datacom.

■ Good English language skills.

■ Experience from product management or marketing & sales.

■ Good communication skills both verbally and writing. Further more, it's importante that you have a structured way of working, are open minded and take initiatives in your daily work.

Contact: Johan Sandberg (08-7193244) or Jens Andersen (08-7196333). Please send application to ÅT/ETX/X/UO att: Beatrice Hagström.

Ericsson Telecom AB, Marketing Asia & Pacific, Telefonplan

PRODUCT MARKETING - MIDDLE EAST

Join a proactive, multi-national team in a rapidly changing environment! The emphasis is on customer awareness, technical skill and an ability to communicate. Promotion or an even better job after two-three years is the norm. Our current team is very experienced.

You will have an opportunity to work with the complete Switching and Network Systems product range, although some specialisation is expected. Two vacancies exist in Stockholm, one in United Arab Emirates.

Education on a University level is required. Fluency in Arabic will impress but is not essential.

Contacts: Patrick Duffy, 08-7190502, Memo ETX.ETXDUFF or Ann Jingkev, 08-71983404, Memo ETX.ETXANN

Ericsson Telecom AB >LDC Systems Design and Integration, TN

ISP CO-ORDINATOR

In Service Performance (ISP) is increasing in importance as the telecom world market changes rapidly. At BU Switching and Network Systems there is a focus on improving the performance of AXE 10. Ten strategic markets have been selected, among them are Switzerland, Australia, Mexico and Norway.

We at GAS Performance are now looking for experienced testers who would like to move on to a more market oriented position. As responsible for ISP at selected markets you will run the ISP improvement work on 3 selected markets. The work implies cooperation with units within the BU and with Ericsson companies worldwide.

You are the driving force for the ISP improvements in your markets. The position is similar to a project manager. You find it easy to co-operate with people and your English is good. A certain level of assertiveness is important and you should have a minimum of two years AXE 10 testing experience. It is an advantage if you have worked with customer support.

Contact: Anders Silver, 08-7192884, memo ETXT.ETXASIL or Susanne Borg, Human resources, 08-7196575, memo ETXT.ETXSUBO.

Ericsson Telecom AB, Systems Design and Integration.

ISP COORDINATOR

In Service Performance (ISP) is increasing in importance as the telecom world market changes rapidly. At BU Switching and Network Systems there is a focus on improving the performance of AXE 10. Ten strategic markets have been selected, among them are Switzerland, Australia, Mexico and Norway.

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Contact: Anders Silver, 08-7192884, memo ETXT.ETXASIL or Susanne Borg, personnel, 08-7196575, memo ETXT.ETXSUBO.

Ericsson Telecom AB, Operations, Software Supply, Network Upgrades

IO SUPPORT RESPONSIBLE

We are looking for a person with competence in the area of IOG11 system handling and trouble shooting.

Our duty is to verify and implement software packages for new and modified Market Application Systems (MAS) to ETX markets. The unit also have a specific responsibility for Application System Replacements (ASR) and support.

We need to strengthen our competence in the IOG11 ; handling, support and trouble shooting areas. The job includes responsibility within Software Supply to handle, troubleshoot and support internal projects as well as customer implementation and support.

You should have experience from AXE10 testing and good knowledge from IO related handling and troubleshooting. You have the customer at focus and is willing to share your experiences.

Contact: Thomas Fagerholt, 98532, memo: ETX.ETXTFT, Crister Carlzon, 93364, ETX.ETXCECA or Human resources Mikael Lundgren, 94332, ETX.ETXDOLF.

Ericsson Telecom AB

MANAGER - SYSTEM VERIFICATION

We at System Design and Integration are looking for a person to fill the position of System Verification Manager at our Local Design Center. The Systems Design and Integration unit's Local Design Center bears overall responsibility for the technical development of Global Application Systems (GAS) within Business Unit Switching and Network Systems. In this position, you will be working in a new organization

in which cooperation and team spirit are important factors. You will be responsible for 10 to 15 staff members, besides being personally accountable for your own budget. In addition, as a member of the unit's management team, you will share responsibility for, and help to develop, the unit's strategy. The person we seek is someone who is an experienced manager, and who has the ambition and the drive to develop further in that direction. We also believe that you are interested in competence development and improvement work.

Contact: Leif Stensson, 08-7199264, memo: ETXT.ETXLEST or Susanne Borg, Personnel, 08-7196575, ETXT.ETXSUBO.

Ericsson Radio Systems AB, Kista

MANAGER CUSTOMER SERVICES , ASIA - PACIFIC

To the business unit Market Operations Asia-Pacific a new unit will be created which will be responsible for the Customer Services within the region. The unit shall work with the Customer Services products defined by RMOG/LY. The new unit shall:

- Support the core 3 teams in the marketing and sales of these products. - Define the implementation of the sold services. - Create strategical plans for these products in the region. - In the budget process estimate the needs of the services. (secure the resources) - Create all contracts towards customers and organisations supplying the customer services. - Consolidate the customer service business within the region. - Support the local companies in organisational discussions , recruitment and implementation of these services. - Follow up all assignments and processes related to the customer services within the region. - Present the operational status of all NMT , TACS and GSM systems in the region.

The manager for this position should have : - A CME20 system experience. - A good knowledge of the organisation behind the customer services. - A good knowledge of the customer services products. - The experience from a local company where these services has been requested and been implemented.

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NEXT STOP – NUREMBERG

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Madras, which lies in the state of Tamil Nadu in southwestern India, has a population of six million and is the third largest port city in the country. Shown is the Madras Art Museum. Photo: National Tourist Board of India.

Mobile system on-line in Madras

At a busy intersection in Madras, a man standing on a scaffolding in front of a large outdoor advertising sign is painting a scene of an Indian making a call on a mobile telephone. The accompanying text announces that RPG Cellular Services Ltd has placed its mobile telephone system in operation in Madras.

Installation and start-up of this GSM system has proceeded very rapidly. Three months after the contract was signed it was possible to call from one mobile phone to another and one month later the system was in commercial operation.

"In the first phase, the net comprises 26 radio base stations, with a capacity for 15,000 subscribers and this covers Madras and the two main roads to the south," relates Rezaul Karim, project leader at Ericsson Telephone Corp. India AB (India Branch) in Madras. Rezaul, who previously worked at Ascom in Switzerland, moved to Madras in July, followed by his wife and two children three weeks later. They will remain in India for two years.

Like Rezaul and his family, Ericsson Telephone Corp. India AB is new to Madras. The office is located in the premises occupied by Ericsson Telecommunications Ltd, EIL, in Madras.

Mr. R. Rangarajan, manager of the regional office, joined Ericsson six months ago. He was previously manager of Indian Telephone Administration in Madras.

"At the moment, there are only three of us in the regional office, but by the end of the first quarter of 1996, we will number 16," he relates. The personnel working with mobile telephony are in addition to this number.

"Today, there are two of us on long-term contract and two more are needed," says Rezaul. At the moment, there are several Swedes employed on short-term contracts, four supervisors from Ericsson in Malaysia and about 20 contracted personnel.

Next day

The operator RPG Cellular Service is a consortium, including the Indian company RGP, American Airtouch and Vodafone of England. Airtouch carried out the cell planning for the project. The operator acquired and prepared the sites.

"When the sites were prepared, we were under heavy pressure to install quickly. The customer wanted the job done by the next day, and we did it. Sometimes, we worked day and night," Rezaul relates. When the time is so "tight", the deliveries to Madras must be on time and all the paperwork must be correct so that there are no delays clearing Indian customs.

There are two GSM systems in Madras, operated by RPG Cellular and its competitor Skycell, in which Bell South and Millicom hold interests. Nokia is the supplier to Skycell. RGP has the most base stations of the two systems and, accordingly, the best coverage.

There are six million inhabitants in Madras and only 350,000 telephone lines. There is a long waiting list for a telephone. The average income is higher than in other



"We are satisfied with the Ericsson equipment," says Mr. K. Krishnan, head of RPG Cellular Service.

Indian cities and many could afford to have a telephone if there were more lines available.

Movie stars

Mr. K. Krishnan, head of RGP Cellular Services Ltd, is satisfied with Ericsson's equipment and foresees a promising future for the GSM system. The commercial start-up was preceded by heavy marketing activities.

Madras is the "Hollywood" of southern India, with several large film studios and many movie stars.

"In addition to businessmen, this is an attractive customer group," explains Mr. Rangarajan. A movie star earns up to SEK 2.5 million (nearly USD 400,000) per film which, with three or so films a year, adds up to tidy fortune. In addition to the convenience of calling on a mobile, these movie stars also perceive the mobile telephone as a suitable accessory to reinforce their image.

Gunilla Tamm

END
LINE
LARS-GÖRAN HEDIN



Use the instruments!

Being the editor of Ericsson's in-house newsletter is exciting work. At times, the pace is just as hectic as the news desk of a "real" newspaper. It seems that, more often than not, major decisions are being made immediately prior to going to press or just after. However, with the help of modern publishing methods and a flexible organization, we then have the possibility of rapidly revising one or more pages so that employees receive the very latest news in Contact.

This issue is a prime example of how we can juggle printing schedules in a fashion that was inconceivable just a few years ago.

On Monday, the Swedish Quality Award was presented in Gothenburg. Contact was there – text and photo coverage is included in this issue, which was printed on Tuesday. The articles – including the president's comments – about the continuing turnaround within the Public Telecommunications Business Area was completed over the weekend and edited on Monday. All of this late material was originated in Swedish for the Swedish edition (Kontakt) and then translated for use in this English-language edition. The language editions were printed simultaneously on Tuesday.

The importance of the employees receiving information first-hand about major changes which affect their work situation is a main tenet of Ericsson's information policy. With the help of Contact – for more indepth coverage – and the electronic Ericsson News, we can meet this important goal. In the new corporate editorial office we have these instruments at hand. All you have to do is use them!

This leads us into another aspect of information. Naturally, it is inherent that the persons making these decisions have insight into the importance of conforming to this information policy. Therefore, it is pleasing to note that this is nearly always the case.

On several occasions during the past year, the timing of public disclosure about major decisions and changes was adapted in order to take advantage of using Contact as the message bearer! Such action is a real motivation for us on the editorial staff.