

# Contact

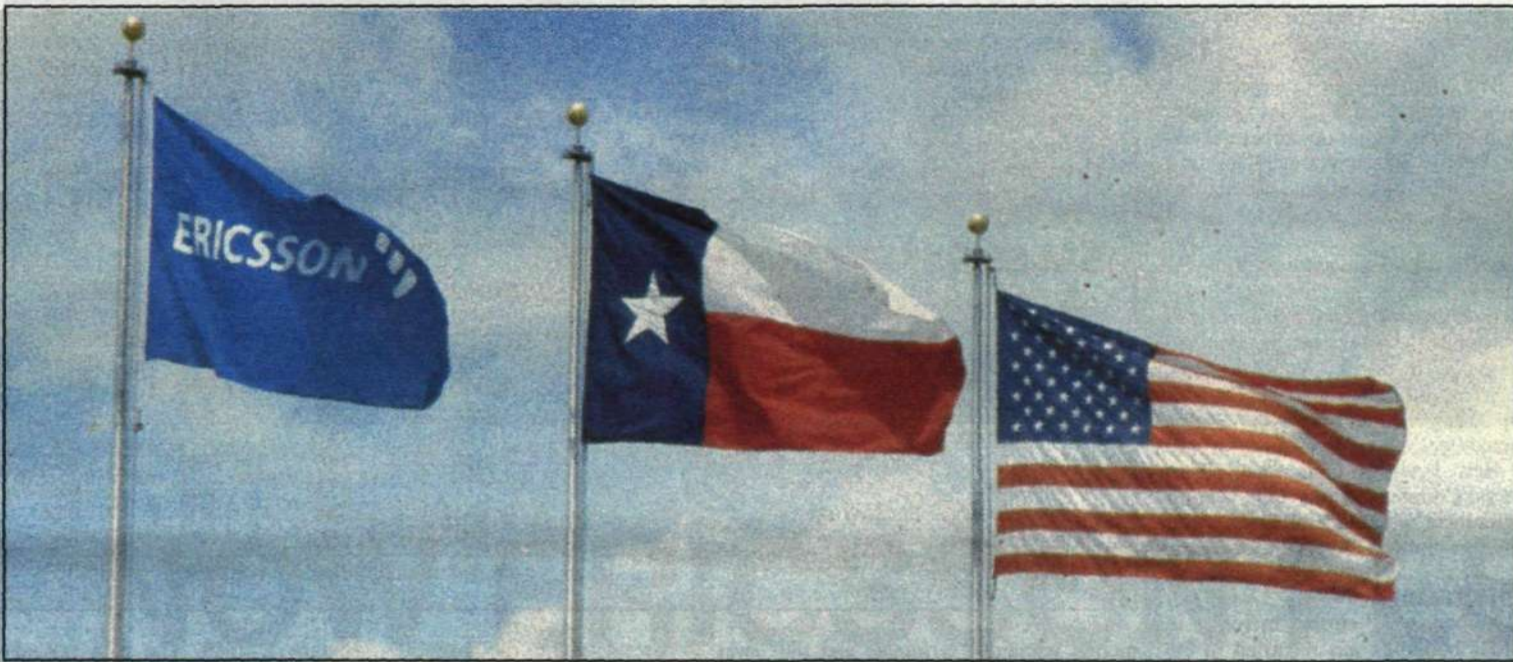
M A N A G E M E N T

No 9

PUBLICATION FOR ERICSSON MANAGERS WORLDWIDE

1989

## Breakthrough in the U.S. is cause for waving the flag



It was significant that Ericsson's breakthrough in the U.S. came within South Western Bell's territory where the 'home state' Texas is the largest state. The Texas flag is seen here between the U.S. flag and Ericsson's.

PHOTO: ALF ÖST

The American breakthrough was long in coming. When it finally arrived, it meant that we became volume supplier of AXE local stations for one of the Bell companies, South Western Bell. South Western Bell covers a number of states in the southwestern U.S.A., of which Texas is the largest.

Thus, one can say that the U.S. breakthrough was on "home ground," since it is in the Dallas suburb of Richardson in Texas that Ericsson has its main U.S. headquarters.

South Western Bell's area is so large that the contract in terms of significance can be compared with our breakthrough in Britain and in France a few years ago. Some 27 million people live within South Western Bell's area. That is as many as live in the Nordic countries combined. So now the flags wave proudly outside Ericsson's U.S. headquarters in Richardson.

On page 3-5, we retrace our history in the United States and the recent breakthrough there as well as taking a look at the global future for AXE.

### Ericsson is regaining the Norwegian market

By taking home a greater share of the large Norwegian offers, Ericsson Telecom is re-establishing itself in the country — but now with digital technology for ISDN and GSM.

The offers were presented on November 24. This is the result of hard work, where some 40 persons in our new subsidiary in Norway worked round the clock with input that occupied at least as many others in ETN and ETX.

Now it is only a matter of waiting to see what the Norwegian PTT will decide next summer. Meanwhile, ETN is working further with its interesting array of products, which in many ways complement our core product AXE.

### Ericsson forms company with Bang & Olufsen

Ericsson Telecom and Bang & Olufsen A/S, Denmark, have agreed in principle to establish a joint company for telecommunications. The basis of the new company is Bang & Olufsen's telecommunications division, Dikon Systems Division.

The new company will develop, produce and market telecom network products, complementary Ericsson's product program, and continue to develop Dikons product family.

"Ericsson employs about 500 people in Denmark. Over and above an increase by 50 engineers in 1988-1989 we wish to extend our industrial base in Denmark, and this cooperation with Bang and Olufsen suits us excellently," says Kaj Juul-Pedersen, Vice President, Ericsson Telecom.



### Intensive in Italy

October was an intensive month for Ericsson in Italy. There were SMAU, the large communications and office automation fair in Milan, and INTELEC, an annual conference in the field of power for telecommunications, which was held in Florence. At SMAU, Fatme presented a fully functioning communications model on the theme "Comunicazione Globale." Center



### Quality battle

After a campaign in connection with Ericsson Quality 1983-1986, Ericsson is giving new attention to quality.

The quality battle in the first place is one between different cultures and traditions.

Page 9.



### Mobitex in Canada

Last December, Mobitex made a move across the Atlantic. That was when ERA won a major order from Canada worth 100 million kronor. In the summer, the pilot project went into operation. At the end of the year, the first phase of network construction will be ready, covering Windsor, Toronto and Montreal and the large routes between the cities.

Page 12.

Continued positive development • Page 2



### President's comments:

### Continued favorable trend

It is gratifying to be able to note that the favorable trend of business we reported following the first six months of the year has continued, fully in accordance with our long-term estimates. The strongest growth continues to take place within our important systems areas, as a result of the strong and consistent efforts we have made over a period of years.

Our efforts to establish Ericsson's AXE system in the market for local telephone exchanges in the United States represent one such investment that is now beginning to yield results. We have now received our first volume order, from South Western Bell, one of the seven regional Bell operating companies. We have also been able to record continued success in marketing AXE for advanced special applications, most recently for use in an Ameritech intelligent network.

In the field of mobile telephony, systems keep expanding at a very good rate and we are maintaining our market share. The market for mobile data communications is also developing in a manner that is favorable to us. It is within the area mobile communications we will strengthen our position through the joint venture we recently formed with General Electric in the U.S.

Through the merger of the Cables and Network Engineering and Construction business areas, and the simultaneous streamlining of their operations, we are becoming stronger in these fields. While a certain improvement has been made, Defense Systems is a business area that still shows a loss. Steps to correct this situation are continuing.

We now have a successful nine-month period behind us. But this does not mean that we have relaxed in any way. We know that the competitive climate being created by continuing deregulation and the termination of monopolies will be increasingly severe. We are continuing our efficiency improvement programs without interruption, with a view to the competition and to assure the best possible platform in the likely event of a levelling off of the world economy.

We have all the prerequisites to be the leading international telecommunications company, and we will make the most of our opportunities. We will do this through continued persistent and forceful efforts in our core business areas.

Björn Svedberg

## SUMMARY OF INTERIM REPORT, NINE MONTHS

Consolidated sales for the first nine months of 1989 amounted to SEK 26,136 million (20,561 in the corresponding period 1988), and order bookings to SEK 29,485 m. (23,146) a 27 percent increase in both cases. Income before appropriations and taxes was SEK 2,320 m. (854), including capital gains/losses SEK -4 m. (7). Income per share after taxes paid and full conversion was SEK 33.57 (9.07). After paid and estimated deferred taxes on appropriations, after full conversion, income per share was SEK 30.58 (12.25).

The continued improvement in income during the third quarter was due primarily to higher operating income in Public Telecommunications and Radio Communications. These two business areas, combined with Business Communications, accounted for the greater part of the increase in sales for the nine-month period. Part of the improvement was attributable to lower net financial expenses. Business Area Defense Systems continued to report an operating loss, but some recovery was noted.

New business units involved in Radio Communications' joint venture agreement with General Electric are not consolidated in this interim report.

### Operations

A continued strong increase in order bookings was recorded in the systems areas, notably for mobile telephone systems. The important orders for AXE systems in the United States, recently signed by Public Telecommunications, are not included in orders booked for the period.

PUBLIC TELECOMMUNICATIONS showed a sharp improvement in operating income and a 35-percent rise in sales, compared with the first nine months of 1988. Order bookings were up 14 percent. Operations continued to develop strongly during the third quarter, primarily in Spain and Italy.

RADIO COMMUNICATIONS strengthened its favorable trend of earnings during the third quarter. Order bookings for the 9-month period rose 92 percent, and net sales 50 percent. Continuing successes were recorded in the field of mobile telephone systems in particular, while orders for

### TREND OF OPERATIONS IN BRIEF

SEK million except where otherwise indicated

	Jan-Sept 1989	Jan-Sept 1988	Change in pct
Net sales	26 136	20 561	+ 27
Order bookings	29 485	23 146	+ 27
Order backlog, end of period	29 996	26 589	+ 13
Income before appropriations and taxes	2 320	854	+ 172
Net income after taxes paid <sup>1)</sup>	1 402	384	+ 265
Net income after taxes paid and estimated deferred taxes on appropriations	1 272	522	+ 144
Number of shares outstanding, millions	40	38	+ 5
Adjusted net income per share after taxes paid, SEK	35,29	10,07	+ 250
— after full conversion	33,57	9,07	+ 270
Adjusted net income per share after taxes paid and estimated deferred taxes on appropriations, SEK	32,02	13,68	+ 134
— after full conversion	30,58	12,25	+ 150

<sup>1)</sup> Period's portion of estimated taxes paid for the full year.

### SALES BY BUSINESS AREA

SEK million	July-Sept 1989	July-Sept 1988	Jan-Sept 1989	Jan-Sept 1988
Public Telecommunications	4 486	3 735	13 496	9 998
Radio Communications	1 487	1 020	4 671	3 105
Business Communications	1 100	919	3 413	2 447
Cable and Network	1 209	1 350	3 831	4 189
Components	440	374	1 456	1 243
Defense Systems	483	401	1 986	1 637
Other operations	167	233	504	794
Less: Intersegment sales	- 1 128	- 1 078	- 3 221	- 2 852
	8 244	6 954	26 136	20 561

### SALES BY GEOGRAPHIC AREA

SEK million	July-Sept 1989	July-Sept 1988	Jan-Sept 1989	Jan-Sept 1988
Sweden	983	1 149	4 222	3 876
Europe, excluding Sweden	3 945	3 319	12 963	9 818
United States and Canada	652	508	1 889	1 601
Latin America	768	748	2 253	2 067
Africa	504	140	785	392
Middle East	177	271	862	622
Asia, excluding Middle East	561	334	1 502	834
Oceania	654	485	1 660	1 351
	8 244	6 954	26 136	20 561

mobile telephone terminals and the Mobitex mobile data-handling system also increased.

BUSINESS COMMUNICATIONS reported a distinct increase in operating income. A 30-percent increase in order bookings and 39 percent increase in net sales were due mainly to continued success for the MD110 business system, but also in part to operations transferred to business area. Order bookings of comparable units rose 24 percent, and net sales 22 percent.

CABLE AND NETWORK reported somewhat lower operating income and an 8-percent decline in net sales as a result of the sale of its road and railway signalling operations, and the divestment of cable operations in the U.S. Net sales of comparable units rose 20 percent. Order bookings during the period were down 4 percent, but the increase for comparable units

was 20 percent, due to the favorable trend of business for Ericsson Cables and Selga in Sweden, and for the network companies in Italy.

COMPONENTS reported a 2 percent increase in orders booked, while net sales rose 17 percent. Operating income improved.

DEFENSE SYSTEMS showed improved operating income but continued to post a loss. Net sales were 21 percent higher and order bookings rose 30 percent. The improvements are attributable to the business area's operations in Sweden.

### Financing

Net financial expense was SEK 168 m. lower. This was due primarily to the sharp decline in Ericsson's net interest expense as a consequence of the continuing positive cash flow. The equity ratio was 36 percent, an increase of 2 percentage points since

January 1, 1989. The gain was attributable mainly to the conversion of loans in Swiss francs and U.S. dollars.

### Capital expenditures

Consolidated investments in property, plant and equipment during the period amounted to SEK 1,475 m. (1,127), of which investments in Sweden totaled SEK 621 m. (455).

### Outlook

Following the continued favorable trend of business during the third quarter, income for the full year 1989 before appropriations and taxes is estimated to amount to slightly more than SEK 3,500 m. In comparison with 1988, it should be noted that fourth-quarter income last year included SEK 192 m. in compensation for the labor market conflict in Sweden.

## British Mobitex order at 255 MSEK

**Ericsson's British affiliate, Ericsson Ltd., has concluded an agreement with RAM Mobile Data Ltd. on delivery of a mobile data net, Mobitex, for Britain.**

The order value in the first stage is put at 255 MSEK. RAM Mobile Data Ltd. is a British affiliate of RAM Broadcasting Corporation in New York.

According to the terms of the contract, Ericsson will supply a Mobitex network nationwide reach

in Britain, RAM Mobile Data Ltd., which was granted a licence by the British Trade and Industry Ministry in June for operation of a mobile data communication system, will build a network covering a major portion of Britain and at least 80 percent of the population.

The system will use a 420-450 MHz band and will offer advanced data communications for mobile and transportable terminals. The target group will consist of users in the transportation sector (taxis, trucks, delivery services, buses and police)

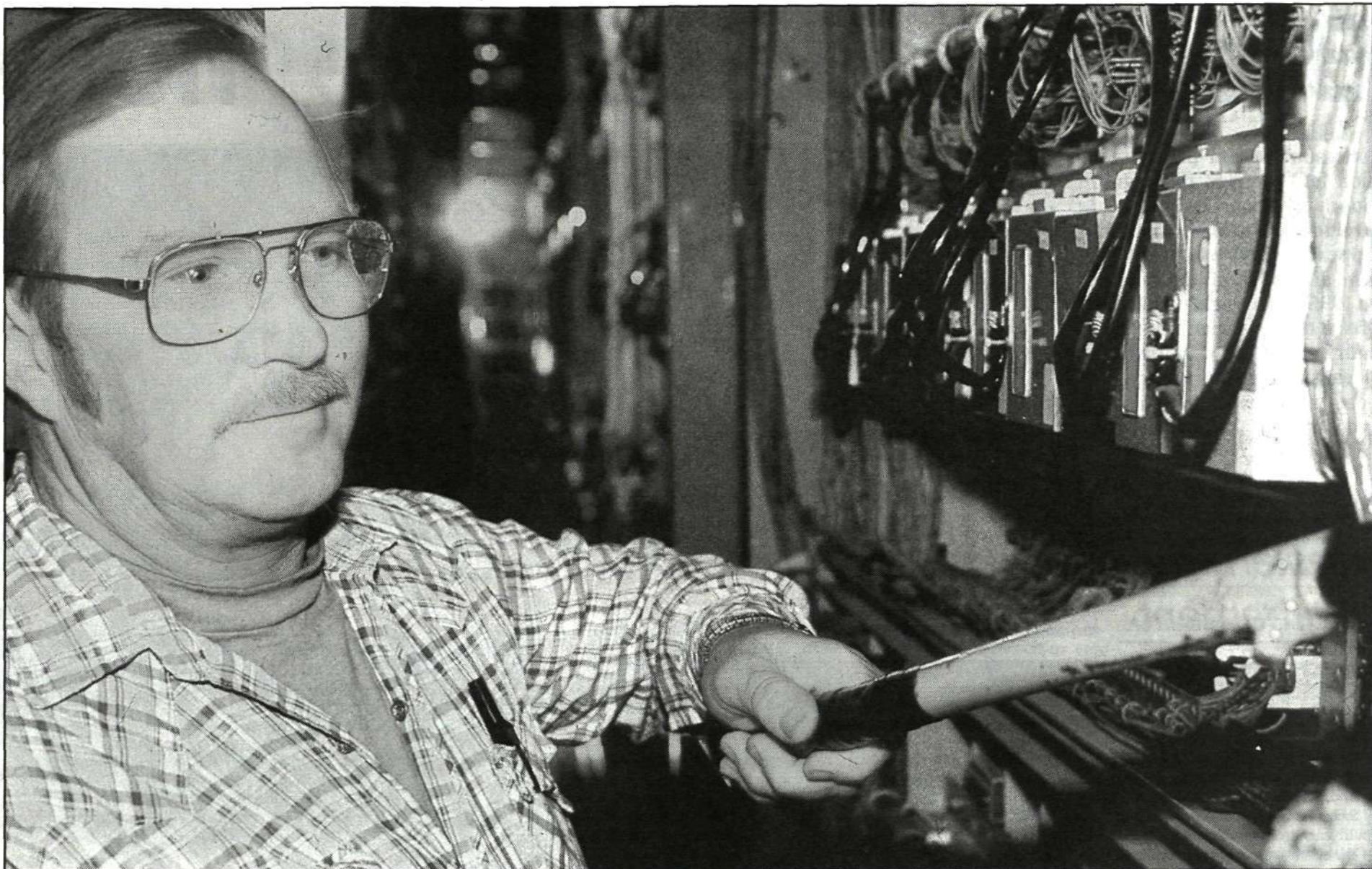
as well as users of mobile data base links such as service technicians and sales representatives.

Mobitex was developed by ERITEL, one of the companies jointly owned by Ericsson and Televerket (the Swedish PTT) and is already in operation in Sweden, Norway, Finland and Canada. Earlier this year, Ericsson signed an agreement with RAM for delivery of a land-based network in the United States.

"Mobitex will complement the excellent mobile telephone system in Britain by offering advanced data monitoring possibilities. We have

already observed a strong growing demand for mobile data communications in all of Europe, and this present agreement represents a breakthrough for Mobitex within the European Community," says Åke Persson, head of Ericsson's Mobile Data operations.

"We are very pleased with this agreement in Britain. Through the Mobitex networks in Britain and the United States, RAM has strengthened its position as an advanced communications system company and stands as the leading international operator of mobile data systems."



On November 14, 1987, Ericsson streamlined operations and gave a hint of what was to come. Here, the old cables are lopped off at the station in Canon City in Colorado as Ericsson's first American AXE station goes into operation. PHOTO IN U.S.A.: ALF ÖST

# NOW ERICSSON FLEXES ITS MUSCLES IN U.S.A.

Ericsson recently took a major step into the U.S. market when it signed a five-year agreement with South Western Bell.

The agreement means that Ericsson's breakthrough in the U.S. is a reality now, after nine years of hard work.

"This is a major milestone in Ericsson's achievements in the United States and gives us a position as an established volume supplier of telephone stations, says Leif Källén, newly appointed director for Ericsson North America Inc.

"Our modern history in the United States began at the end of 1980, when a first attempt was made to sell AXE for a long-distance network for Southern Pacific Communication, which was already a transmission customer for Ericsson.

We did not get the contract that time, but we maintained contacts with the long-distance company during 1981.

One of the companies we worked with was MCI, and it was with them that we won our first order, in 1982, for two switches for long-distance traffic.

The stations were built at first for national traffic, but before they went into operation it was decided that they should be extended to international stations. They went into operation in 1984.

That same year, we expanded our offices in Richardson, where we had a construction office since the MCI business in 1982. There, work was also done on AXE development for mobile telephony. Before that, marketing of AXE was handled from California through the company grouping Anaconda-Ericsson, which, from the start, was geared primarily to the transmission, cable and PBX markets.

## Mobile telephony in Buffalo

In this context, we should not forget the historic AXE business connected with mobile telephony, which got its start in April 1982. The Buffalo order was first in this respect.

That, nevertheless, is a chapter in itself in the success story that gave Ericsson a 23 percent market share in the U.S., plus close to 50 percent in Canada. With our new head office in Richardson, we continued to offer AXE to MCI and won business to increase and expand up to three international stations.

In conjunction with the deregulation in 1984, we began to offer local stations to the Bell companies, so-called Class 5 offices.

We staged a "Road Show" to present AXE and Ericsson for the seven Bell companies that resulted from "the divestiture."

US West was the first for which we arranged a local office in Denver, Colorado. Mike Margolis, who became manager there, is still in the job.

We were also in Greenwich, Connecticut, where we had our main office during the Anaconda-Ericsson time (near Nynex's main office).

We received the first local station contract from Mountain Bell, a subsidiary of US West. This was for a station in Canon City, a small place on the edge of the Rocky Mountains with some 20,000 inhabitants.

The station, which was to have about 10,000 lines, was set into operation amid great pomp on November 14, 1987.

We later made a fine showing with this station, when it was moved in the station locale while still in operation — with a so-called Hot Slide.

In 1987, we also won an Idaho contract with the same Bell company and even a test station for Nynex, the Bell company whose territory included New York.

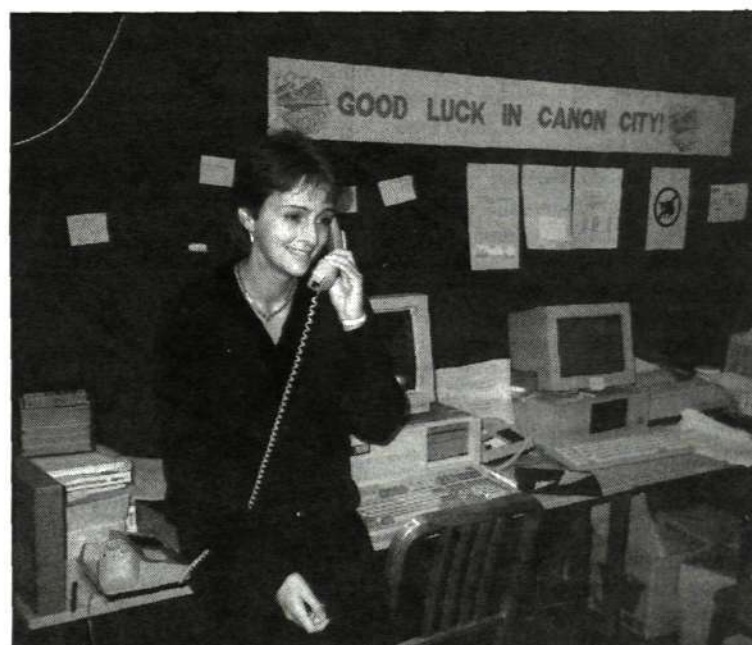
## Station for Manhattan

It was New York Telephone that wanted a station at its locale in Manhattan (140 West Street).

We also sold an IMAS-switch to New York, a station for, among other things, mass information, which generated huge revenues for the operating companies.

From the end of 1987, we also had a contract for STP (Signal Transfer Points) in Denver and Phoenix. Later, there were STP stations for Bell South and U.S. West.

In total, before the present contract with SWBell, we are up to more than a



Birgitta Mossler, testing manager, was tired but happy, as she confirms that the first large AXE step in the U.S. had gone well.

million lines, including mobile telephony. In pure local station installations, we are up to 170,000 AXE lines.

Since the agreement in principle

with SWBell did not publicize details, we do not know how many we will receive of the total 425 stations to be replaced.

Alf Öst

**The big American breakthrough — OVER!**

# Breakthrough on the 'home

Ericsson's recent penetration into the U.S. through South Western Bell is a prelude to the '90s, which appears very promising. The aim is 7.8 million lines in 1995 and a world market share of 15 percent. But a number of new market breakthroughs are foreseen in an ever tougher competition for world markets.

## South Western Bell agreement - a prelude for the '90s

And so, the breakthrough in the U.S. has finally happened. With the multiyear agreement on supplying one of the seven large regional telephone administrations in the U.S., South Western Bell, Ericsson's attempt to penetrate the American market is now paying off.

The volume and order has up to now been kept secret, but the agreement is as significant when Ericsson broke through into Britain and France a few years ago — so large is each and every one of the Bell companies in the U.S. "In effect, the agreement will have even larger strategic value," says Jan Stenberg, president of Ericsson's largest business area, Public Telecom, with some 18 billion kronor in sales annually and with 33,000 employees.

### Nimbus, quality image

"It gives us legitimacy in connection with further penetration into the other Bell companies. For some time now, Ericsson has been the foremost global player on the market, but now we have a global nimbus and a quality image that is totally unique in this branch.

The American breakthrough has cost blood, sweat and tears. The strenuous endeavours are proof of increased confidence in Ericsson's long-term plans and "staying power," as the American say, that is the stamina to work against the odds.

It is now five years since the U.S. investments were made on a large scale. The result has been long in coming. And Jan Stenberg is the first to recognize that there were mistakes.

"We did not envision all the problems that we would encounter and in certain instances this was self-induced through a much too basic planning and sometimes an unprofessional follow up. But we have now resolved these issues. It has cost time and money and we are one to two years into our original planning.

"We have found precisely the demanding customers that we expected. But we did not envision how unusually hard our American competitors would hit back in a pricing battle."

Only a few years ago, the group's penetration into the U.S. was marked



From the relay's noisy hum to the gentle electronic ticking. Bo Nilsson, sales manager for Ericsson's AXE in the U.S., takes a final stroll through the old U.S.-built relay station in Canon City on November 14, 1987.



A historic conversation on the U.S. network. Jan Stenberg, president of Ericsson Telecom, makes the first call from the AXE station in Canon City to Björn Svedberg on a Swedish morning.

by losses. But this is not a matter of huge sums. Stenberg rounds out the figure to some 100 Mkr a year at this point.

"That does not even amount to 5 percent of our profits and that is besides market investments, outlay that is invaluable. Not only for the U.S. but for the entire world market, which often picks up on American trends some years later.

Stenberg sheds no crocodile tears at the fact that price levels in the States have been depressed as a result of market penetration by Ericsson, West Germany's Siemens and Japan's NEC.

### To live with

"The price downturn at most affects a small percent of our total volume, while it hits in large part total volume of 5-6 million lines, with AT&T and Northern Telecom. That's a price level we have to learn to live with."

The breakthrough in the U.S. came at the eleventh hour, in a decade that proved to be one of the most turbulent for the company. The huge data investment, hand in hand with the U.S. penetration, strained the company's resources, from management capacity to liquidity, and triggered a minor crisis in the mid-80's.

But a solid regrouping around the company's core, its telecommunications system, with mobile telephony and the MD10 private switch, the sale of its computer operations and an improved demand in the telecommunica-

tions markets like Britain and France provided impetus for work. Now, 1989 promises to be a brilliant year.

### On the threshold

As such, Ericsson Telecom stands on the threshold of the '90s, better equipped than ever, as far as markets are concerned, and moving full speed ahead in developing products for the nineties.

And what are Stenberg's goals for the coming decade?

The point of departure is the current market position for some 5 million local lines, which in all certainty should grow to 5.5 million next year. This is a very large increase over the 3.9 million lines in 1988.

"The demand now — and for a few years ahead — is good in markets where we are solidly established as the primary or secondary supplier. I visualize growth of about 10 percent a year. After 1992, the situation is a little harder to assess. There will be a recession sooner or later which is bound to affect order intakes."

The telecommunications markets do not always follow the usual recessionary up and down patterns. Telecommunications administrations (PTTs), Ericsson's customers, can formulate their plans but in the end it is the politicians who decide. A case in point is Spain, where the entire country is investing in infrastructure equipment prior to the Olympics in Barcelona and the world's fair in Seville in 1992. In Greece, they are

starting to invest for the Olympics in 1996.

But naturally Ericsson has a good grasp of what orders would entail a few years from now. In fact, the company does not have more than about 100 actual system customers.

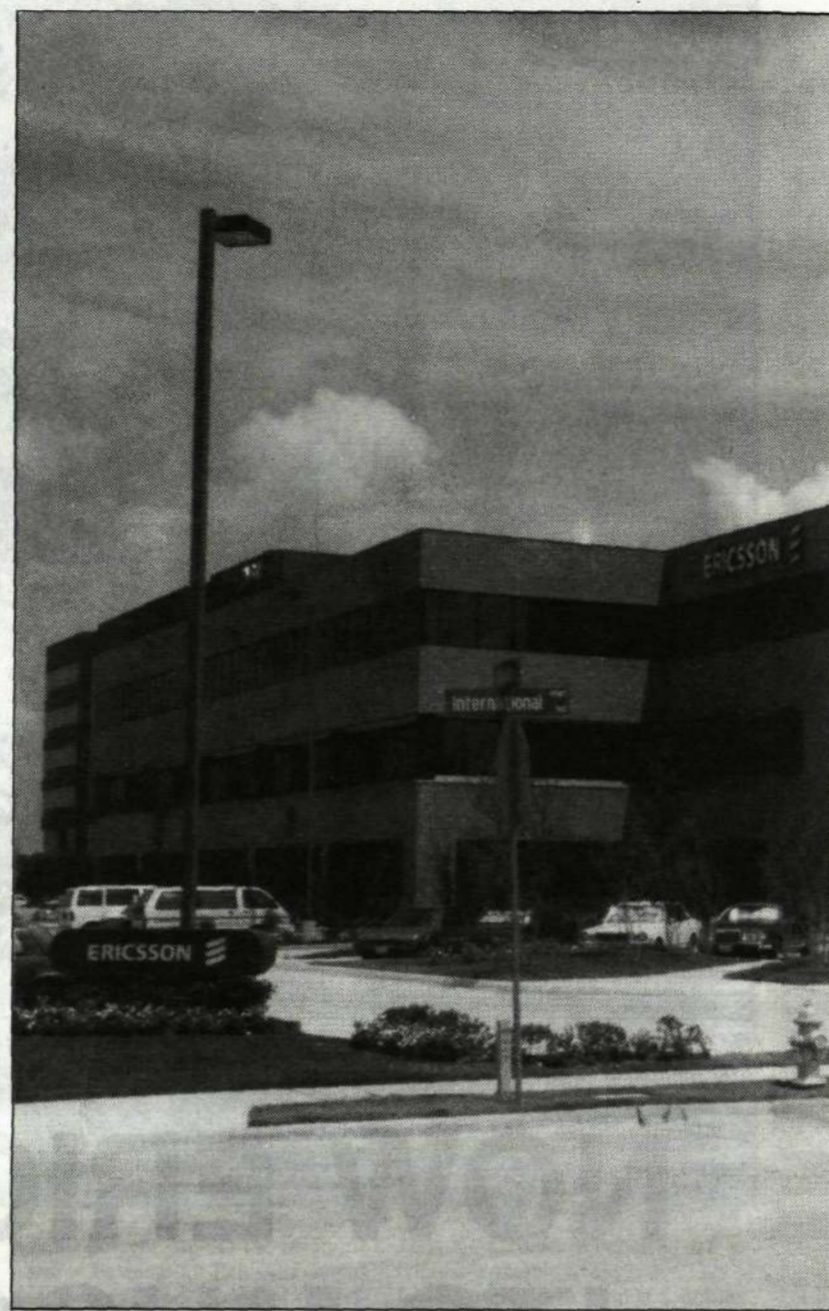
"Some 25 customers account for 80 percent of the world's total telecom orders. We are supplier to 50 percent of them" says Stenberg. "And we are supplier to 65 percent of the world's largest customers."

This customer base is stable, but demonopolisation and deregulation mean that new customers could arise and old ones could drift off. Movement in the customer base will increase and system loyalty could diminish.

Stenberg paints a picture of the strategic goal of the company's market planning. It reveals a sharp rising curve in the increase in the number of delivered lines per year. It begins with 3.9 million in 1988 and ends with 7.8 million in 1995.

Is this really possible? A doubling in seven years and a 50 percent increase in world market share?

"It is possible, but not absolutely sure. Nevertheless, we are already well along the way," says Stenberg.



'Deep in the heart of Texas', Ericsson's modern U.S. headquarters is a formidable presence in Richardson. Texas is also the largest state within South Western Bell, for whom Ericsson is now the main supplier.

"This year, we have installed 5 million lines and I see as very likely an increase to 5.9 million next year. In the U.S., I also believe that our increase to 500,000-600,000 is a rather conservative estimate."

Stenberg reckons with expected growth in already large and well-known Ericsson markets such as Britain, France, Spain, Italy and the many markets of the Third World. But a few names are new in the Ericsson context, such as West Germany, the Soviet Union and India.

Well, new and new... at the turn of the century, czarist Russia was the company's largest market and in the upper circles of management there were far-reaching plans to shift headquarters to St. Petersburg. Then came the revolution. Around 1970, we supplied a number of transit stations to the Soviet Union, but there has not been much more than that recently.

However, the Soviet Union is opening up its market again for foreign telecommunications companies, and Siemens and the French Alcatel have already publicly announced agreements for major supplies.

"We really wonder how much substance there is to these reports," says Stenberg. "Our feeling is that up to now it has mainly been a matter of evaluations. And the fact is that we ourselves have participated in these evaluations. Therefore, I figure we are involved and there is the likelihood that we could be supplying the Soviet with AXE within two to three years.

Another large dot on Ericsson Telecom's map is West Germany. That is a matter of 3 million installed lines per year, until now relegated to the domestic Siemens and Alcatel's West German subsidiary, Standard Electric Lorenz (SEL).

"But the West Germans have now taken their first step toward deregulation. It shouldn't take too many years before we are there and competing."

Could Ericsson survive the ever tougher competition on the world market in the '90s?

Stenberg is still optimistic. Contrary to what one could believe in a high-cost country like Sweden, the company has proved to be one of the branch's strongest competitors when it comes to prices.

"We think prices in our field will fall by about 5-7 percent a year. We feel we can cope with that, in large part through rationalizations. We are building well in advance a cheaper and better product. Despite large wage increases, we feel that much can be gained through major rationalization

possibilities in our plants around the world," says Stenberg.

Over a period of several years, the software sector has increased considerably compared with hardware in the system, and it now accounts for one-fifth of the price. Little has been done up to now to rationalize and measure software production, but the time has come, Stenberg feels, and there is much to be done in the way of automating and better equipment for builders and developers as well as costs.

At the moment, Ericsson is at a cost disadvantage with its global and decentralized production structure.

"Today, we have higher costs than, say, the Americans, who in enormous plants produce a series of unified products for a single market."

"But they also have to venture out into world markets and then are obliged to adapt to local production and local products. This is a difficult and costly process, which we already went through many years ago. Our European competitors have also long produced for home markets without any real competition. This can hardly lead to cost effectiveness. In this respect, we have an important headstart."

Nor is Stenberg unduly concerned about price competition. As far as that goes, he recognizes that Ericsson in ever more global competition will see its portion of the market pie shared by additional competitors.

# ground' in Texas



'Deep in the heart of Texas', Ericsson's modern U.S. headquarters is a formidable presence in Richardson. Texas is also the largest state within South Western Bell, for whom Ericsson is now the main supplier.

But this could be a complex business, with credits and barter agreements.

"The Soviet market has tremendous potential. We estimate the market at 4-5 million lines per year. How much of that could apply to a foreign system is difficult to say, since the Russians themselves are actually seeking partners in the first place for manufacturing their own new digital system."

### Another dot

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## Ericsson in U.S.

During the expansive 1890s the British telephone market played an increasingly important role for LM Ericsson, and by the turn of the century half the Company's sales were to Britain. In the telephone's native land, the USA, the market situation was very different and barely 2 percent of LME's sales during this period went to that country. The British sales office having proved successful from 1898 onwards the LME management hoped that a similar initiative in the United States would also succeed. LME therefore decided in 1902 to open a sales office in New York, with Klas Weman who set up the St. Petersburg factory, as office manager. LME's agent in New York, the firm of Smith & Hemenway, had developed a certain market for LME's exchange equipment and telephone sets among telephone companies outside the Bell Group, the so-called "independent telephone companies". Some of these were completely independent, others only partly so in that they operated jointly with the Bell System and had therefore to adapt to its terms. The Bell Group had a firm grip on the market, and LME's only potential customers were the fully independent companies.

1920 compelled LME to try to wind up the operation. Production at the Buffalo factory was stopped in November 1920, and at the beginning of 1923 the Parent Company sold its American assets. The parent company's total losses in the U.S. amounted to 8-7 million kronor.

During World War II, for a time we had a purchase and sales operation in the States, but it was really in 1951-1968 that the next Ericsson era in the U.S. took place.

The reason goes back to the war. It was then noted that sea blockades meant problems with supplying the Latin American market with telephone material. We did not want to risk that a new war in Europe should have a similar effect and therefore, Ericsson established itself in the U.S. which, moreover, was seen as a country with good labor and technology resources.

**Advantages in the U.S.**

Naturally, there were also the marketing advantages to be reaped by setting up in the States.

The factory Ericsson chose to invest in was the North Electric Company (NEC) in Ohio. LME acquired in two purchases a 2/3 majority in NEC, which had about 1,000 employees in four plants, of which the largest was in Galion, near Cleveland.

Manufacture consisted of telephone apparatus, finger disks and telephone centrals for the American telephone companies. But the company also had large orders from the U.S. government for military telephone equipment. NEC developed, among other things, with LME, electronic switches for the U.S. Air Force. LME was subcontractor to NEC and the material supplied functioned very well. After 10 years, NEC got a repeat order.

**Factory in 1960.**

In 1960, a plant was purchased for the manufacture of power supply equipment for computers and telephone stations.

Over the following years, however, things did not go so well for NEC, chiefly because of a dwindling market for the independent companies. Freedom of movement in these markets shrank considerably and government orders began to fall off.

A turn for the better came in 1965, thanks to a huge order from United Utilities (UU), a holding company for a group of operating companies. An agreement in principle called for UU to take over NEC. Already that year, 1966, the majority shareholding was passed over to UU and the last remaining minority shares were sold in 1968.

With that, LME's second attempt to establish itself as a manufacturer in the States was ended. Thanks to the dealings with UU, though, this time LME came out of the entire affair unscathed.

The 1980's "plant" establishment is geared to program wares production for the Bell companies. This third establishing in the States, judging from everything so far, is here to stay.

**Rising costs**

The Buffalo factory was completed in 1906 and put into operation in 1907, when about 200 workers were employed. During its early years of operation, up to 1910, LME delivered certain telephone equipment from Stockholm. During the company's active period in business up to 1920, the only years in which LME in Buffalo showed profit were 1915 and 1918. As a result of rising production costs, excessively low contracted prices for the ignition devices, and a depression in the automobile industry, the loss figure for 1920 was again very large. The large loss incurred in

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FLORENCE

# Here power experts recharge their batteries

INTELEC, the International Telecommunications Energy Conference, is the big event for power supply expertise. An important contact with customers, administrators and manufacturers, where Swedish Ericsson is a power factor. INTELEC shows where the expertise was assembled in Florence at Ghiberti's Paradisport, near the Giotto bell tower and the Etruscan Ponte Vecchio bridge.

*At Intelec one sees where developments in power supply are headed*

The world will soon have a telephone density of ten subscribers per 100 inhabitants. This would be the case toward the end of 1989 when the world's population hits 5 billion and the number of telephone subscribers reach 500 million. Many countries give a priority to telephony, especially the not so rich, in order to set up the right infrastructure for the country's development.

So said Paolo de Ferra in his introductory speech at the opening session of INTELEC in Florence.

Since the beginning of 1978, INTELEC has established itself as the largest and most international forum in the field of power supply for telecommunication. The conference is staged every year.

Tadeus Wolpert, of Ericsson Components power division in Kungens Kurva, is one of the driving forces behind the founding and recent successes of INTELEC.

What was it like at the beginning? "Ever since the development of electronic systems in telecommunications took off in the '60s, the demand for power equipment has increased. The need for technical development is becoming greater," says Wolpert.

## Man without a country

"But despite the significance of power technology, its status was low. Operations were often centered on small units. It was technically isolated from the larger telecom operations around. Power engineers had no chance of building up a stimulating idea-oriented climate, similar to what was found in telecom operations. As one of INTELEC's founders, Dr. Josef Suozzi, of AT&T, put it: A power engineer was a man without a country. The insight into power significance among telecom managers often arose when power became a problem. It was a case of negative publicity.

## INTELEC begins

AT&T took the initiative for INTELEC in 1976. A delegation visited several countries and organizations, among them Sweden, Britain, France, Germany and Japan, and set up a group of interested persons.

Tadeus Wolpert was the Swedish participant. He was at the very beginning a member



INTELEC assembled 600 delegates in Florence's Centro del Congressi. INTELEC has been influential in technical developments within power supply for telecommunications. Customers are made rapidly aware of the latest result and new demands are met.



Tadeus Wolpert, right, a Swede from Ericsson, one of the pioneers that made INTELEC what it is today, in conversation with Ulf Linder, center, and Takashi Koga, power manufacturer, Japan.



Customers come here. Krister Smedman, right, Televerket, Sweden, chats with L. J. Scerbo, Bell Communication Research, Bellcore, Morristown, New Jersey, U.S.A.

of the international steering committee, the Advisory Committee, where he was vice president for a year, and a member of the Conference Executive Committee, which organized future conferences. He was responsible for organizing a conference in Stockholm in 1987, where Televerket and Ericsson were the main participants, but also where Philips, Uveco, Tudor and Noack were represented.

The first INTELEC conferences took place in Washington, D.C., in 1978 and 1979. There-

after, there were meetings in London, Washington, D.C., New Orleans, Munich, Toronto, Stockholm, San Diego and this year in Florence.

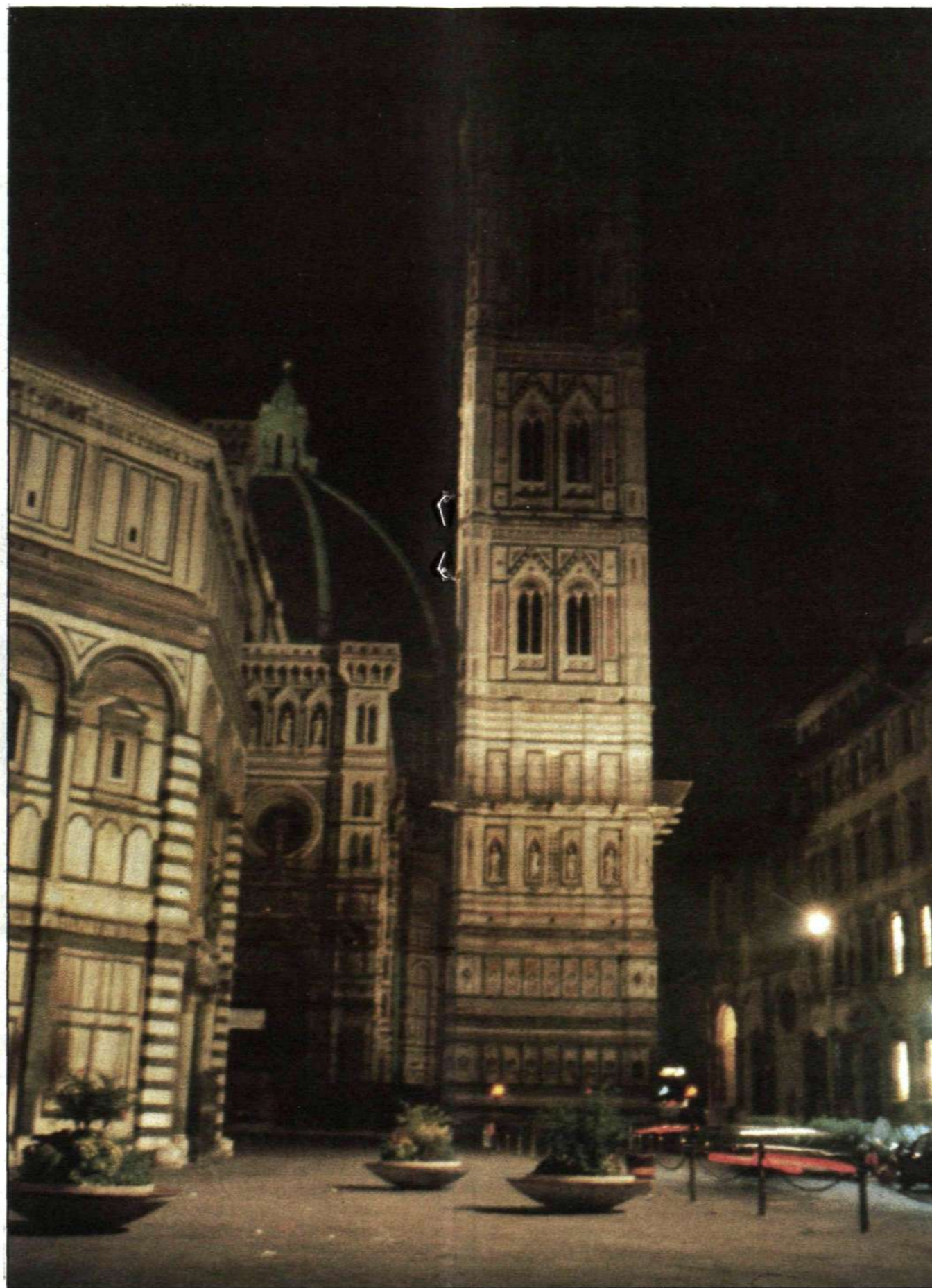
The areas that INTELEC chose to highlight from the start are still valid even to this date. They deal with power supply systems for telecommunications, uninterrupted power supply systems (UPS), static converters, reserve power, microprocessor applications in power systems, cooling and climate systems in station buildings, reliability, electrical safety, electromagnetic compatibility, among others.

Today, INTELEC numbers some 600 persons. Besides the technical conferences, there are simultaneous exhibitions and technical seminars and workshops. They are conducted in three or four parallel sessions.

## Two INTELEC

In reality, INTELEC is not just ONE technical conference. Events take place at two levels. There is the purely technical side, which is the core and principal aspect of the event.

But it is also outside of the technical forum that ideas are exchanged. It's in the corridors, in the snack rooms, at the bars, maybe in front



A long line of the world's leading artists and master architects contributed to the cathedral in Florence. Above, the Giotto bell tower. The entire population of Florence shared in the cathedral's construction, over a period of 150 years.



Competitors meet here. Dag Björk, left, and Inger Franzen, right, together with Mr. Murena, power manager at Ascom Hasler, in Ascom Hasler's exhibition bus.

of the David statue at Academia or on the Ponte Vecchio at this year's conference in Florence, in the street or square, where energy is released and batteries are recharged among the world's power experts.

Here the technical trendsetters assemble, where salesmen and customers gather, where competitors meet. Here is a stimulating, idea-generating climate.

INTELEC is the big event of the year for

power supply experts. Competitors meet to exchange thoughts and ideas. But behind every meeting, the deepest secrets remain intact with profound diplomacy. Every meeting is a balancing act.

## Swedish Ericsson

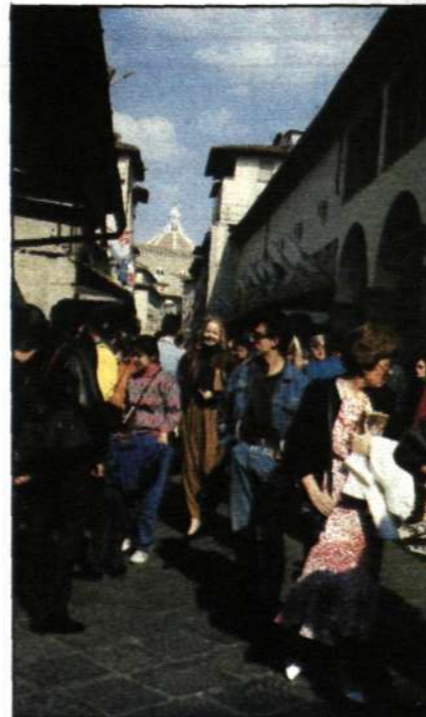
"Swedish Ericsson is a powerful factor in the world of power," says Lars Björkström, Ericsson Components. Ericsson is the most international of all and we are in the most numerous places around the world with Power.

From the viewpoint of historic perspective, Ericsson Power has been a major trendsetter, a standards designer and has been accepted as a leader in the development of power supply for telecommunications.

Ericsson's power products are used more and more to supply even competitors' telephony with their power needs. New markets have been opened up.

It is INTELEC that gives an indication of what is to come and of where developments in power supply are headed. "Developments have been so rapid and revolutionary that one is inclined to see it as a permanent revolution," Wolpert emphasizes.

Text and photo: Inger Bengtsson



Ponte Vecchio, the 'old' Etruscan bridge, is the principal meeting place.

MILAN

# Here we open up every possibility



For the first time, Fatme displayed in a resounding way its connection to Ericsson.

At the Italian communication and office automation fair, SMAU, in Milan on October 2-9, Ericsson presented a wide-ranging program, SMAU, which stands for Salone Internazionale per l'Ufficio, is the most important fair of its kind in Italy, where Ericsson has its largest market abroad with more than 10,000 employees. Close to 160,000 visitors attended the fair.

On the theme of "COMUNICAZIONE GLOBALE" Fatme participated with two huge stands, where it presented products and systems from all of the business areas in an integrated fully functioning model, all linked together by a so-called intelligent network (L'intelligenza di rete).

"We wanted to show how one can explore all possibilities for communications between people, systems and machines," says Anna-Karin Svensson, of marketing communications in Fatme.

The idea is long-range and is not yet completed on the commercial level. But by demonstrating our integrated communication ideas at exhibitions, functioning in the very least detail, we show how it is possible to accomplish it in practice.

At the Fatme stand, there was a fully functioning AXE Switch in a container design. Integrated with this were both MD110 and ERIPAX, the two products that set the stage for carrying through with the idea of global communications.

At another stand was Sielte, the other Ericsson Italian company, which mainly builds tele networks and sells engineering services. Here, one invested in beauty and social communication with customers. A very informative video program relayed over 16 monitors with an effective presentation of Sielte's nationwide operations dominated the scene. In a bar with the inviting words "Sielte Bar Service,"



SMAU is the most important exhibition in this branch in Italy. This year, there were close to 160,000 visitors.

visitors could reinforce themselves with drinks and snacks.

"We have the products and Sielte has the means to put them out," says Giuseppe Bianchi, Fatme's information director.

## Strong position

Ericsson's Italian companies have a very strong position on the market. Fatme is the second largest supplier of public telecommunications with a market share of 24.5 percent.

"During the last two years, since competition became more open, we have strengthened our position further. For example, in Rome, where we have never been before, today we have several large AXE switches," says Anna-Karin Svensson.

Historically, we have always been predominant in Sicily, in the Naples area and in Venice. Now, we are spread all over Italy with digital public switches.

Moreover, when it comes to the private sector, Fatme is very successful. For example, Fatme is a forerunner when it comes to marketing ERIPAX. For instance, Italcable uses ERIPAX as a linkup with overseas public X-25 networks. Fatme accounts

for ten percent of the entire sales for Business Area Business Communications.

On the other hand, Sielte is one of the leading network construction companies in Italy. The bulk of its customers come from tele administrations, but the private market is becoming more and more important from the point of view of the engineering side.

## Increasing exports

SMAU also caters to an international public, which is important for the increasingly export-oriented Fatme. Export business is now about 11 percent.

"We keep mostly to the Mediterranean area," says Anna-Karin Svensson. "We are big in Cyprus and Malta. In Africa, it is Ethiopia, Liberia, Malawi, Mozambique and Libya that are the most important markets. In Latin America, there are exports to Guatemala.

"Investment in SMAU is money well spent," says Giuseppe Bianchi. "Costs amount to about 500,000,000 Lire (2,500,000 kronor). But that is the only large exhibition in which we participate.

Text and photo: Thord Andersson

# Training 'JAB' Enhances Courses

*"Knowledge has to be improved, challenged and increased constantly, or it vanishes."*

Peter Drucker



Bill Paulson, Manager of Technical Training.

Not too long ago, Ericsson trainers in Richardson, Texas, invited some of the Bell Operating Companies' (BOCs) top technical maintenance people to a JAB (job analysis brainstorming) session. In a structured atmosphere, EXU trainers quizzed their guests on every aspect of their AXE switch maintenance responsibilities. As the Bell technicians talked, the trainers took notes. By the end of the session, the Ericsson staff had gleaned enough material to redesign the maintenance training to match exactly what the BOC technicians must do to maintain an AXE.

"The JAB session was just one more example of how we at Ericsson try to satisfy the high standards of our clients — particularly the BOCs," says Bill Paulson, manager of technical training. "Bell has had a very good internal technical training program for a number of years and, consequently, expects the highest caliber, both in timeliness and in quality, from its vendors."

## Continual challenge for staff

Expanding and enhancing a quality training program to keep up with the market applications of the AXE is a continual challenge for Paulson and his 30-member staff of course developers, teachers, switching technicians, graphics specialists and administrative personnel.

Five supervisors oversee the training operation. Their responsibilities cover course development and administration; tier-one maintenance (less technical maintenance subjects);

tier-two maintenance (more technical areas such as software), network (engineering, switch administration and data transcript) and training for EXU software designers.

Sessions in the 35-course curriculum range from a one-day AXE overview to a six-week study of AXE installation testing. Approximately 45% of the 8,000 to 9,000 yearly training days (one trainee for one day) consists of local Ericsson employees, including customer service representatives, installers, technical assistance personnel and documentation specialists. Ten percent are Ericsson employees from around the world and the remaining 45% are customers.

"Our original charge was just the U.S. and portions of Canada," says Paulson. "Now we have full classes of people coming from Europe, and we've sent our faculty to Australia, Saudi Arabia, Ireland and Sweden."

## Adapting courses to U.S. market

While AXE technology is the same around the world, Paulson adapted the focus of the courses to the U.S. market. For instance, outside the U.S., many customers request broad-based sessions. However, Bell companies prefer focused, job-specific segments.

"The philosophy of training at Bell differs from much of the world," Paulson says. "In the U.S., Bell employees are task-specific in their duties. A worker may have fewer responsibilities than his world counterpart. He may do only trunk testing, for instance. Therefore, Ericsson's training must be extremely functional and specialized."

As a rule, Paulson's staff travels to Bell locations unless the sessions include hands-on experience with a captive office AXE training switch. In those situations, Ericsson will host the customers at its two-year-old facility at 705 North Glenville Drive in Richardson, Texas. The trainers will utilize any of seven classrooms that have computer terminals connected to one of the three AXEs. There are also two other classrooms for lectures. Hands-on programs range from four to eight students; lectures can accommodate up to 20. Viewgraphs and other teaching aids are produced on site.

## Developing training disks

Paulson, who spent 30 years in the Bell system, including AT&T training programs, says the flexibility and economies available in computer-based courses make it a requirement to do continued business with the Bell companies. Already his department is planning a project to design training disks that Bell companies can use on site. The disks will enable a four-week course on switching to be covered for the most part at the Bell trainees home location.

"We're always trying to anticipate and then meet the needs of customers," says Paulson. "We must do it with flexibility, quality and by staying current with technology. And we must be versatile enough to tailor-make courses for specific needs. After all, we're here to serve the customers."

# Our Efforts in the U.S. Market And Why We Remain Committed

Let's return to the very beginning, when it all started. I remember, because I was there.

We saw how we were operating in a world of markets where growth was rather weak.

We also noticed how several markets were changing and becoming more open about the choice of vendors and the competition between them.

In the United States this transition process was called "the break-up of the Bell system". The experts said we now had an opportunity to penetrate a market that accounted for one-third of the world's telecommunications business.

Many claim that Ericsson is a stable and secure company that never takes risks. That's not true. We make huge risk investments from time to time. Our penetration of the U.S. market is an example of an enormous investment involving several hundred million kronor with no guarantee of any return. Investments of this scale require careful consideration, strong decision making power and great endurance. A company cannot give up and pull out as soon as it encounters the slightest difficulty or setback.

After what we felt was careful consideration, we decided to focus our efforts on the United States. We pushed the start button in 1984.

We have run into many difficulties — including ones we could not even foresee. The project has become much larger in scope, required more resources and taken more time than we planned. This includes the mistakes we made ourselves, and had to correct later.

The U.S. market, which seemed mature and very profitable at the time, has since become the world's most dynamic market, in which product and price competition is severe. The dollar rate has also fallen sharply.

Judged on the whole, we have made a fantastic achievement. Only one or two other companies in the world would be able to accomplish this. Among those vendors seeking to penetrate the U.S. market, I feel we have been the most successful one. We haven't reach our goal yet, but we have received several clear indications that we are on the right track.

Despite everything that has happened in the American market, nothing has caused us to reconsider our commitment. On the other hand, we now realize that the United States is more than a potential source of expansion for Ericsson. By participating in the development of telecommunications technology in the U.S., and meeting the market's requirements, we are learning many things that are useful in our other markets. We become, quite simply, a more attractive and interesting partner and supplier to customers in other parts of the world — clients who are following trends in the U.S. with great interest.

I have never doubted our ability to succeed in the United States. I have only become more and more convinced of the strategic value of our stake in the American market. The costs we bear each year represent an investment, in my opinion.

Our decision in 1984 was correct. Our power and ability to endure will lead us to the goal.

Jan Stenberg

# Aftonbladet steps into space age

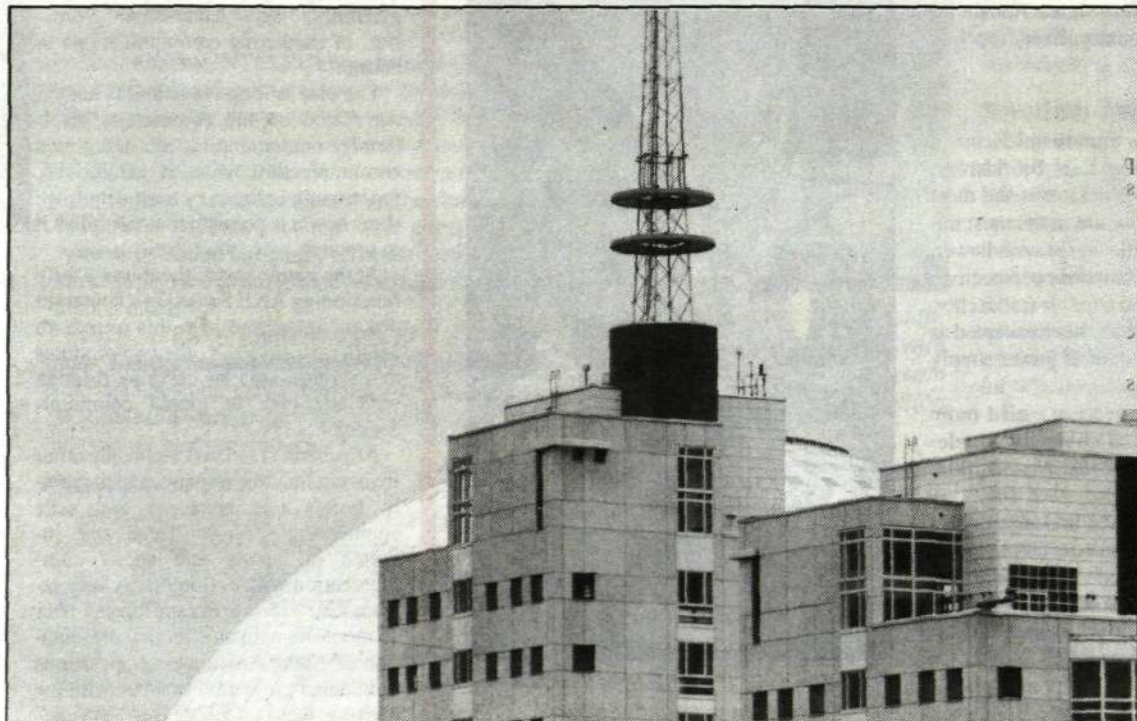
## Faster news thanks to Ericsson

Now the last press rooms in the old newspaper district of Klara in Stockholm are being silenced. Aftonbladet is leaving its old quarters and is moving to Globen. Print and editorial operations are no longer going to be in the same building. With help of technology from Ericsson. Both Aftonbladet and Svenska Dagbladet are switching to the new system of delivering finished pages for printing — via fax and radio link. As an important part of the radio network, an antenna was recently mounted atop Globen.

Ericsson in Sweden supplied the

radio link equipment. Ericsson Data Services took care of the montage as well as the continuous monitoring of the system. Ericsson Radar Electronics supplied the satellite equipment for TeleX.

Now it is possible for Aftonbladet and Svenska Dagbladet to transmit finished pages from their editorial newsroom to presses in Kista. The pages are faxed to the print site via Ericsson's radio link network. With a bandwidth of 8Mb's, one can send 500 A4 pages per second.



# TODAY'S QUALITY WAR

## A BATTLE BETWEEN CULTURES

There are far too many pigeons in Lund and two groups were hired to research what could be done about them. One group concluded quite simply that some of the pigeons should be shot. The other group analysed why there were so many pigeons and concluded that it stemmed from the fact that pensioners had too little to do and therefore sat around feeding the pigeons. The group suggested that instead of shooting the pigeons something should be done about the pensioners.

What does all this have to do with Ericsson? Well, it has to do with the thinking behind quality. The anecdote was taken as an example for a quality seminar in the autumn. It shows how important it is to analyse a problem before you confront it. And to bear in mind that every problem is unique.

It is no longer enough to just talk about quality. Investment in quality and quality direction has made new leaps. In the tough competition in the world market, quality is one of the most important tools in facing the competitor. Therefore, it is important for the concept of quality to permeate all of Ericsson.

Management has recognized this by arranging a special seminar on the quality theme. This was attended by managers from all the business areas as well as by Chief Executive Björn Svedberg and his deputy C.W. Ros. One result of the seminar is that quality will be an obligatory issue for all leadership groups and business directors.

"Quality discussions should be concrete. Business areas should talk about what impedes quality," says Sture Ögren, head of the quality staff and the support unit Ericsson Quality Institute. He feels that what's important is not what is said but what is done.

Discussions during the seminar centered a great deal around the manager's role.

The signals managers impart during the work day is of utmost importance. Managers should present quality in a convincing manner and examples of success with quality should be stressed.

### The Japanese miracle

The seminar, which was conducted over two days, generated many issues, question and conclusions.

Dr. Nakahara, executive vice president of Sumitomo Electric Industries, pointed out the important role managers have, at the same time showing how important it was to mobilize everyone in a collective pursuit for improvements.

What significance do culture differences and discipline have in quality? IBM's speaker, Jose Munuz Velert, feels that Japan's national culture is a key factor in productivity and quality, and that countries such as Sweden have a long tradition of industry. It remains only to draw on these resources.

The Japanese, after the war, established a quality culture from scratch. This has been acquired and can be transferred to Western companies. IBM is one of the companies that have succeeded in doing so.

### Not contrary

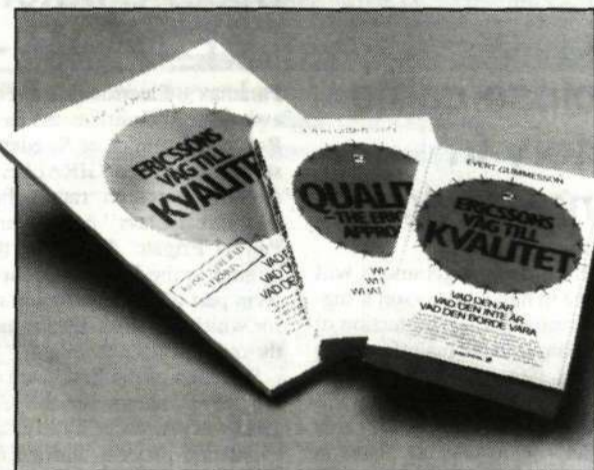
A problem with striving for quality has been that one aspect of the factors one should pay attention to is in a direct relationship contrast to the other.

To be able to do a quick job could solve problems in prompt delivery. Product quality could suffer in the bid for cost effectiveness. But it does not have to be so, it is felt today. Everything could be accomplished at the same time, if only the different things are done in the right order. First, product quality, then delivery deadline, cost effectiveness, and, finally, flexibility.

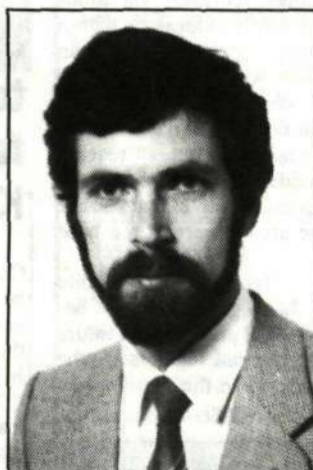
Over the years, the quality concept has changed. From having been a matter of control after production so that faulty products are not shipped out, it



Japan has drawn on national culture which promotes productivity and quality. With national culture as a base, the Japanese, after World War II, achieved a quality culture from scratch. In contrast, Sweden has a long industry tradition, which it can draw upon.



Three books on quality that can be obtained within Ericsson. Contact Lars-Erik Ericsson in Karlstad (KB/ETX/P/IMD), phone 054-193012. The books are 'Ericsson's Route to Quality,' by Evert Gummesson (ISBN 91/970199 USV), in a condensed version (LZTI09429 USV) and English (ISBN 91/97019 UE).



'Everyone can contribute his puzzle piece to quality,' says Sture Ögren, head of the quality staff and support unit Ericsson Quality Institute.

is now a case of removing the mistake before it occurs.

The huge EQ project that was conducted between '83 and '86 was the spark that kindled

quality awareness within the company. Eighty percent of managers and 20 percent of higher-ups benefitted from the education, recalls Ögren.

## 'We shall be in the quality elite'

At the quality seminar earlier in the autumn, Chief Executive Björn Svedberg said about the strategic goal: "To be a market leader as far as the quality of our systems, products and services are concerned, price and performance wise."

"We shall be as good as the best, if not the best ourselves. We shall have no faults on delivery and we shall deliver on time.

If the customer has an evaluation system and a competitor has a higher standing, we shall also have the highest standing.

We shall know where we are vis-à-vis the competitors.

We shall always compare ourselves with the best. If we are alone in a market or have not so competent competitors on just this market, we shall raise our sights and see

who stands beyond the border, who could be a possible competitor and compare ourselves with them.

And we must really exert ourselves to meet the competition and not shelter behind the argument that the customer is difficult and that it is his fault that we cannot show the same figures as the competitor.

We shall be in the quality elite."

After the project, a clear change in attitude was discovered, but there was also a case of campaign fatigue. But now there is renewed interest for quality.

Support Unit Quality is seen today as a resource to be drawn upon out in the business areas. The unit offers consulting help and education and the response during the fall has been enormous.

The future trend is to anticipate the customer's needs. That means putting the customer in focus and understanding his needs better than he himself does. Then it is a matter of making a product with as high a customer satisfaction as possible.

### Motivation

In order to achieve the goal of quality, all employees must be involved. Everyone should be interested in improving quality and be aware that they could do something about it.

"No one holds all the pieces of the puzzle, but everyone can contribute his part," says Ögren. It is a question of motivating people to want to contribute."

There is a risk that an operator who sees the opportunity for improvement says nothing about it. He feels that the mistake is his.

In the end, it is such that the operator can help the machine to do a better job. To acquire this kind of insight is the next major task.

One way of accomplishing this is to provide statistical process monitoring. A sort of assistance for the operator to interpret data.

Operators who have learnt the new method of controlling quality have been very motivated and have recruited others who want to learn.

"It is even a way of achieving job satisfaction," says Ögren. "That the employees know that they can influence the process."

Job satisfaction in turn achieves better quality.

Text: Helena Lidén  
Drawing: Bim Ericsson



## Radio use in Norwegian tunnel

In Norway, tunnels are blasted through the mountains to improve road transport. ERA's Norwegian company, Ericsson Radio Systemer, has received an order from the Norwegian transportation authorities for base stations that would cover communications in tunnels.

Stations have been installed in five tunnels, and the police, fire brigades and ambulance services are also fully covered by radio. In addition, there is program one and two on radio. Like mobile telephony, the order came through Televerket.

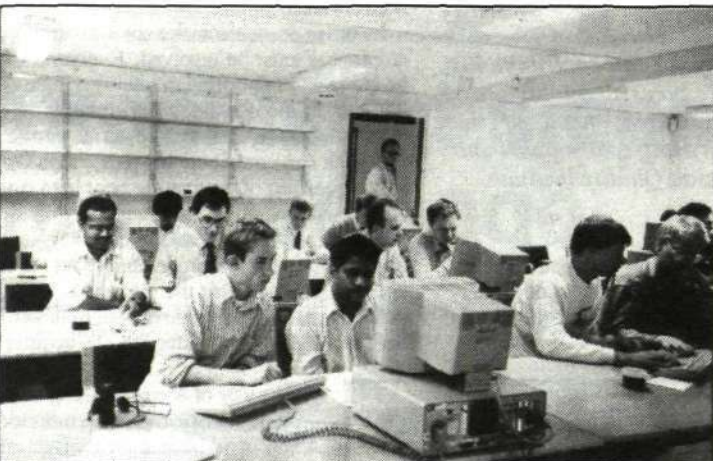
Base stations are placed in a common room, at one end or in the middle of the tunnel, which can range from about 600 meters to four kilometers long. (ERA Nyheter)

## ERIPAX order from Italian energy agency

Ericsson received a new order from the Italian ENEL, the energy authority, for the data communication system ERIPAX. The order is worth 80 million SEK.

ENEL is one of the largest public administrations in Europe and has 113,000 employees. The order covers an important extension of ENEL's communications network which was supplied by FATME, one of Ericsson's subsidiaries in Italy.

Today, Ericsson has more than 50 percent of the Italian market for private networks which are used by large companies and organizations to utilize data communications in the most effective way. Some of the largest ERIPAX customers in Italy besides ENEL are the Milan stock exchange, Banca Nazionale dell'Agricoltura, Mobil Oil and Italcable.



## Englishmen in school

Sixteen English technicians are at school right now at ERA in Mjärdevi, Linköping. They are all newly employed with "Cellular Systems and Special Networks" at Ericsson Limited in England. Before they take up duties, they will pursue a training course over eight

## Mobile phones for Hong Kong

Ericsson's mobile telephone division in Lund has signed an agreement with Pacific Link Ltd. in Hong Kong for ongoing delivery of Ericsson HotLine mobile telephones. For 1990 alone, the order is worth at least 20Mkr.

"Interest in our mobile telephones on the Hong Kong market is further proof of the high technical quality and competitive edge of our products," says Fleming Örneholm, head of the mobile telephone division.

Pacific Link is one of three authorized operators of cellular mobile telephone systems in Hong Kong. The system that is envisioned for Ericsson's HotLine telephones is called ETACS and was launched by Pacific Link at the beginning of September this year.

The HotLine model which will be distributed in Hong Kong is a powerful pocket telephone with an effective user time of two hours.

## The only telephone

It will be a long time before we can all have our own personal phone, with "our" number. The cordless "personal telephone," which will replace all others and which we will carry with us. At home, in town, at work, traveling overseas, etc.

That is the view of Jan Swerup, responsible for business development at ERA's division for mobile telephone systems.

The personal phone can be a further developed mobile telephone. But it can also be an updated version of the cordless business phone DOT 900, which will begin to go on sale next year. Or it could be built on the English CT2 standard, which is already being used for so-called home phones (cordless variations that are in effect extensions within the network) and for Telepoints in the city. "Cordless telephone booths," where with a small and simple cordless phone you can call out on the network (but not receive calls) provided you are in the vicinity of a sign that indicates that you are within the area covered by a base station.

Swerup feels that mobile telephony has a good chance of being the personal phone in the future and could cover all segments — the home, at work, in the car, in town etc. (ERA nyheter)

## Ericsson to supply more AXE to Brazil

Ericsson do Brasil, the Ericsson associated company in Brazil, has signed a contract with Companhia Riograndense de Telecomunicações, a provincial telephone administration in southern Brazil, for delivery of AXE equipment.

The contract value amounts to USD 47 million (SEK 300 million) and covers mainly digital AXE equipment for local and transit exchanges, as well as power equipment, to be installed in several cities in the province of Rio Grande do Sul, in the southern part of Brazil.

All equipment will be delivered during 1990-1991 from Ericsson do Brasil's plant in Sao Jose dos Campos, 100 km north of Sao Paulo.

Ericsson has so far signed contracts with 17 of 29 provincial PTTs in Brazil and sales of AXE in Brazil reach 1.5 million lines. AXE exchanges have been installed in major Brazilian cities, such as San Paulo, Brazilia, Fortaleza, Belo Horizonte, Salvador, Vitoria and Porto Alegre. The first AXE exchange in Brazil was cut into service in 1982.

As early as in 1924, Ericsson established a sales company in Brazil, Ericsson do Brasil Comercio e Industria S.A. In 1955, the company started local manufacture. Today, Ericsson do Brasil has 5,500 employees and two factories, one in Sao Jose dos Campos, producing AXE equipment for the Brazilian market since 1981, and a second in Manaus, Amazonas, for production of telephone sets. The head office is situated in Sao Paulo.

Ericsson do Brasil is also exporting telecommunications equipment to different markets in Latin America and Africa.

## Ericsson wants to close cable factory in Kungsbacka

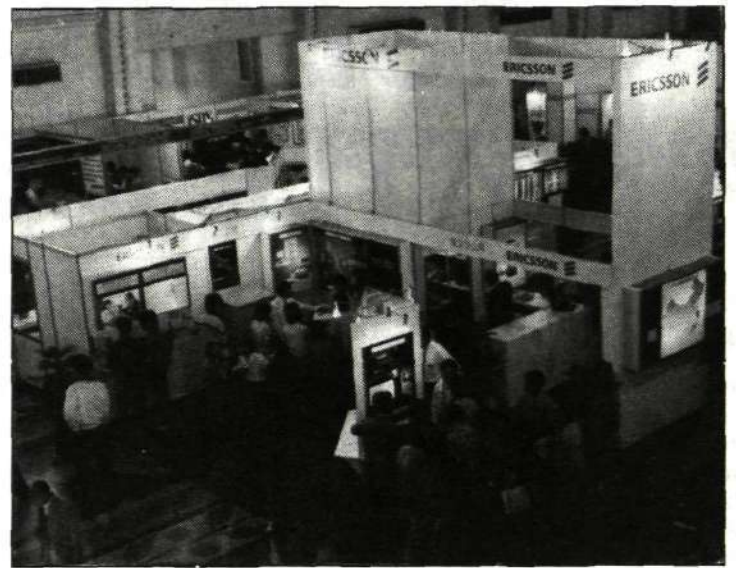
Co-determination negotiations will be started to handle Ericsson's suggestion for restructuring production of the company's cable manufacturing in Sweden 1990.

The suggested restructuring will lead to a concentration of cable manufacturing at existing plants in Falun and Hudiksvall, and the closing of the plant in Kungsbacka. The Kungsbacka plant currently employs 280 people.

Restructuring is deemed necessary in order to maintain and strengthen the company's position during the 90's in profitable product and market segments.

The development of new technology and more efficient production methods necessary to meet the stiff competition in the open European market requires major investments. Competitive power requires full utilization of production facilities and the efficient use of common functions. The units in Falun and Hudiksvall have the resources judged best able to meet the requirements.

Only minor changes are suggested for the production mix, and the potential for sales both in Sweden and abroad are considered good.



## Exhibition - office - conversation

CHINA TELECOMM '89, the international telecommunication and computer exhibition, took place October 10-15 at the Shanghai Exhibition Center. The fair attracted some 20,000 visitors.

In total, there were 34 exhibitors from ten countries. Ericsson participated with four business areas, as well as with MET which participated at the French stand. Among our competitors were Alcatel, Siemens and Fujitsu.

Ericsson showed AXE for different applications, transmission equipment, a live MD110 demonstration, live fiber welding, fiber cable, paging, power equipment, mobile telephones and land-based mobile radio.

## Ericsson wins search radar contract for second batch CPF

Paramax Electronics Inc. has awarded a contract to Ericsson Radar Electronics of Sweden for a second batch Sea GIRAFFE naval air/surface search radars for the "Montreal Class" of the Canadian Patrol Frigate Program (CPF). Similar to the first batch, they will form part of the electronics system for which Paramax Electronics has the over-all responsibility.

Selection of the first batch of Sea GIRAFFE radars for the CPF in 1983 was preceded by an extensive evaluation process, carried out by Unisys Defense Systems under the supervision of the Canadian government. Several of the leading radar manufacturers took part in this competition, in which Ericsson came out ahead.

The version selected is the Sea GIRAFFE 150HC. It features an antenna with four elevation beams, providing for a large elevation coverage. Radar range for detection of approaching anti-ship missiles is in the order 20 km in adverse seather and severe clutter conditions.

The radar operates at C-band. Digital pulse compression is employed, together with frequency agility in MTI and non-MTI operation.

The radar has an integrated automatic air target detection and tracking system (ADT). After manual initiation, also surface targets are automatically tracked.

This second CPF order confirms Ericsson's position as a leading manufacturer of naval search radar for the future air and surface threat.

Ericsson held a press conference for 32 Chinese journalists from the major daily, business and technical publications as well as from television, radio and news agencies. The news that we made public was that Ericsson opened an office in Shanghai, the fourth in China, that the first mobile telephone conversation in Shanghai was conducted through Ericsson's system and that we received an order from Guangdong province to expand the mobile telephone network.

In conjunction with the opening of the office, an inauguration ceremony and a banquet for 400 guests were held at the Hilton.

## Breakthrough for MD110 in Eastern Europe

Ericsson has signed a contract valued at SEK 17 million with the Brno Fairs in Czechoslovakia covering delivery of an MD110 communications system. The order represents a breakthrough in Eastern Europe for Ericsson Business Communications. Installation of the system is scheduled to be completed in July 1990. The system will be the largest digital private communications system for voice and data in Czechoslovakia.

Brno Fairs is one of the largest exhibition facilities in Eastern Europe, with an annual industrial and equipment trade show in September featuring 3,000 exhibitors.

Ericsson has also signed a MD110 contract, valued at SEK 10 million, with the World Health Organization (WHO) in Geneva. Switzerland is one of the few countries in Europe in which Ericsson has been unable to sell to the private market due to a monopoly situation. However, international organizations are not affected by the monopoly. The order from WHO provides Ericsson with a strategic reference installation prior to the planned abolishment of the monopoly in 1991-1992.

The MD110 is a digital system for simultaneous transmission of voice and data. It is well suited for large and medium-size companies and organizations requiring 50 to 15,000 extensions. The modular design of the system offers great flexibility when an organization changes or when its communications needs expand. Its modular architecture also makes MD110 ideal for companies and organizations with widely dispersed operations.



# IMCC already an institution after two years

IMCC, Ericsson's conference for marketing communications managers from around the world, is on the way to becoming an institution. And that after only two conferences!

Marketing communications was reviewed in Malmö at the beginning of November. Some 80 Ericsson delegates from 20 countries participated in the three-day conference.

The program included everything, from presentations of advertising campaigns and discussions about the group's CVI rules to suggestions for handling exhibition activities in the future.

Several guest speakers addressed the group during the conference, John Meurling, Vice President, Business Strategies, in Public Telecommunications, spoke before a rapt audience on "Telecommunications and the challenge for the '90s". After his speech, there were many who said they had

acquired a totally new perspective on their operations.

Hans Johnsson, Senior Vice President, Corporate Communications, Atlas Copco, spoke about "Effective Market Communication." His book, "Market Communication — a Paradise for Amateurs," is a must for everyone active in this branch.

The conference — which aside from the lengthy discussions also offered ample opportunity for social meetings — ended with a study visit to the research village Ideon in Lund.

There, delegates were also able to meet Björn Svedberg, who, among other things, spoke about Ericsson's evaluations.

The next IMCC meeting is schedul-



ed to take place in Brussels in 1990. Anders Gummesson has been appointed chairman of the organizing committee for 1990.



A number of 'workshops' were held at IMCC-90. Above, Nils Ingvar Lundin, far right, discusses press issues with, from left, Lars G. Ruhr, Johan Wahlgren, Lars Silfverling, Kathy Egan and Leif Dahl.

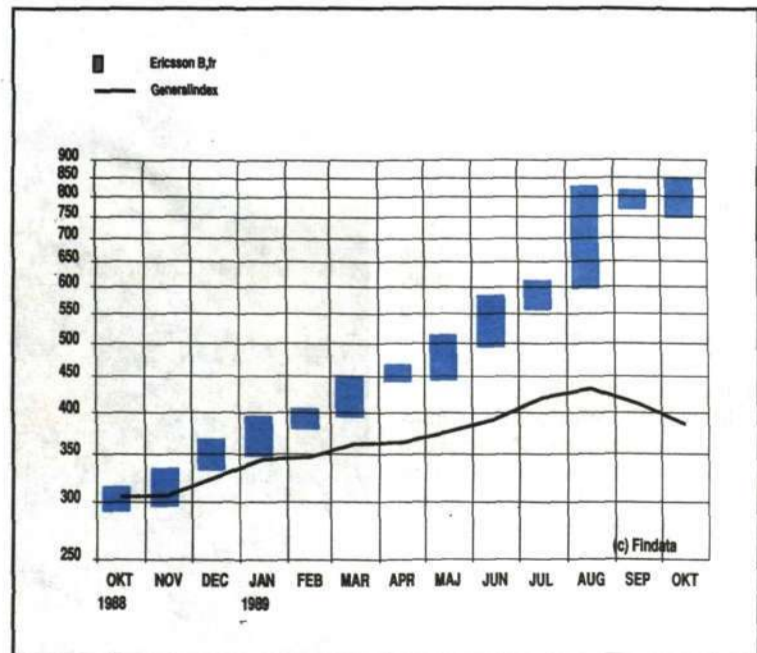
## SHARE TRADING

Since the major stock market upheaval of October 13, the Stockholm Bourse general index fell by close to 5 percent up to November 1. The market has been nervous and sensitive to both negative and positive news.

Ericsson shares were pulled down in the heavy market slide in mid-October, but they recovered very rapidly in light of, among other things, the breakthrough in the U.S. At the beginning of November, the B-free shares were up again to about the same levels as before the crash.

As such, Ericsson continues to be one of the Stockholm Bourse star performers this year, with a 125-percent rise since the beginning of the year and a 20-percent gain since the Bourse's all-time high of August 16.

Expectations are running high for the group's results this year, and the majority of outstanding forecasts are close to 50 kronor per share, compared with 34 kronor for 1988. The group's stock, in relation to forecast profits (p/e ratio) hovers around 17, which is high compared with the Stockholm Bourse industrials average of 10.



### ERICSSON'S SHARES

	Mutual Fund		Share Savings Fund	
	Share Price (SEK)	Assets (MSEK)	Share Price (SEK)	Assets (MSEK)
31 Dec. 1987	70	27,1	147	31,7
31 Dec. 1988	135	52,2	343	56,0
30 Sept. 1989	284	94,5	765	79,6
31 Oct. 1989	286	93,3	758	76,7

Share prices reckoned as of the end of October are based on an underlying share price of 810 kronor. The mutual fund convertible holdings are estimated at about 307 percent of nominal value.

PT — personal telephone, or whatever it is eventually called, will be the next major tele revolution. In the large telecom manufacturer's development labs, the working pace is high-pressured in an effort to produce the little portable telephone in a pocket-sized version. The forecasts are that 10 percent of the population will have them before the year 2000 in the more advanced European countries.

The largest revolution in telephony in many decades will come in the 90s, said Björn Svedberg, Ericsson's chief executive, when he delivered the opening address at the recent Telecom fair in Stockholm.

What he was referring to is what in the English-speaking world is known as PCN, Personal Communications Network, a system based on microcell and radio wave transmitted conversations to telephones the size of a cigarette pack, which we carry with us mostly for convenience.

What it will be called in Sweden is still uncertain. But why not PT — personal telephone, in contrast to the plugged-in phone that's hooked up to a cable network.

Like the mobile phone, the network of personal telephones will function within cells with transmitters and receivers. There is speculation that the largest cells could have a radius of maybe 2 km and the smallest only 100 meters.

These microcells, in densely populated areas like offices and city centers, will have a microbase station that will be backed up by a second "storehouse" of macrocells with base stations. These macrocells could be 8-20 kilometers in diameter and cover tens of microcells in cities and other populated areas. Telephone conversations will be transmitted via radio.

Whoever gets a licence to operate PCN, personal telephone networks, will be forced to make heavy investments. In England, where consortia have already begun to apply for licences, there is talk of investments in the range of 10-20 billion kronor for each and every operating company.

In Sweden, one could hardly think of any other than Televerket (PTT), and possibly some other competing operating companies, with sufficient financial resources and staying power. It could take up to ten years before investment costs can be recuperated.

Regrettably, one has to reckon with the possibility that quality in a PT network could be quite bad, or in any case worse than today's mobile telephone network. Actually, one can't imagine that the operating company will set up a tight network of microcells in the beginning so that com-

munication can move entirely freely between everybody in a city, or in a country.

But sooner or later the quality of conversation could be measured by mobile telephony. If there is any communication means that has the possibility of becoming a truly mass market, then it's the personal telephone.

One can also visualize a successive introduction of different levels of service, with different forms of receivers. For example, that could be a cordless phone, eventually as an alternative or complement to the plugged-in phone at home or in the office. It could also be a portable pocket phone, which can only receive calls but not make outgoing calls. Then, too, the fully mobile personal telephone, capable of two-way communication that can practically be taken everywhere.

The introduction level and diffusion depends naturally on costs for the subscribers. In the British applications for licences some companies listed prices for subscriber equipment of around 1,000-1,500 kronor. The tariffs vary between monthly fees of 85-220 kronor and charges per minute of 40 öre to 2.50 kronor, depending on the level of service.

This is no direct cheap communication. Added to this, the subscriber could have problems with terminals, which, because of their tiny size, cannot handle particularly long user time, making it necessary to recharge batteries.

There is also a need for a lot of technical development before the personal telephone becomes the easy, compact and cheap communication tool that will make a truly giant market a reality. But that does not prevent the British forecasters from envisioning close to 15 million users in Britain of mobile telephony in some form by the end of this century.

It seems almost unbelievable that Britain in ten years' time could have 15 million users of mobile telephones. The population is expected to reach some 60 million. That would mean that 25 percent of the population would be using mobile phones.

To this, one may note that all forecasts for mobile telephony so far have been off. Growth will in the end be considerably greater!



# Open doors in Canada

**Canada has become the major international breakthrough country for the Swedish mobile data system Mobitex. The system is now under construction in the cities of Montreal and Toronto. Eventually, the system will be linked to traffic in the U.S.**

The need for mobile data communication is immense in Canada. Distances are great, as I have quickly noticed when I drive or fly between cities along the east and west coasts.

Canada is one of the world's largest countries. Larger than both China and the United States and 33 times as large as Italy, but with only 26 million inhabitants.

Since the introduction of mobile telephony in Canada in 1985, Ericsson has been the main supplier for the private operator Cantel. Today, the country has 130,000 subscribers and is one of the world's fastest growing markets for mobile telephony.

Ericsson now has a mobile telephone system in 32 countries and 40 percent of the world's market. With the Mobitex order from Canada and the States, Ericsson has strengthened its position even more in the field of mobile communication.

Both mobile telephony and mobile data communication have been developed in close cooperation with Televerket Radio.

"We wanted to have a public national system with far-reaching capacity that would make it economically possible even for smaller companies to acquire mobile data communications," says Tom Pirner,

head of the mobile data division at Cantel in Toronto. In this context, Mobitex proved very interesting.

During our conversation, he returned time and again to the remarkable collaboration that exists between Sweden and Canada in the area of telecommunications.

"I have enormous respect for Swedish technological knowhow. The products you develop are always of a very high quality," says Pirner.

But there is one thing that bothers him in the business contacts with Sweden and the current Mobitex order.

### Toughness missing

"Sometimes you lack understanding for the commercial toughness that's common in countries like Canada and the United States. Speed is of the essence. If we do not get the system going in time and with sufficient capacity that market needs demand, then it has to be thrown out," Pirner says.

"In Scandinavia, there is considerable tolerance for lateness. There is also widespread understanding for the fact that it takes time to achieve the best quality. Unfortunately, these are arguments that are not readily accepted here. "Mobitex is not a full-fledged

*Exactly one year ago, Ericsson Radio Systems won a major Canadian order for Mobitex. The customer, the Canadian telephone company Cantel, will construct a nationwide mobile data network. Today, the network covers Toronto and its surroundings.*

system yet. Capacity is too low. It has to be increased at least fivefold within just a year to suffice in Canada. We have to succeed in that."

Other than that, Pirner has only good things to say about working with Swedes.

"You speak excellent English, you are ambitious and have both respect and courtesy in your dealings with other peoples and cultures. I am happy to be working with people from Ericsson and Televerket Radio," he says.

Right now, construction is moving full speed ahead in Montreal and Toronto. Next year, there will be coverage for 50 percent of the population and in five years for almost 70 percent.

### Like Sweden

The Canadians are thinking of using the Mobitex system like in Sweden. It is above all in the transport sector that there is an immense need for data communications. The same is true for courier operations and service companies of different kinds. Pirner does not rule out the possibility that Canada will also use Mobitex in rescue services, such as we do in Sweden.

The Mobitex network in Canada will be digital and will operate on a 900MHz frequency. This makes it possible to use the system with both vehicle-bound and hand-portable



terminals to connect to data bases and to exchange data and text messages.

It was during a period of strike that Sweden got the Canada order.

The development costs for Mobitex have been high. The Swedish market alone has never been seen as sufficient to make the system economically worthwhile. International success was absolutely necessary.

"Now, Mobitex is going to be a success all around the world, and it will have a positive impact on the Swedish market," says Michael Larsen of Televerket Radio.

### Operators' club

The lead over the competitions is still strong, but several similar systems are being developed in Japan, Canada and United States.

In order to maintain its lead and to spread the technology to as many countries as possible, Televerket Radio has taken the initiative in founding an operators' club, which today includes representatives from Sweden, Norway, Finland, Canada and the United States.

The aim is to keep abreast of developments in the tightly competitive markets around the world and at the same time to acquire an exchange of knowledge as far as technology and markets are concerned.

Later, it is left to be seen how far this can go.

**Jörgen Ulvsgård**

*This article was published in issue No. 5/89 of KOM!, a publication of Televerket Radio.*