

Savings on track

At a "Strategy and Technology Summit" Kurt Hellström assured investors, analysts and the media that the savings program is on track, even if the industry itself is in a state of flux. **News, 8**

Preparation for 3G

Every year some 25,000 people from all over the world receive 3G training in the Stockholm suburb of Kista. Many operators realize that their staff do not have enough knowledge about Mobile Internet. **16-17**

A living platform

Most of Ericsson's fixed and mobile networks are based on AXE. And AXE is also clearly playing its part in the 3G world. Read more about it in the first of three articles about Ericsson's technical platforms. **Technology, 18**

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Ericsson CEO Kurt Hellström is certain of success and activity within two years.

Photo: Lars Åström

Major changes affect everyone

"We have identified areas for major potential savings that can be achieved without any harmful effects on our customers. However, the really tough part will come when the measures are implemented within all parts of the organization," says CEO Kurt Hellström. "But these hard times will make us an even stronger company. In two years, we will have a very strong Mobile Systems activity and be highly successful in the area of multi-service networks."

Efficiency Program, 4-5

New major CDMA order from China

Ericsson has succeeded in landing yet another multi-million dollar contract in China. This time it involves a CDMA contract with China's second largest telecom operator, China Unicom. Ericsson will be the main supplier for CDMA equipment in seven Chinese provinces. **News, 8**



Lars Tofft, Fátima Raimondi and Tor Olofsson, account representatives at the local company in Portugal.

Photo: Ecke Küller

Benefits to society and 3G

Portugal is working hard to become a leading IT nation. The government has instructed the four operators that received 3G licenses to develop applications that benefit society as a whole. Ericsson in Portugal is in an intense period - they will be supplying systems to three of the four operators. **12-14**

He will run the new company

What is the man who will be heading Sony Ericsson Mobile Communications really like? *Contact* has met Katsumi Ihara to get his views on cultural differences, Sweden and how the new company will become number one in mobile phones. **3**



■ WORLD WATCH

Operators are worried about how fragmented the telecom sector is in the European Union. For Ericsson, however, the lack of uniform standards and rules is not the main problem. According to Thomas Sidenbladh, at the Corporate Public Affairs unit, the level of debt within the industry is much more serious. The key question at the moment is how Europe is to maintain its lead in telecom. **10-11**

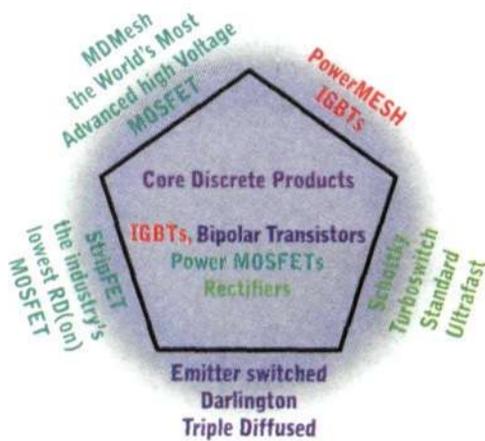
■ TECHNOLOGY

All the available space will be needed for the networks of the future, so existing GSM networks are being progressively upgraded in order to offer genuine 3G services within a couple of years. Development is occurring via packet data with GPRS, improved GPRS with the new Edge modulation, and converging towards UMTS, with the help of the new Geran radio network interface. **19**

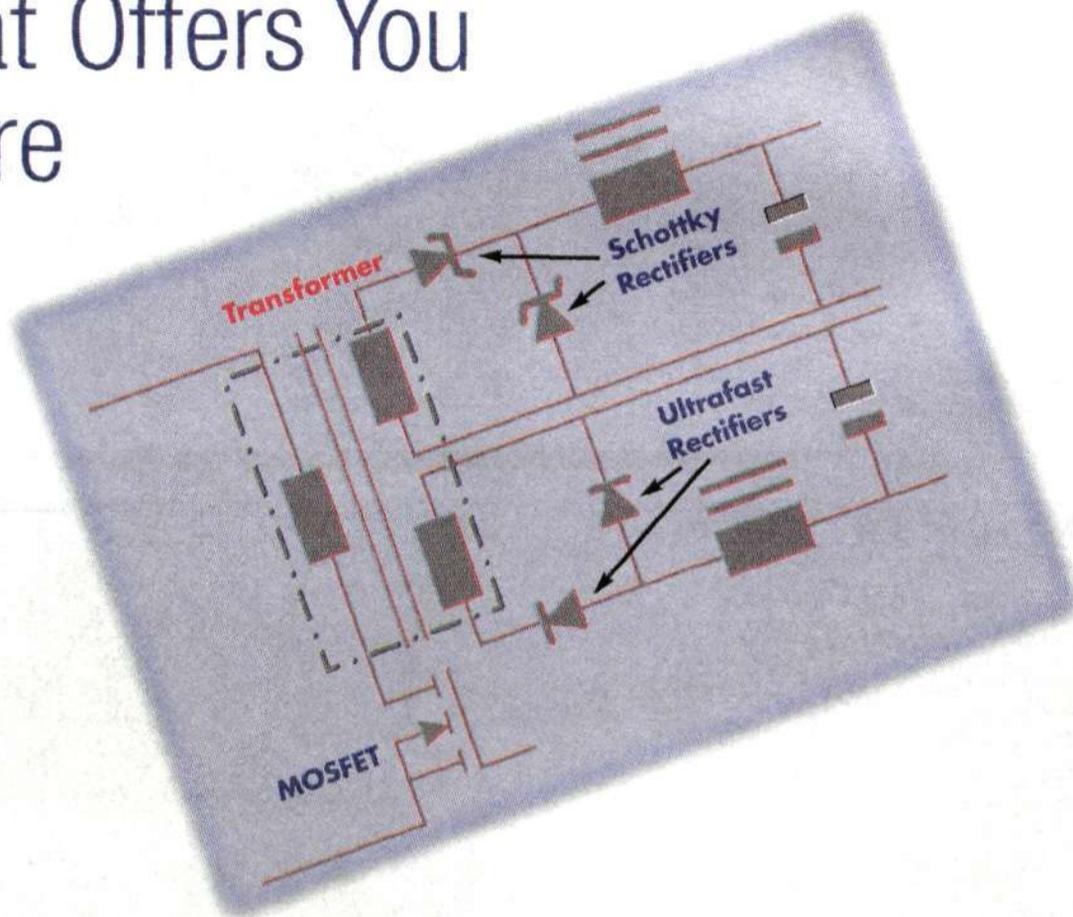
■ AT WORK



"In times of cut-backs, you see many who are exercising their power by standing on the sidelines," says Bert Nordberg, head of the Global Services Division. Bert Nordberg and Conni Simonsen, President of Ericsson in Denmark, discuss what power is and why they personally have chosen to live up to their responsibilities. **20-21**



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Ihara – a popular manager

Katsumi Ihara is described by his present employees as a man who is open to new ideas, uncomplicated and honest. And the man who will head Sony Ericsson Mobile Communications thinks that Swedish journalists ask far too many questions about cultural differences.

"I've been having meetings with people from Ericsson for ten months now and haven't come across any differences in the way we think and work. Sony happens to be a Japanese company, but we are primarily international, just like Ericsson," says Katsumi Ihara on a visit to Stockholm.

► These are busy times for Katsumi Ihara, Vice President of Sony and the man who has been appointed President of the Japanese-Swedish mobile phone company. In the course of a few weeks, Katsumi Ihara and Jan Wäreby, President of the Consumer Products division, will manage to meet most of the people, from Ericsson and Sony, who will work for the new company. This will entail a great deal of travel, although his primary task will involve participating in the process of change required for the streamlining of two separate organizations into a single company.

"We have formed an integration group, which is now quickly preparing a strategy to merge the companies in a very short time. Naturally, the goal is to include the best of Sony and the best of Ericsson," says Katsumi Ihara.

A multitude of features have to be harmonized, ranging from sales and technology to personnel issues. In addition, the two companies' product portfolios must be combined and a powerful brand name chosen for the new products. The new company has a distinct goal: to become Number One in the market for mobile phones within three to five years.

"We have to develop extremely attractive phone models. I'm convinced that the product's power is the company's power. And quality products are DNA hallmarks of both Ericsson and Sony," says Katsumi Ihara, leaning back with a smile on his face.

The fact that Sony and Ericsson also complement one another is something that everyone agrees on. The new company has been described as a dream team, but surely there must be problems, too? What about the issue of cultural differences, for example?

"Why does everyone talk about this all the time? During the ten months we have been



During the 1980s, Katsumi Ihara was in charge of Sony's European operations and lived in Germany, but he managed a few trips to Sweden. One of his initial tasks at Sony Ericsson Mobile Communications will be to formulate a strategy for the swift fusion of the two companies.

Photo: Ecke Küller

meeting to discuss our cooperation, I haven't encountered any difficulties. Both companies are international, and Swedes are very nice. Cultural differences will probably emerge at a later stage, but we will overcome them."

Ihara has had only positive personal experiences of Sweden. During the 1980s, he was responsible for development of Sony's European operations and lived in Germany at the time. He often traveled to Sweden during the summer, since he finds the natural surroundings magnificent.

"Another thing I like is that you eat a lot of fish and seafood, just as we do in Japan. I'm also interested in Scandinavian design, particularly office environments," he says, making a sweeping gesture across the light furnishings in the room where our meeting is being held.

In common with many of the senior managers at Ericsson, 50-year-old Ihara has been with his company for a long time – for twenty

years in fact – during which he has held several top positions. Earlier, while studying at Stanford, California, he was a professional basketball player for a few years. Today, he is happy to be a spectator, but he does play golf, of course.

The official announcement that Ihara would head Sony Ericsson Mobile Communications was made on April 24. When asked why he, specifically, is suitable as President, he responds with some embarrassment that he doesn't like to boast.

"You should direct that question to Kurt Hellström," he replies.

However, he does say that he likes working close to his employees and discussing various matters with them. For their part, his employees describe Ihara as being open to new ideas, unprejudiced, forthright and uncomplicated.

"Now it's time for Ericsson employees to decide whether they agree," concludes Katsumi Ihara.

Elin Dunås

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FACTS/KATSUMI IHARA

In the news: Appointed President of Sony Ericsson Mobile Communications

Born: 1950 in Matsue, southwest Japan on the main island of Honshu

Background: Mitsui Knowledge Industry 1973, Sony Corporation since 1981 (several leading positions), Senior Vice President 1997.

Family: Wife and one son

Interests: Basketball and golf

Reads: Historical books, particularly about the Roman Empire

Film: "Gladiator" is a favorite

Use of i-Mode: "Naturally! News, share prices, ring-tones and e-mail"

Favorite food: "There is nothing I don't eat, but seafood is always nice"

The product's power is the company's power

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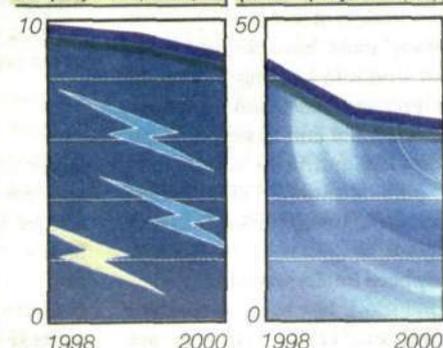
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"This painful program will make us stronger"

"Work on the efficiency-enhancement program is making excellent progress. But the really tough part will come when the measures are implemented within all parts of the organization," says CEO Kurt Hellström.

"Naturally, it is painful to have to make people redundant. But if we didn't make these savings, the effects would be even more severe."

Is there anything that might prevent Ericsson from achieving its savings goal?

"Not that I can see. I am convinced that we will be successful. We have identified major potential savings and they can be achieved without any harmful effects on customers. The only problem might be if we ignored the seriousness of the situation and instead believed that the problems are now behind us, but there are no signs of this today."

10,000 employees must leave the company, 4,000 of them in Sweden. What message do you have for those now afraid of losing their jobs?

"Serving notice is always a painful process. I don't believe there is anything you can say to comfort people who lose their jobs. What we can do is to explain the situation and hopefully get people to understand that we have no alternative. If we didn't make these savings, the effects could be even more severe. However, within Ericsson we have a tra-



"We will continue to do our utmost to make the transition to other employment as painless as possible, and the people concerned will be treated with the greatest respect," says Kurt Hellström.

Photo: Lars Åström

dition of supporting those who are forced to leave the company. And that is our intention on this occasion, as well. We will continue to do our utmost to make the transition to other employment as painless as possible, and the people con-

cerned will be treated with the utmost respect."

You and Ericsson's management are urging everyone to become more cost-conscious. What savings will you make yourself?

"I am probably the type of person who has always been careful with the company's money; some may feel that I am excessively thrifty. But I don't like to see money wasted on unnecessary items. In my own case, I try to keep down my travel

and entertainment expenses, for example."

Can you comment on the market situation today?

"As yet, the situation shows no signs of improving. Some customers seem to realize that they can't afford to put off new investments, while others continue to cut back and sales as a whole are still declining. At the same time, we can note that we are gaining market share. We belong to a sector of the future, but for the time being we cannot say exactly when the turnaround will occur."

Looking ahead, where do you see Ericsson in a couple of years' time?

"By then, I hope that the market situation will have changed and that we have entered a growth period. The changes that we are going through will make us an even stronger company. In two years' time, we will have a very strong Mobile Systems activity and we will be highly successful in the area of multi-service networks. This means that combined with our service and applications operations – and our cooperation with Sony on multimedia handsets in particular – we will by then be in a position to supply very complete solutions to telecommunications and multimedia operators."

Lars-Magnus Kihlström

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Extracts from this interview can be seen at:

<http://inside.ericsson.se>

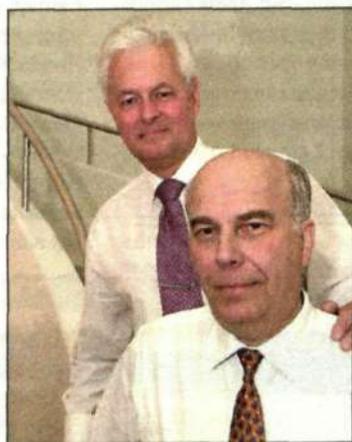
Cooperation for efficiency

Efforts are currently underway worldwide to make the organizational structure more efficient. A large part of the solution involves cooperation and sharing resources among several units.

Major efforts are currently underway within divisions, business units and market areas to create a more efficient organization. Ultimately, this will also mean that 6,000 employees around the world will have to change their jobs, in addition to the 4,000 who have received redundancy notices in Sweden.

Many units have already made great strides in locating and implementing rationalization measures. In the Central and Eastern Europe, Middle East and Africa (CEMA) market area, a number of initiatives which are in tune with the Efficiency Program have started or have already been implemented.

One move has been to combine several smaller markets into one



Karl Alsmar and Ragnar Bäck are working to increase the efficiency of the organization.

Photo: Ecke Küller

larger one. In the CEMA market area, for example, Croatia will now also be responsible for Bosnia and Serbia. Slovakia will be managed from the Czech Republic and cooperation between the Baltic States will increase further. Markets are also

being merged in Africa, where Nigeria and Egypt will provide centers for surrounding markets.

"This enables us to save on administrative costs and other expenses previously incurred in each separate country," says Karl Alsmar, Executive Vice President of the CEMA market area.

Combining regions

In the Western Europe market area, the Netherlands and Belgium will be combined into a single Benelux market.

"It's not all that easy to make these kinds of mergers in a region, such as Western Europe, with relatively large local companies. It involves combining two organizations into a single entity. But in our current situation, this is essential in order to obtain an efficient structure," says Ragnar Bäck, Executive Vice President of the Western Europe market area.

By comparison, CEMA's markets in Eastern Europe, the Middle East and Africa are relatively small. That

means that no country has full expertise and sufficient resources in all areas. As a result, various networks have been formed to share resources throughout the entire region.

One of these networks focuses on customer solutions. Since no single country is large enough to have experts in all fields, each market is instead responsible for its share. When a new project is initiated, such as a bid, a group is formed to accomplish the task, drawing on expertise from throughout the network.

Although this network has so far concentrated on Central and Eastern Europe, it will now expand to include Morocco, South Africa, Egypt, Lebanon, Saudi Arabia and the United Arab Emirates.

"Local companies are still important. They work directly with customers, but they share their resources," says Karl Alsmar.

Five hubs

CEMA is now starting up another network that will focus on imple-

mentation. To do so, it is establishing five hubs in South Africa, Croatia, Turkey, Hungary and Lebanon, from which the available resources will be controlled.

If, for example, a facility is going to be installed in Bulgaria and certain resources are lacking, it will be easy to obtain them via the hubs.

"We're doing this for two reasons – one is to achieve greater profitability and flexibility, the other is to increase customer satisfaction. This type of organization enables us to give customers better service," says Karl Alsmar.

In order to further improve cash flow, measures have also been taken to ensure that customers pay their bills.

"The focus on costs has actually been going on for some time, when we could foresee a slowdown in the market in 2001. The new factor is that customers are not very good at paying on time," says Karl Alsmar.

Lars-Magnus Kihlström

Information must circulate

Knowledge about how the efficiency enhancement program works must grow within the company.

"No department manager should be able to say that it is not possible to attain the savings targets due to unclear directives," says Ingemar Blomqvist who is heading the group responsible for the savings program.

By-and-large, Ingemar Blomqvist is satisfied with the period that has passed since the efficiency program was launched on March 27 this year.

"The reporting from each division has taken place at the desired pace and the reports show that we are in line with our savings targets," he says.

Not satisfied

However, he is not satisfied with the confusion that exists among personnel regarding the structure of the program.

"When I meet employees and union representatives in various



"Responsibility for savings is borne by each division, company and unit," says Ingemar Blomqvist.

Photo: Ecke Küller

contexts, they often believe that the efficiency program is being carried out as an individual project within the company and that is not the case

at all. The program is being carried out throughout the company. Responsibility for ensuring that the savings are implemented lies with each division, company and unit concerned," he explains.

The efficiency program is divided into two parts: EP1 and EP2. EP1 was initiated directly following the profit warning on March 12 this year and implies a savings requirement of USD 800 million throughout the company.

Later, Kurt Hellström announced that, taking the situation into account, the company would have to save USD 2 billion.

Ingemar Blomqvist and the senior management established savings targets and brought together the so-called group of 40 (the division managers, market managers and the presidents of the largest subsidiaries) for a meeting on April 9 and 10 this year.

Everyone must improve

"At the meeting, we summarized the situation with the managers present outlining their savings programs

with regard to the USD 800 million included in EP1. In turn, the senior management presented an estimate of how the USD 2 billion could be divided across the company. The meeting closed with all present agreeing that the USD 2 billion savings were to be carried out," says Ingemar Blomqvist.

Following the meeting, detailed savings requirements were sent out to each unit. The savings requirements concerned the remaining USD 1.2 billion making a total of USD 2 billion and this program was given the name EP2.

Managers duty

Reporting occurs in reverse order via division and market managers who report to senior management. It is also each individual manager's duty to ensure that their employees receive all necessary information concerning the savings.

"Anyone who has not received information from his/her immediate supervisor bears the responsibility for finding out what the situation is themselves," says Ingemar Blomqvist.

On May 11, the various savings measures were reported to Ingemar Blomqvist's project group who then produced a survey of the entire savings program.

"It appears that the various measures combined provide savings of USD 2 billion," he says.

On May 16 and 17, the group met again. In addition to a presentation of the survey, each manager had to account for what had been achieved so far in their savings programs.

Complete unanimity

"We were completely agreed to carry through the program that was established. We also agreed that the group of 40 would meet in August for a further follow-up of each program.

Ingemar Blomqvist feels that internal information about the savings program must improve.

"Everyone must get better at providing as accurate and concrete information as possible."

Jenz Nilsson

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Product development more defined

The company's extensive cost-reduction program will have several effects on the product development organization.

The primary change will take the form of clearly defined limits between those who order products and those who conduct the actual development work.

Business units will be responsible for which products get developed. Product development units will merely create them.

That means that all sales, marketing and overall product manage-

ment, which previously rested with the product units will be shifted to the business units. Likewise, no product development will take place within the business units.

"We need a better mechanism for prioritizing products and focusing correctly," says Jan Uddenfeldt, Senior Vice President, Technology and responsible for Research and Development at Ericsson.

"Now those operations will be



Jan Uddenfeldt

managed according to the desires of customers. This separation must not, of course, be exaggerated to the point that it results in negative consequences."

Powerful concentration

One consequence of the newly defined boundaries will be that product development will be concentrated to fewer than 20 large units.

In the past, approximately 50 product units plus sub product units were involved.

"The new Product Development Units (PDUs) will look more or less like today's larger product units," says Jan Uddenfeldt.

"They will each be responsible for several products and we will make extensive savings by dividing products according to function instead of each unit having a full complement of their own functions," he continues.

The former sub units will become true development units, localized in one place with responsibility for just one product.

Expertise needed

"I know that many people are worried about their jobs, but I want to emphasize that we will do everything we can to avoid laying off skilled product development personnel,"

he says. "They will be needed to replace all of the consultants that will no longer be working for us."

Sweden will be affected somewhat differently than the rest of the world. Product development has been managed largely from Sweden, and that is also where most administrative and consulting positions will be reduced.

Outside of Sweden, certain product development centers that can no longer be given a clear product responsibility, will need to be reduced or eliminated.

Lars Cederquist

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New IT-organization to reduce servers

The efficiency enhancement program within Ericsson's IT sector is in full swing.

One of the goals is to slim down the number of servers within the company by up to 30 percent, which would save a considerable amount of money.

Within Ericsson's efficiency program, a special group has been given the task of identifying savings within the IT sector while at the same time building up a new IT organization.

The work involves a thorough review of personnel and computer-related equipment.

"In the first phase, the goal is to

reduce the number of UNIX servers by 30 percent and NT servers by about 20 percent," says Christer Sjörin at Ericsson TTM and Development Solutions.

Saving money

"Almost every site within Ericsson currently has its own user register and, therefore, its own server," he says.

"It is possible to organize a large number of sites on a single server. In this way, we could save a lot of money through reduced maintenance and support."

The group is also looking at how money can be saved in day-to-day computer usage from stationary work stations.

"At the moment, we have a pilot project in Kista where we replace all large work stations with so-called thin clients."

Only the essentials

This means that each workplace only has the absolute essentials, usually just a monitor and a keyboard.

"A time-consuming stock-taking of all IT operations within the company is needed. Therefore, I think that the real results of the efficiency drive will not be noticed until next year," Christer Sjörin concludes.

Jenz Nilsson

Transition to Flextronics re-scheduled

As reported, Flextronics will take over production of mobile phones in a number of countries, including Brazil and Malaysia. The original date for the hand-over in these countries was April 17 2001. However, due to local regulations it has been moved up to June 30.

The new transition date also applies to the US distribution center in Richardson, Texas. Jörgen Ekengren, Director of Supply Management at DCP, says:

"We're working together with Flextronics to see that everything is in place according to the initial agreement." He adds that Ericsson will continue working together with

Flextronics during the transitional period, lasting until the end of 2001.

Ericsson plants in Carlton and Scunthorpe, in the UK, once appeared to be at risk of closing. Discussions currently under way with potential buyers might save the plants and as many employees as possible there. Hopes are that a Memorandum of Understanding will be ready in June; accordingly, the revised transition date of June 30 will not apply there. However, the original decision to discontinue with phone manufacturing in Q3 remains, even under new ownership.

Kris Walmsley

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FIVE VOICES
ON SAVINGS

How are the cutbacks being noticed in your department?

Maria Wase,
Ericsson
University



"We have had to cut back a little on our training programs. This is sad because we know that training is necessary, but you have to make the best of the situation. We are also thinking about reducing travel."

Göran Ritter,
Ericsson
Education
Europe



"All extra-curricular activities, such as dinners and the like, have been removed. For example, we had a kick-off with activities during the day and then we went home. But that's OK. I understand that you have to start with the things that are easy to cut back. Morale is still high and we are kept busy."

David Rejdemyhr,
Access



"You notice it a lot. For example, many consultants have had to go. All external training has ended and many future projects have been postponed. We are also discussing how we can save more."

Hans Brolin,
Corporate
Technology



"For us, it is noticeable because we have lots of work – in part, it is our job to keep track of the savings carried out by all of the production units. However, I am not working on that myself. There are only 35 of us here, so there isn't a lot we can cut back on. But there are lots of small things like traveling less."

Laureen Sandquist,
FA Projects



"We travel less and hold teleconferences instead. And we invoice everything that we possibly can and try to re-use old equipment, such as switch cabinets, on customer projects."

Employees given notice

On Friday, May 18, Ericsson employees in Sweden received the news that 4,000 people within the company have been identified as surplus to requirements. The first redundancy notice affects 2,700 employees in the country.

"The news was fairly well received," says Bo Lindgren, responsible for Human Resources at Ericsson in Sweden and for Ericsson Internet Applications.

The company is being forced to reduce its workforce by 10,000 worldwide, due to the economic downturn and slower economic growth.

On Friday, notice was given to employees in Sweden. Of the 2,700 employees given notice in Sweden, 2,600 of them work in the Stockholm area. Before the end of June, those affected by the first redundancy no-

tice will be advised as to which of them will have to go.

The remaining 1,300 will receive notice in the near future, with every employee receiving a decision no later than September 1. The company will also reduce the number of consultants by 4,000 during the year.

By the end of the year, Ericsson will have less than 90,000 employees in total.

"Theoretically, we could have waited to give notice until we were able to identify all 4,000 employees in Sweden, but in reality that is not possible, since we need to reduce our costs as quickly as possible," says Bo Lindgren.



Bo Lindgren

Will those who are made redundant be offered any kind of support?

"Negotiations are currently taking place at every Ericsson company. Our ambition is to provide similar support to that which we have given employees who have had to leave the company in the past," says Bo Lindgren.

He does not believe that more redundancies will be necessary next year.

"No, I don't think that will be necessary. Ericsson does not have any control over business cycles, but I am sure that we will be strengthened by these changes."

How can you and other managers motivate those employees who will continue to work at Ericsson?

"By providing good support for those who must go and by looking ahead. The entire industry currently

finds itself in a situation that nobody could foresee. Over the long term, however, we're in a sound and expanding industry, and we have major things to accomplish."

Despite the recent difficult announcement, Bo Lindgren felt that the atmosphere among employees was fairly hopeful.

"Everyone seems to understand that the measures we are now taking to reduce our costs are absolutely essential. Despite everything that has happened, I feel as though there is a belief in the future among the employees, although this is mixed with disappointment for those employees who must leave the company."

Ericsson will reduce its expenses during the year by a total of USD 3.8 billion. Personnel cutbacks are part of that savings program.

Ulrika Nybäck

ulrika.nybäck@lme.ericsson.se

Mobile Systems reduces consultants

The Mobile Systems Division, which for years has shown remarkable growth in sales, is no longer increasing its sales as rapidly as before and its cash-flow situation has worsened.

"In order to turn the tide, we must reduce our costs significantly. Firstly, we must reduce the number of consultants and, unfortunately, this also means that we must also reduce the number of employees, says Mats Dahlin, who is responsible for the division.

Large portions of Ericsson's savings of USD two billion per year will be made within Mobile Systems. A number of measures are to be carried out. This will include the division reducing its personnel.

"Anything that is not essential will be closed down or postponed. We must become more critical when it comes to product development and projects. In addition product management will be centralized by ordering functions being combined within the business units. Production units will be streamlined to develop products cost efficiently."

The goal of the division is to reduce the number of consultants by 2,500 and, so far, efforts have gone according to plan.

"It is extremely important that we keep the customer's needs in focus. We are now adapting to the market. This is necessary in the current situation. However, I would like to stress that I am very optimistic about the longer term. We will not only main-

tain but also strengthen our lead. The efficiency program is a part of that process," says Mats Dahlin.

Monica Bergström is the Deputy Chairman of the Ericsson chapter of the Swedish Union of Clerical and Technical Employees in Industry. She says that they will do everything in their power to support their members.

"All our members must have long-term support. We have ombudsmen and a central crisis group who can provide this support," she explains.

"Of course there is a need for restructuring, but this must be done in a way that is healthy for operations. In this case, savings are being spread across operations and I am not sure that is the right method."

Håkan Hedberg works with purchasing at Ericsson Radio Access and was divided in his opinion after hearing of the cutbacks in personnel at a large meeting.

"It's a good thing we had this meeting, so that we don't have to go around speculating. We don't want to get to know about things like this by way of the tabloids. I was employed only recently, so naturally, I am worried that I may have to go. In general, every cloud has a silver lining. The company will become more efficient, but perhaps this could have happened earlier," says Håkan Hedberg.

Jesper Mott

Elin Dunås

Action program proceeds according to plan

On May 18 the Consumer Products Division also served notice that 280 employees in Sweden would be made redundant. These do not constitute new employment-termination notices – rather, they are part of the figure of 2,000 employees that was presented during the first-quarter report earlier this year.

The Consumer Products Division's new organization went into effect on May 15. It is a functional organization, which means, among other things, that business units within the division will disappear. Sales units at every local company will now report directly to division management or to regional managers.

No surprise

"Redundancy notices in Kista and Lund should come as no surprise to the employees – we've been working on cost-reduction measures since last summer," says Nina Eldh, media relations manager for the Consumer Products Division.

"Everyone within the division has worked very hard over the past few months. Efforts have included both streamlining the organization and preparing it for the merger with Sony, which is scheduled to take effect October 1."

Future expectations

"It's always difficult when employees are forced to leave, but since the announcement of the collaboration with Sony, future expectations and confidence in the division have been high. There have been two major meetings between Sony's President Katsumi Ihara and Jan Wäreby, Executive Vice President, Consumer Products Division, during which they shared their visions for the future of the new company," says Nina Eldh.

On May 25, it was announced which units will have to reduce their workforces. Exactly which employees will lose their jobs in Sweden will be announced before the end of June.

Cutbacks in countries outside of Sweden also continue. Each nation has its own set of rules regarding



"Redundancy notices in Kista and Lund should come as no surprise to the employees – we've been working on cost-reduction measures since last summer," says media relations manager for the Consumer Products Division, Nina Eldh.

termination notices and redundancies.

"Our action program is proceeding according to plan and we are in a good position. Our goal remains firm

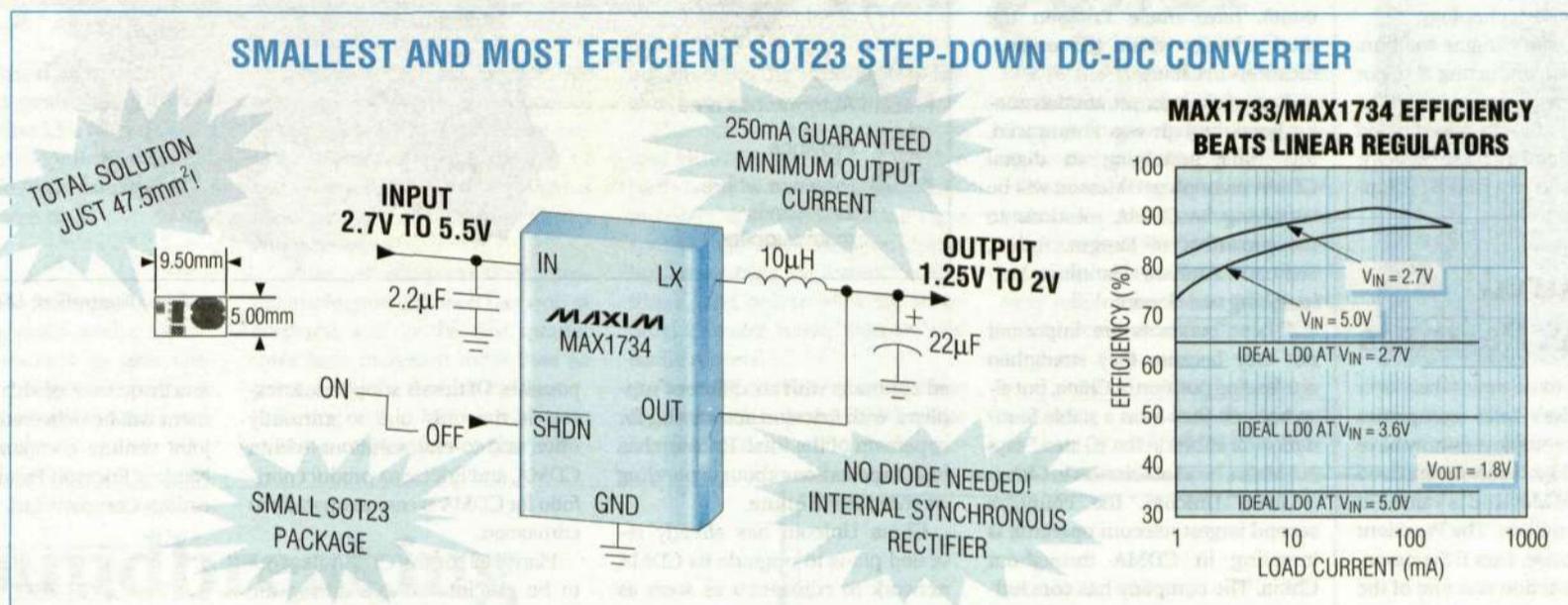
– to become profitable during the second half of this year," says Nina Eldh.

Ulrika Nybäck

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Ericsson's credit rating lowered

» The credit rating Institute Standard & Poors has downgraded Ericsson's credit rating to A- with Negative Outlook. S&P fears that Ericsson won't reach a positive cash flow position before the end of this year. However, Vidar Mohammar at the Corporate Treasury says that the move was expected but this means that Ericsson will have to pay more in interests for its borrowing.

"Our cash flow would have been positive during the first quarter if the clients had paid in time but the payment time increased from 82 to 116 days. We're now working hard to get back to previous levels of payment time," he says.

New Engine order from UK

» BT will be investing an additional USD 60 million to upgrade its transit network using Engine technology.

Assisted by Ericsson's Engine solution, the UK operator is conducting a major renovation of its nationwide backbone network, in order to fuse its telecom and datacom networks and increase capacity.

Last year, Ericsson received BT's Supplier of the Year award.

Deal secured with Apax Partners

» Apax Partners have now taken over Ericsson Enterprise's sales companies and 2,400 Ericsson employees now have a new employer. The deal was finalized at the beginning of May and is valued at just over USD 470 million. The President of Ericsson Enterprise, Lars E Svensson, says that this transaction was one of the most complicated in Ericsson's history.

However, Ericsson will not lose touch with the sales companies entirely since it has invested USD 35 million in the new Enterprise Solutions unit that has formally purchased them. As a result, Ericsson owns 19.9 percent of Enterprise Solutions.

New launch of popular switch

» In May, Ericsson Enterprise will be launching a new version of the MD 110 call center for enterprises. The new MD 110 BC 11 can be connected to the IP network and in principle still offer telephone operators and other users the same functions as earlier.

The call center has new mobile functions. It also provides the possibility of sending text messages to connected DECT telephones. The SMS-application requires terminals that support text messages. Therefore, a new collection of DECT telephones will also be presented.

Phone users get better test results

» A study in Hong Kong among high school students showed that those regularly using mobile phones did better on attention tests than those not using phones. The test was performed by researchers at Hong Kong University and was published in the journal *Neuroreport*.

The researchers themselves caution that other differences between the two groups, for example socioeconomic differences, could explain the results.

Ericsson largest CDMA supplier in China

Ericsson has landed a huge CDMA contract in China. The China Unicom operator has named Ericsson the primary supplier of CDMA equipment for seven different provinces. The contract, worth USD 210 million, further strengthens Ericsson's position.

China is on its way to becoming Ericsson's largest single market. A number of pioneering multi-million dollar contracts over the past year for GSM equipment and multi-service networks (IP Backbone), have made Ericsson the market leader within telecommunications in China.

Two weeks ago, yet another major breakthrough was announced, this time pertaining to digital CDMA technology. Ericsson will be supplying its CDMA solutions to the provinces of Jiangsu, Anhui, Sichuan, Yunnan, Liaoning, Heilongjiang and Henan.

"These contracts are important not only because they strengthen our leading position in China, but also because they form a stable foundation for efforts in the 3G area," says Jan Malm, head of Ericsson in China.

China Unicom, the country's second largest telecom operator, is investing in CDMA throughout China. The company has concluded



Illustration: Mikael Parment

ed contracts with six different suppliers, with Ericsson accounting for 15 percent of the total. Ericsson has high expectations about expanding its share in the future.

China Unicom has already revealed plans to upgrade its CDMA network to cdma2000 as soon as

possible. Of the six suppliers, Ericsson is the only one to currently offer end-to-end solutions within CDMA, and Ericsson's product portfolio for CDMA is easy to upgrade to cdma2000.

Plans call for the CDMA network to be put into service during the

fourth quarter of this year. Equipment will be delivered by Ericsson's joint venture company in China - Nanjing Ericsson Panda Communications Company Ltd.

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Convincing the market

Ericsson is on the right track with its efficiency measures and is still the leader in mobile communications, including 3G and GPRS.

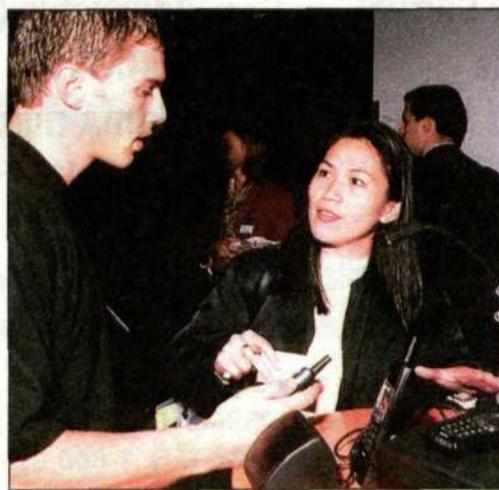
This was the message conveyed by members of the Corporate Executive Team at the "Strategy and Technology Summit" in New York last week.

This meeting, attended by more than 300 media representatives, analysts and investors, was the first in a series of such gatherings.

Kurt Hellström's main message was that the ongoing efficiency program is on track and that the goal is now to reduce costs by USD 3.8 billion, of which USD 1.8 billion applies to the Consumer Products division alone. He promised no immediate recovery of the situation in the industry and did not want to provide a more detailed forecast for full-year earnings in 2001, but a turnaround towards better times is on its way.

Torbjörn Nilsson, Ericsson's marketing director, gave a more detailed description of the market situation and the factors that have caused the downturn.

"Now that many countries in Europe are approaching 70-percent penetration, the market for mobile telephony has matured and the



A Mobile Internet Café was located adjacent to the presentation venue. This was the site of demonstrations of the possibilities offered by 3G, Mobile Internet and Bluetooth.

Photo: Jack Radgowski

conditions have changed," he explains.

Jan Wäreby, head of the Consumer Products division, pointed to that this probably will be the first year when the number of replacement phones sold will exceed the number of phones purchased by first-time buyers.

"However, subscription numbers continue to grow, and the traffic per subscriber is also continuing to increase. So, sooner or later, the operators will be forced to increase network capacity."

The need for increased capacity was one of the core points of Ericsson's argument that 3G will really start to make strong headway the

day that the industry has regained its confidence. There has been much talk of new services, increased data capacity and opportunities for operators to increase revenue, but it is equally important that 3G technology provides extremely efficient use of the available radio spectrum.

Another important message for the market at the moment is that Ericsson is much more than mobile communications alone. The success of Engine - the company's solution for the migration of fixed networks from circuit-switched to packet-switched technology - confirms this. Einar Lindqvist, head of the Multi-Service Networks division,

emphasized that the fixed broadband market is now experiencing strong growth in the access area.

"We anticipate that this market will be worth USD 67 billion within a few years. Then we will have a 20-percent market share and an even greater market share - 35 percent - for migration solutions. We will also defend our market share of at least 14 percent for fixed narrowband systems."

Chief Financial Officer Sten Fornell received several questions regarding how Ericsson intends to return to positive cash flow and the extent of the company's exposure to customer-finance of 3G contracts.

"Of the 31 contracts we have secured for 3G, only two contain agreements that we will assist the customer in financing its investments," Sten Fornell assured.

Regarding cash flow, the new rules for managers' salary bonuses were outlined several times.

"No managers will receive a bonus this year, unless Ericsson can report a positive cash flow at year-end. And the costs of restructuring measures - estimated at about USD 1.5 billion - have also been included in the calculations."

Lars-Göran Hedin

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Alliance to improve Mobile Internet

Diveo Broadband Networks, Inc., a leading provider of Internet infrastructure and broadband services in Latin America, has formed an alliance with Ericsson to provide Mobile Internet infrastructure solutions for mobile operators, content providers and traditional enterprises throughout Latin America.

The services will increase efficiency and performance of Mobile Internet services for mobile wireless operators, traditional enterprises using Mobile Internet devices and content providers. Hosted in Diveo's Internet

Data Centers throughout Latin America, the new services enable businesses to rapidly enter the Mobile Internet access market and offer new value-added services to increase productivity and profitability.

"The Ericsson-Diveo alliance features Ericsson's multi-service network solution Engine, as the platform for Value Added Services," explains Joseph Ghaly, director of Marketing Strategy & Business Development.

"Services offered by Ericsson on top of Engine include Consulting and Mobile Internet Applications. The strategic value of this alliance is that the offering represents a unified

mission for Ericsson and all of the company's strengths are packaged to market in integration - multi-service networks, Mobile Systems and Global Services".

A complete solution

As part of the integrated solution, Diveo will provide the network infrastructure and Mobile Internet web hosting services, while Ericsson will provide hardware and software products for access gateways, along with Mobile Internet systems integration and consulting services. These basic infrastructure services will be available under a turnkey bundle delivering a complete solution.

Until now, mobile users in Latin America have had to contend with substandard Internet infrastructure and reliance on a US-hub architecture, causing increased latency and packet loss, and preventing the basic functionality of many Mobile Internet services.

The Diveo-Ericsson alliance focuses on solving many of those problems. All the services are designed to be content, carrier, and device neutral; interoperable with several standards.

"The best way to to increase Mobile Internet usage is to provide open platform solutions for the entire Mobile Internet market," says

David Rutchik, President of IP Business and EVP Corporate Development for Diveo Broadband Networks.

A single provider

"If you are a mobile operator, dot-com or a traditional enterprise and you want a single provider for Mobile Internet services, this is the solution you need. These new Mobile Internet services position Diveo as an enabler of advanced mobile communications in Latin America," concluded David Rutchik.

Joseph Ghaly
freelance journalist

Engine Life cranks up the power

Pulsating sound, provocative words, mind-grabbing graphics. The Engine Life Mini Fair that rolled into Dallas recently packed these high-energy elements into a total experience.

The three-hour fair combined live presentations, multi-media, videos, and demonstrations to give customers and employees a chance to see a live Ericsson multi-service network in action.

"The goals of our Engine Life roadshow are to gain the confidence of our customers and educate our sales teams on the advantages of our network," explains Magnus Anseklev, head of Customer Group North America.

In the past two years since introducing Engine, Ericsson has won 51 contracts and in the first quarter sales have increased more than 30 percent over the first quarter 2000.

During the mini fair, Ericsson spends a majority of the time show-

ing operators the advantages of Engine, instead of just telling them.

Through videos, the audience sees real-life examples of a video birthday message from Grandma, remotely opening the house for a spouse who was locked out, playing games over the Internet with a friend, and online banking, shopping, learning, news, weather, and traffic reports.

The icing on the Engine cake was Ericsson being chosen by BT as the supplier of the year and quality ven-

dor of the year. This is a satisfied customer who started deploying Ericsson Engine in January 1999 and currently has 57 class 4 switches.

When asked what he thinks of the mini fair, one computer software engineer from WorldCom says, "it is very informative. The whole show is very helpful for me to understand what Ericsson has to offer."

Jack Radgowski
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The roadshow will visit several American cities over the next few months. Photo: Jack Radgowski

Groundbreaking WCDMA installation

The first Ericsson WCDMA base station in Germany has been installed. It is located in downtown Düsseldorf and is the first important step for German operator D2 Vodafone in the rollout of 3G in Germany.

The base station is the first ever to be installed in the D2 network in Germany. It's the first in a pilot network. Ericsson and the operator are expecting the pilot to be launched during the summer of 2001. The pilot will be used to gain further experience with planning and operation of 3G systems prior to Mannesmann's commercial launch expected in 2002.

The first installation was followed by a ceremony where Björn Eisner, head of customer unit D2 Vodafone, officially handed over the first Node to Achim Wortmann, regional head of D2.

"Our customer is very eager to get started with WCDMA and it's very exciting to move from planning to implementation", says Meike Wingen, pilot project leader. "It is now evident that Ericsson is capable of going from words to action with the 3G rollout."

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Voice over DSL boosts German network

The global network operator KPN International Network Services has selected Ericsson for the upgrading of its network with Voice over DSL.

Ericsson's Engine solution will help KPN to launch the service quickly.

KPN will begin by integrating Voice over DSL into its German network. Successful implementations have already been completed along certain stretches of the system and, at some point during the summer, KPN anticipates being able to offer Voice over DSL at full scale.

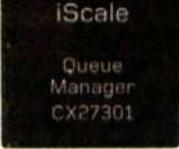
"We have chosen Ericsson's Engine solution because Ericsson has shown itself to be capable of delivering a complete and integrated Voice over DSL system," says Leo Roobol, member of the board of KPN and in charge of the fixed network.

Voice over DSL is a technology that facilitates the combining of speech and data across a single copper wire in an access network. By employing this technology, operators need not install new cables, thus making extensive savings.

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Cisco reports loss in billions

Cisco reported a loss of USD 2.69 billion at the beginning of May. The loss is the result of inventory write-downs of USD 2.2 billion and nonrecurring costs of USD 1.2 billion for an action program that includes layoffs of 8,500 employees. Cisco's operating profit for the third quarter was USD 230 million, as compared with USD 100 million for the corresponding period last year. Cisco also anticipates that the fourth quarter of the company's split fiscal year will remain weak and did not promise, as many had hoped, any improvement. Shares fell 6.3 percent according to S&P. With the release of Cisco's quarterly report, the season's most eagerly awaited reports have now all been released.



Photo: Claes Nordenskiöld/Pressens Bild

Green light for car phones

It does not appear likely that there will be any kind of national legislation in the US restricting the use of cell phones while driving, according to Reuters. Robert Shelton, head of the National Highway Traffic Safety Administration (NHTSA), testified before Congress that it is premature to create any form of legislation in this regard.

"There have always been sources of distraction while driving, whether it be the radio, eating food or looking after accompanying children. Distractions while driving account for between 20 and 30 percent of all accidents," says Robert Shelton.

The role of cell phones in accident statistics has been the subject of debate in the US recently. A study by the University of North Carolina showed, however, that only 1.5 percent of those drivers who were in accidents blamed the use of cell phones. Three states, California, Massachusetts and Florida have implemented somewhat restrictive rules for the use of mobile phones while driving.

SMS poets win prizes

*txtin iz messin,
mi head'n'me englís,
try2rite essays,
they all come out txtis.
gran not plsed w/letters shes getn,
swears i wrote better
b4 cominzuni.
&she's african*

So read the winning entry, submitted by 22-year old Hetty Hughes, to a poetry contest sponsored by the UK newspaper The Guardian. All submissions were composed as SMS messages. A total of 7,500 poems were sent from 4,700 mobile phones, with the seven winning submissions being picked by a jury consisting of newspaper critics.

"One interesting aspect of this is the special reading experience one has in that only one line can be read at a time (due to the size of the display). That increases one's focus on individual words," says Peter Sansom, one of the jury members and a cultural critic at The Guardian.

Division may hinder

15 nations. 15 government authorities. 15 sets of rules. The telecom sector within the European Union does not function according to a uniform set of rules, and this is causing problems.

"We have to be able to guarantee an open telecom market, otherwise the sector could be hindered," says Erkki Liikanen, the EU commissioner with oversight responsibilities.

Is the European telecom industry's lead threatened by the costs of 3G licenses in Europe? That was what 24 established operators claimed in a joint letter to the EU Commission in April. The open letter expressed a desire to avoid new bureaucratic rules that could delay the rollout of 3G and hinder development of third-generation networks. Included among the signatories were influential operators such as BT, Orange, Vodafone and Italy's TIM.

It is a complex game that is being played out within the European telecom industry. Global consolidation among mobile operators has increased the need for coordinated regulation, but the EU has been unable to keep up with the rapid pace of developments in the industry. The clearest sign of this is the distribution of 3G licenses in Europe, with every member nation overseeing the process as it sees fit. The most dramatic examples are the expensive licenses in Germany and the UK.

"The distribution of 3G frequencies has been a national matter and nothing can be done about it after the fact. What is worrisome is if it ends up slowing development of the industry," says Olle Wikström, at Ericsson's Corporate Public Affairs unit.



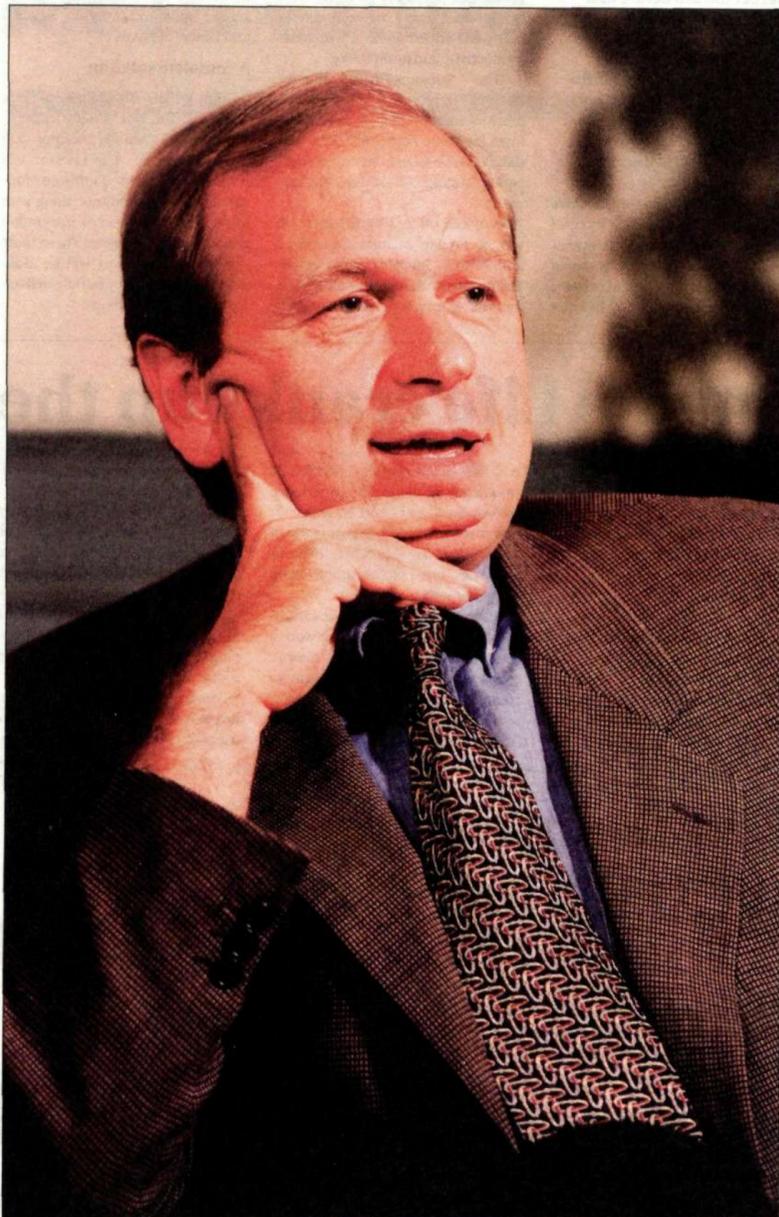
Olle Wikström

European operators have spent over USD 120 million on licenses in Europe, even as share prices have dropped and creditworthiness has fallen, making it more expensive to take out loans.

And that is just the beginning. The next step includes comprehensive investments in infrastructure. Several difficult rounds of negotiations remain in order to resolve technical, logistical and organizational issues before 3G becomes a reality in Europe. On top of that come the costs of marketing and sales of services in 3G networks.

Must stay ahead

The enormous investment needs have created considerable concern throughout the industry, which has caused the EU Commission to react. A memo dated in March highlights both the risks and the importance of introducing 3G as quickly as possible, in order that the industry in Europe not lose its competitiveness and lead. 3G is



Erkki Liikanen, the EU Commissioner responsible for 3G networks, is worried that Europe's competitiveness might suffer if a well thought-out plan is not available for the transition to 3G. Photo: Jack Mikrut/Pressens Bild

also significant from an employment standpoint.

A review of regulations within the EU has been initiated by Erkki Liikanen of Finland, who is the commissioner responsible for telecom issues. Senior Administrative Officer Helena Strömbäck, who oversees telecom issues for the Swedish Ministry of Industry and Commerce, says that the work is moving forward.

"It began last summer during the French chairmanship. Regulations need to be adapted to the latest technological developments, while simultaneously harmonizing among member nations," she says.

She is, however, doubtful whether there will ever be supranational regulation of the distribution of radio frequencies, for example.

"In any event, a cooperative group consisting of regulators from the various member nations is in the process of being formed to discuss a harmonization."

Other measures being discussed include developing new services in various European languages, maintaining a high level of research surrounding mobile networks and coordinating the introduction of new Internet versions.

"We have to ensure that Europe's competitiveness is not threatened by the lack of a well thought-out plan for the transition," says Erkki Liikanen.

Fragmentation within the European telecom sector is not, however, the largest problem for Ericsson, according to Thomas Sidenblad, at Corporate Public Affairs.

"The big problem for us is the high degree of debt within the industry," he says.

Thomas Sidenblad has studied the significance of the high cost of 3G licenses on infrastructure suppliers such as Ericsson.

It is his opinion that it will not necessarily be the established operators who will be primarily affected, but rather the new players who do not yet have steady revenue flows from subscribers using second-generation networks.

"The distribution of licenses has resulted in major expenses, regard-



Thomas Sidenblad

telecom in Europe

3G LICENSES IN THE EUROPEAN UNION

- License issued through auction
- License issued through a beauty contest
- 3G licenses will be issued in the near future

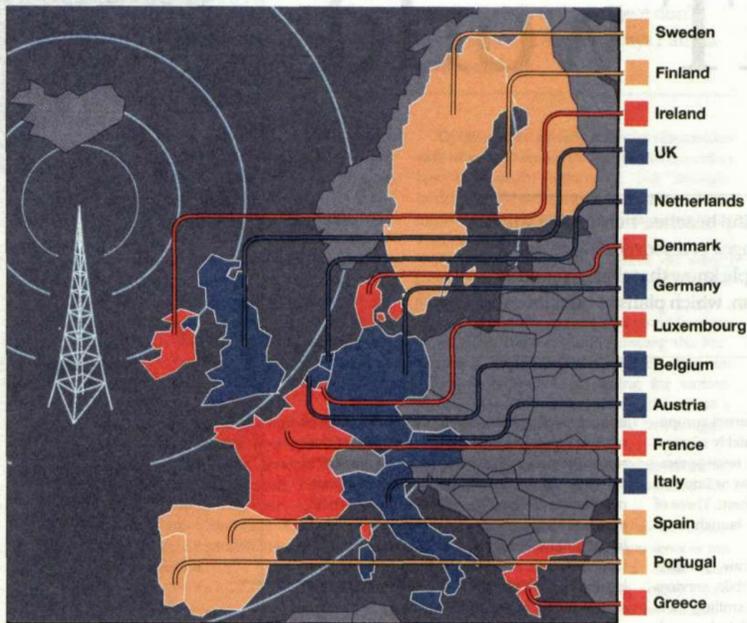


Illustration: Mikael Parment

Austria: Auction completed in November 2000, yielding USD 80 million for six licenses. The coverage rate by the end of December 2003 must be 25 percent, and 50 percent by December 31, 2005.

Belgium: Auction completed in March 2001. Four licenses sold for about USD 420 million. Coverage should be 30 percent after three years, 40 percent after four years, 50 percent after five years and 85 percent after six years.

Denmark: Auction to be held in October. Four to six licenses will be issued.

Finland: Beauty contest (comparative evaluation of bids) was held in 1999. Four licenses were issued without any special coverage requirements.

France: Beauty contest plus administrative fee (about USD four billion per license). The selection process has not yet been completed since only two candidates have applied for the four available licenses.

Unofficially, the contest has been postponed until next year. Coverage demands include providing voice telephony to 80 percent of the population within eight years, and mobile data services to 60 percent.

Germany: Auction was concluded in August 2000. Six licenses were auctioned off for a total of around USD 45 billion. By the end of 2003, 25 percent of the population must have access to 3G services and 50 percent by December 31, 2005.

Greece: An auction will be held starting July 11, in which candidates can decide how many licenses will be issued. This provision has been included to avoid the problems experienced in Italy, Austria and Switzerland. The starting bid for respective licenses is USD 13 million.

Ireland: Beauty contest later this

year. Four licenses will be issued. No other details available.

Italy: A partially unsuccessful auction, due to unclear rules, was held in October 2000. Five licenses were issued, costing slightly more than USD 13 billion. By 2004, all regional capitals must be covered by 3G networks, and by 2007 all provincial cities must be included.

Luxembourg: Beauty contest to be held this autumn. Four licenses will be issued with an annual fee corresponding to 0.2 percent of 3G network sales.

Netherlands: An auction was held in July 2000, in which licenses sold for USD 2.5 billion. By January 2007, cities with more than 25,000 inhabitants must be provided 3G network coverage.

Portugal: Beauty contest for four licenses was concluded in November 2000. A one-time fee per license of USD 370 million plus an annual fee. Twenty percent of the population must have access to 3G networks one year after the licenses go into effect, with 40 percent after three years and 60 percent after five years.

Spain: Beauty contest with one-time fee of nearly USD 500 million plus an annual fee of USD 12 billion over 15 years. Four licenses issued in March 2000.

Sweden: Beauty contest for four licenses concluded in December 2000. A one-time fee of USD 4,680 plus annual fee of 0.15 percent of sales.

UK: An auction in April 2000 brought in about USD 35 billion for five licenses. A coverage rate of 80 percent must be achieved by 2007.

less of whether it has been through auction or beauty contest. It has already resulted in small operators being forced out of the future 3G market," says Thomas Sidenblad.

An impossible scenario

There are various ways to deal with the large amounts of debt that operators are taking on. One is to remit or pay back the amounts that operators paid for their licenses. That is, however, an impossible scenario, since it would be considered as state support, which is prohibited," says Don Jayasuriya of DJ Consulting Service to Communication Week.

Discussions are, however, being held to offer operators more advantageous loans. The European Investment Bank (EIB) is discussing

petition authority, explained at the end of April that too much collaboration can stifle competition and be a disadvantage for consumers.

According to Thomas Sidenblad, sharing networks is of no particular significance to operators, since the costs of infrastructure only account for a fifth of the overall ongoing costs to deliver 3G services.

"We're positive towards operators collaborating on networks, since it will improve coverage. But measures to facilitate the expansion of new networks, such as uniform environmental regulations, are just as important," he says.

Collaboration between operators is controversial, however. Mario Monti, head of the EU's com-

FACTS/MOBILE TELECOM

WITHIN THE EU

- 63 percent have mobile phones
- 38 percent rate of growth in mobile communications during 2000
- 30 percent of revenues within the telecom sector come from mobile communications

Source: EU

Vodafone buys into Japan Telecom

Vodafone is purchasing BT's stake in Japan Telecom and its subsidiary, mobile phone operator J-Phone. This means that the UK's Vodafone will become the majority shareholder in Japan Telecom with an ownership share of 60 percent.

In order to finance the purchase, Vodafone is implementing a new share issue of slightly more than USD four billion.

The agreement means that BT will almost completely withdraw from the Japanese telecom market, which is considered one of the world's most prestigious. For Vodafone, the purchase will create a number of opportunities, especially when it comes to J-Phone.

Vodafone CEO Chris Gent was quoted by the Total Telecom news service as saying, "The goal is to make J-Phone competitive and give DoCoMo a good fight."

DoCoMo currently has a 60 percent market share, whereas J-Phone has just 16.4 percent, or 10 million mobile phone subscribers.

Increased profit for NTT DoCoMo

Japanese mobile phone operator NTT DoCoMo's net profit increased by 45 percent to USD three billion for the financial year ended March 31, 2001.

This was above expectations. Sales increased by 26 percent to USD 38 billion.

During the year, DoCoMo acquired 6.7 million new mobile phone subscribers and further consolidated its dominant role among Japanese mobile phone operators, with a market share of 60 percent.

Telia's profit lower than expected

Swedish operator Telia's earnings for the first three months of the year were significantly lower than anticipated. Profit before tax totaled USD 50 million, compared with the market's forecast of USD 94 million.

The increase in sales was just six percent, which Telia's CEO Marianne Nivert thinks is far too low.

"Six percent is too low, even if there are reasons behind it. The efforts that we are now making have not yet yielded results, and we are still suffering from the lingering effects of the substantial price decreases during 2000," she said in a comment to the Web service E24.



Marianne Nivert

Norwegian girls take phone lead

For the first time ever, more women than men own mobile phones in Norway. In just a few years, sales of mobile phones to women have exploded, and the relationship between men and women has shifted.

"In certain age categories, such as girls between the ages of 13 and 15, an amazing 75 percent own mobile phones," writes the publication Mobil.

In 1998, 58 percent of men owned a mobile phone, while only 42 percent of women owned them.

Portugal conquers the IT world

Portugal. Some people think of beautiful beaches, rich-tasting wines and colorful tiles. Others think of voyages of discovery, Vasco da Gama and early colonialists. Few people know that this is a country intent on becoming a leading IT nation, which plans to offer its entire population Mobile Internet services.

► These are busy times at the Internet companies in Portugal – they have to quickly create a wealth of attractive services for the next-generation mobile systems. Mats Lindelöw at Ericsson in Portugal cooperates with 23 of them. Three of four operators have decided to launch both GPRS and 3G services.

"It is actually possible to draw parallels between the next-generation mobile services and tv shows," says Mats Lindelöw, smiling. He is responsible for the New Business Solutions unit at Ericsson in Portugal.

"Ten years ago, the entire family followed the soapoperas Dallas and Dynasty, but today children often watch cartoons, young people watch 'Friends,' and older people watch something else. To achieve momentum in GPRS and 3G services, an abundance of exciting services is required – it is not only about creating one best-selling service. Today, there are so many customer groups that have varying needs and interests," he continues.

Contact met Mats Lindelöw at a café in Estoril, a small town thirty kilometers outside the capital, Lisbon. When we order coffee, the waiter keys the order into a wireless device and it appears on a PC monitor in the kitchen.

"This is an excellent example of the Portuguese willingness and interest in quickly adapting to new technology," Mats Lindelöw explains. He moved to Portugal nearly a year ago and makes comparisons with other countries where he has worked.

Theater tickets from ATM

ATMs are another example. In Portugal, withdrawing money is not the only activity they are used for: at the ATMs, you can pay bills, order cinema and theater tickets and buy insurance. The technology-wise Portuguese and the fact that the number of mobile subscribers is growing much faster than the number of fixed connections make Mats Lindelöw and many others believe that the Portuguese will take the same route as the Japanese, meaning that many people will use a mobile rather than a PC to connect to Internet.

The employees at the New Business Solutions

unit are working to encourage the development of services for Mobile Internet and to establish Ericsson in Portugal in this area. The local company is currently collaborating with 23 different companies that are involved in everything from the development of applications to Internet portals, including VM-data, Novabase and Movensis. In Mats Lindelöw's unit, activities also include the marketing and customer-adaptation of datacom systems, such as IP routers and ATM switches.

Secure the contract

The unit's operations started in January. An important goal during the year is to sign contracts with operators for various services and to supply these services. Mats Lindelöw anticipates securing three of these contracts within a few months. Another important goal is to increase Mobile Internet expertise within the local company and to create readiness and procedures for future deliveries and requirements.

In order to succeed in the Mobile Internet field, close cooperation with the customers is required, according to Mats Lindelöw.

"It is important to maintain the role of integrator, in order to always be aware of the needs of the customer. On the other hand, we can let other companies develop the services in collaboration with us," he says.

Are there any services that are typical for Portugal?

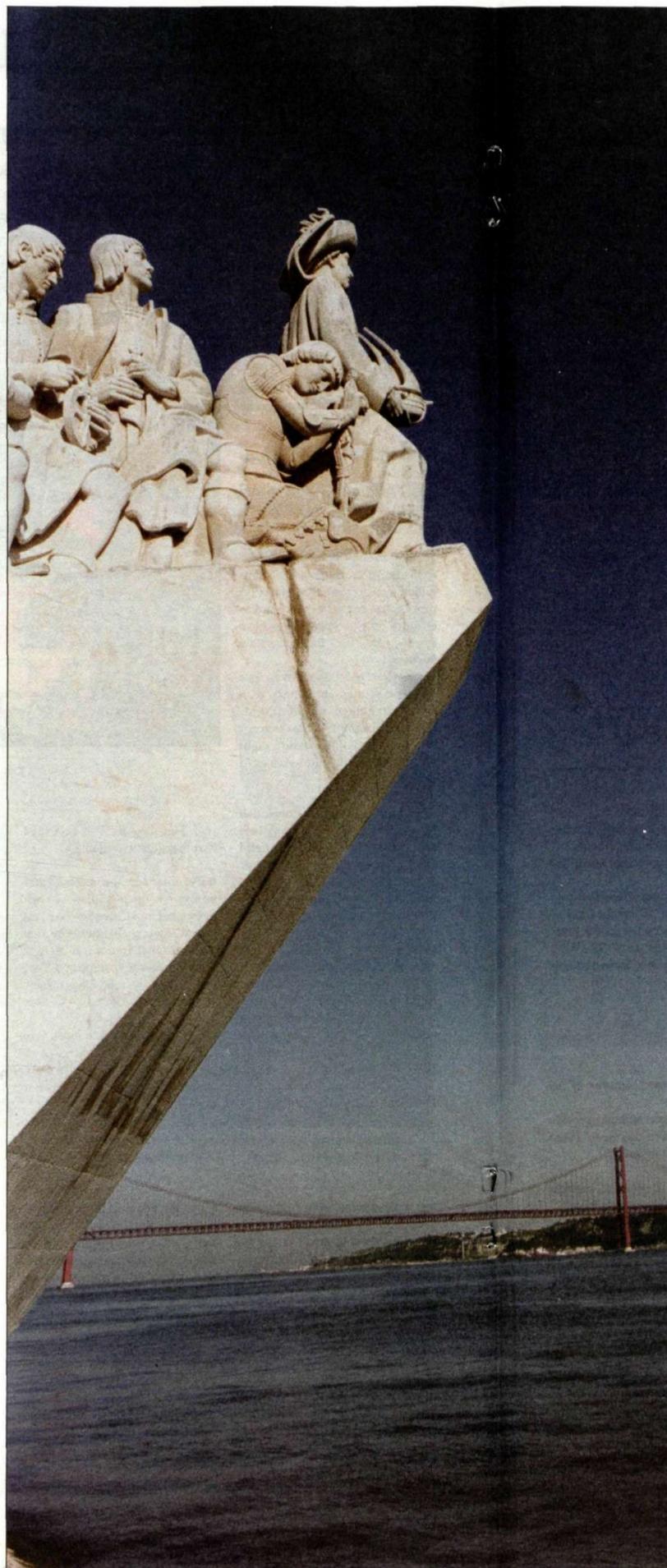
"The operator TMN is already offering soccer results via SMS and this is the kind of service we are going to see more of. With higher capacity in the network, in a couple of years the Portuguese will definitely be able to have the latest soccer goal as a video sequence on their mobile phones."

This interest in soccer is confirmed by the offerings at newspaper stands – in Portugal, three soccer newspapers are published every day.

"I always use my R380 to check that flights are on time," Mats says and opens up a WAP page on his phone, where he can see whether the flight is on time or delayed before he drives out to collect customers or friends at the airport.

Ulrika Nybäck

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Portugal is not only about Vasco da Gama and colorful tiles. This is a country that is focusing on becoming a leading IT nation.

Photo: Ecke Küller

Account managers put to the test

Ericsson in Portugal has secured three out of four available 3G contracts. However, the account managers cannot sit back and take it easy.

"It is important that we show that every customer is unique. If we don't succeed in this, we can be replaced within the space of a week," says Fátima Raimondi, Key Account Manager for Telecel Vodafone.

► Contact met up with the three key account managers for TMN, Telecel Vodafone and Optimus in Cascais, a small town 20 kilometers outside Lisbon.

At the beginning of December 2000, the winners of the 3G licenses were announced. The three account managers – Fátima Raimondi, Tor Olofsson and Lars Tofft – agree that the trust the local company had established by demonstrating its technical expertise and ability to deliver in time was crucial in securing the contracts. The fourth operator in Portugal is Oniway, for which Nortel and Siemens are the suppliers.

"Then, as now, it is important to show that we regard each customer as unique. We must customize networks and services for their needs," says Fátima Raimondi, Key Account Manager for Telecel Vodafone. As the name implies, the British company Vodafone is the majority owner of Portugal's Telecel.

"The customer wants us to devote ourselves exclusively to them, but at the same time they want to know that the systems are being tested by others," says Tor Olofsson, who is Key Account Manager for TMN, the largest operator in Portugal.

The Portuguese government is first in Europe to demand that the operators who have secured 3G licenses also develop services that benefit the public. The account managers take a positive view of this.

"Optimus has already initiated discussions with one of the country's universities regarding how they might collaborate. For example, students could receive test and exam results by mobile phone or over the net," says Lars Tofft, Key Account Manager for Optimus.

The account managers reflect on which GPRS and 3G services will be popular in the future.

"E-commerce is an area that could become large. There is no resistance among the Portuguese to paying over the Internet – they are already accustomed to paying for various services via ATMs. In fact, I haven't been to a single post office since I moved to Portugal," says Tor Olofsson.

Lars Tofft believes, just like Mats Lindelöw (see adjacent article), that sports-related services will be a hit.

"The Portuguese love soccer, so the operator who is first to offer good soccer services will have a head start among many consumers," he believes.

Fátima Raimondi nods in agreement and continues.

"Services with a local touch will also be important," she predicts. "Such as reading Portuguese news via a mobile phone."

A few years ago, Telecel Vodafone mainly targeted businessmen and women. At the time, the company did not believe in prepaid services, but it revised its strategy in time. Today, as many as 80 percent of subscribers in Portugal have a prepaid subscription. For some

The operator who is first to offer good soccer services will have a head start among many customers

Lars Tofft

High growth boosts prosperity

Fifteen years have passed since Portugal joined the EU. The country's wealth has increased considerably during this time. Two of the goals of Prime Minister Antonio Guterres are continued high growth and establishing Portugal as a leading IT nation.

► In 1986, Portugal's GDP was 53 percent of the EU average, a figure that is now 75 percent. This wealth has largely benefited the inhabitants of the major cities – in the capital Lisbon, for example, GDP per capita is 90 percent of the EU average, while the figure for the Azores remains at 50 percent.

Portugal is also feeling the effects of the economic slowdown that began with the downturn in the US economy about a year ago. The country's economic growth for next year is forecast as about the EU average or slightly less. Portugal has always had low unemployment, with a record low reached during the 1990s, when the unemployed totaled 7.5 percent of the population.

For Prime Minister Antonio Guterres and his socialist party, Portugal's continued growth is of the highest priority. One of the goals is for Portugal to become a leading IT nation. One example of this is that the operators who were awarded 3G licenses will also develop Mobile Internet services that provide public benefits, such as for schools and hospitals. Another example is that it will be possible to vote via the Internet at the next election.

The majority of the Portuguese population is Catholic, but in recent years the Bible has been interpreted more freely. Fewer Portuguese couples now marry in church – two out of three according to recent statistics. In 1960, nine out of ten people married in church. The number of divorces is also approaching the European average, with one-fifth of marriages now ending in divorce.

Women in Portugal were given the vote as recently as 1976. Today, 63 percent of the female population work, compared with 20 percent in 1960. Nowadays, 60 percent of women – nearly as many as the number who work – continue with studies at university.

Ulrika Nybäck



Fátima Raimondi, Tor Olofsson and Lars Tofft are Key Account Managers in Portugal.

time, Telecel Vodafone has been trying to attract more young people by offering, for example, lower prices for SMS.

The three account managers have noticed that the operators' demands have changed in the past two years. Today, they want Ericsson to take care of everything from design of the network, to locating sites, constructing the network, integrating services and managing support. The customers want to spend more time designing and marketing applications.

"This puts major demands on us, but it also means that we move up in the value chain," says Tor Olofsson.

Fátima Raimondi continues:

"The operators have high demands – suppliers that don't succeed can be replaced in a week. There are plenty of competitors prepared to take over when someone fails."

The account managers believe that there is every likelihood that GPRS and 3G services will become really popular in Portugal.

"Many Portuguese love new technology and want to have the latest in mobile phones, so our future looks bright," says Lars Tofft.

Close customer relations is key

Collaborating closely with the operators from an early stage was important for being selected as 3G supplier and will remain important for increasing market momentum. Eduardo Restuccia, President of the local company, tells us how the company is succeeding.

► There are several reasons why Ericsson in Portugal secured most of the 3G contracts. It was important to be involved in the process at an early stage, to help the operators to calculate everything from how they can earn money on the new services to thinking about how quickly they can build out the network.

"The first period was tough. We helped seven consortia to prepare license applications, since we knew how crucial it was to become involved in the process at an early stage," says Eduardo Restuccia.

Four of the seven operators secured a 3G license and three of them selected Ericsson as a supplier.



Eduardo Restuccia

Just as important as the planning phase was the ability to show the operators how the services function. For this reason, the local company constructed a test network, where the customers could test various applications.

"Our activities included showing a video conference and a positioning service, whereby the customer received directions for how to drive home. Now, in retrospect, we can see how valuable a good demonstration is and that the local touch brings the service closer to reality and makes it extra attractive," he continues.

The Portuguese government decided to organize a combined beauty contest, with a fixed price of EUR 100 million, USD 90 million, for the license. The beauty contest was based on the operators being judged according to how rapidly they would be able to build out the network and the extent of national coverage.

In addition, the government made demands

for the development of socially useful services, aiding hospitals and universities, for example. Ever since Portugal held the presidency of the EU, the country's prime minister, Antonio Guterres, has been pushing the massification of Internet rather strongly.

Restuccia does not believe that the local company will be seriously affected in economic terms by the technology shift from GSM to 3G networks.

"Growth may be somewhat delayed, since the 3G contracts will not appear in invoicing until the interim reports are published next year. The only way I see for the company to overcome the gap in earnings between GSM and GPRS and 3G is to sell more services," says Eduardo Restuccia.

"Nevertheless, we have a very good position, with 60 percent market share of GSM and we will continue growing in that area."

Eduardo Restuccia believes that a large number of exciting services is the key to getting the market for GPRS and 3G started up. He believes that the market will really gather momentum next year.

"To persuade consumers to purchase the next generation of mobile phones, we must create added value. Consider, for example, the

progression from typewriters to computers – give the users enough good reasons to change to the latter and they will do it," he says.

Steve Fernandes is responsible for business development for 3G and mobile Internet at Ericsson in Portugal. He believes that the local company should remain small and fast and for this reason it should concentrate on the integration of services and advice, as well as initiating collaboration with companies that develop content.

He looks ahead and reflects on what the local company should do in the future.

"Simply selling 'boxes' and telephones will not be sufficient. We will work even closer to the operators in such areas as sales planning, building sites and launching networks," he says.

Eduardo Restuccia takes a bright view of the future, despite the need to cut costs.

"Ericsson in Portugal is a small company with a huge amount of willpower and pride, and with rather young employees who will do everything to ensure that our customers are satisfied," he concludes.

Ulrika Nybäck

"Ericsson provides us with excellent local support"

FACTS/TELECEL VODAFONE



Manuel Soares, Telecel Vodafone

Company formed: 1990
First GSM service launched: 1992
Total market share: 35 percent
Total number of subscribers: 2.5 million
Proportion prepaid: 75 percent
Most popular GSM services at present: Voice and SMS
GPRS launched: April 2001
First GPRS service launched: WAP via GPRS
3G services to be launched: December 1, 2001, but expected to be delayed until year-end 2002

Why did you choose Ericsson as your supplier of 3G equipment?

"We have cooperated with Ericsson since 1992, and almost our entire mobile network consists of Ericsson systems. It was encouraging to see the production of radio base stations in Gävle, during our visit there."

When will the 3G services really start to take off?

"We believe the real 3G commercial launch will take place around the fourth quarter in 2002."

The government has directed you to develop 3G services that benefit society. What are your plans on that front?

"We aim to help people with physical handicaps."

Do you offer any services that could be said to be typical for Portugal?

"We offer a service that enables subscribers to have the latest soccer results as SMS. In 1997, we launched a service that enables customers to pay their telephone bill and transfer funds between their accounts using their cellphone."

What are currently your most popular services?

"Voice and SMS."

How much do you expect your subscriber base to grow?

"In five years, we expect the total number of mobile subscribers in Portugal to be in excess of 120 percent, since many people will have more than one telephone."

FACTS/OPTIMUS



Jean Pierre Bony, Optimus

Company formed: 1997
First GSM service launched: 1998
Total market share: 22 percent
Total number of subscribers: 1.5 million
Proportion prepaid: 80 percent
Most popular GSM service at present: Voice and SMS
GPRS launched: November 2000
GPRS services: expected to take off in 2001 and 2002
3G services to be launched: December 1, 2001, but expected to be delayed.

Why did you choose Ericsson to be your supplier of 3G equipment?

"They offered the best deal. Ericsson will deliver the entire core network and 50 percent of the radio network. We have also purchased GSM equipment from them in the past and it worked well."

When will 3G services really start to take off?

"All Portuguese operators who obtained a 3G license have promised to launch services in January next year. We think that the 3G services will start to take off in a couple of years."

The government has directed you to develop 3G services that benefit society. What are your plans on that front?

"In our application for the 3G license we committed ourselves to providing mobile Internet to certain low-income groups at lower rates. We will also support projects that permit universities and students to take advantage of the new technology."

What are currently your most popular services?

"Voice and SMS. With our SMS services, subscribers can also join chatrooms, and this has become very popular among young people."

How much do you expect your subscriber base to grow?

"Today, mobile penetration is 71 percent. In five years, we expect penetration to have reached 100–120 percent. Machine-to-machine communication will also increase every year."

FACTS/TMN



Jorge Aleluia, TMN

Company formed: 1991
First GSM service launched: 1992
Total market share: 50 percent
Total number of subscribers: 3.2 million
Proportion prepaid: 83 percent
GPRS launched: November 2000
First GPRS service launched: WAP and Internet access via GPRS
3G services to be launched: by December 2001

Why did you choose Ericsson as your supplier of 3G equipment?

"Ericsson offers high-quality GSM systems and they provide us with excellent local support. They were also the first vendor to show us a 3G demo with stable functioning."

The government has directed you to develop 3G services that benefit society. What are your plans on that front?

"We are working in various ways to prevent certain groups from being excluded from the information society. Measures include offering pensioners lower prices."

Do you offer any services that could be said to be typical for Portugal?

"I believe that in a few years, 90–95 percent of the services will have a local character – for example, offering information on theaters and restaurants, combined with a positioning service to tell the subscriber how to get there."

What are currently your most popular services?

"Regarding regular telephony, its voice and SMS. Among our WAP and GPRS services, sport news, stock quotes, news and horoscopes."

What services do you foresee will be popular in five years?

"I believe that various multimedia services will be the killer applications. Machine-to-machine services will become increasingly widespread after 2005."

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ERICSSON 



EEE now has its own complete UMTS network in Kista to train both outside clients and Ericsson employees. Roberto Gonzalez Martin, Mark Dillon and El Habbash Ahmed were three of the experts called to Stockholm to help get the system ready in time.

Photo: Sofia Ekström

3G skills rule the day

In order for investment in third-generation mobile telephony to pay off, both customers and Ericsson employees need to acquire the appropriate skills. At Ericsson Education Europe (EEE) in the Stockholm suburb of Kista, some 25,000 people from various parts of the world receive 3G training every year.

► In an age when telecom companies are investing billions in 3G contracts and systems solutions, many companies have overlooked the fact that trained employees will be needed to ensure that networks function.

"Is there currently enough expertise within the telecom industry to handle the transition to 3G? The answer is no. In Europe, as well as North and South America, for example, there is a shortage of a couple of million essential positions or job opportunities, just within the IT sector," said Pär Thomsson, at the marketing unit at EEE, in an address at the CeBIT trade show recently.

There is an enormous demand for skilled workers. To that end, EEE's Training Center in Kista offers a large number of training programs

covering the latest telecom industry developments for both Ericsson employees and outside clients. Many of the courses fill up months in advance, and employees at EEE have noticed increasing demand for training programs.

"As more and more telecom companies review their employee's skills, they are finding gaps that need to be filled, especially within the field of Mobile Internet," says Ulf Annerberg, head of Ericsson Education Europe.

"Regardless of whether a company has previously been active within the datacom or telecom sectors, the transition to 3G means that they will have to adopt an entirely new set of conditions," Ulf Annerberg continues.

The Mobile Internet is unifying both datacom and telecom into a single technology. This is an unusual work situation for many companies. At

some workplaces, people are not even clear about what kind of skills will be needed in order to master the new technology.

"In cases where the customer is willing, we offer to conduct an analysis of a company's needs. We visit the company and find out what

sort of goals have been established by conducting interviews and holding discussions with management and employees. Following such an inventory, it is often

fairly easy to see what the appropriate training programs are for the customer," says Ulf Annerberg.

EEE was established on January 1, 2000 and currently has operations at five locations in three countries (Sweden, Norway and Denmark). The center in Kista is the largest of the five, training 25,000 people each year. In order for the facility to retain its popularity, however, it

Is there currently enough expertise within the telecom industry to handle the transition to 3G?

The answer is no

Pär Thomsson

is important that course offerings are updated regularly.

"The worst thing we can do is train customers in something that they have no use for. If a company feels like it has been duped by a course, word will quickly spread throughout the industry. Consequently, we have to constantly ensure that our courses keep up with the latest technologies," says Ulf Annerberg.

As part of the ongoing process of updating courses, a complete UMTS system (the third-generation mobile standard in Europe) was recently installed at the training facility in Kista.

"In the past, we've conducted UMTS training using a makeshift system that we created ourselves in a laboratory environment. Now we will have access to a fully operational system, with all of the services that the Mobile Internet affords," says Ulf Annerberg.



Ulf Annerberg

Jenz Nilsson

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Key industry meeting place

EEE's Training Center in Kista is not merely a training facility. It also serves as one of the few places where industry representatives from around the world can meet and share experiences.

► Conversations in a number of different languages can be heard in the lounge at EEE's Training Center in Kista. Network installers from the UK discuss GPRS networks with colleagues from Germany, while two engineers from mobile phone operator Cesky Mobil in the Czech Republic compare notes from the latest lecture. Jan Votrubec and his colleague Zbynek Ceska both work in Prague but are visiting Stockholm to participate in a four-day course entitled Radio Network Features.

"We've had intense days with a large amount of studying. Tomorrow, we're going to study GPRS in greater detail," says Jan Votrubec.

Cesky Mobil is one of four mobile phone operators in the Czech Republic. The compa-

ny has approximately two million subscribers connected to its network. Currently, all of Cesky's traffic is sent over a GSM network, but they anticipate integrating the first GPRS solutions into their network sometime during the coming year.

"This will involve major changes for us as engineers. This course is helping us to understand the parameters that apply in planning GPRS and 3G networks."

The course is organized in a number of short subcourses, each of which concludes with a written exam. About 75 percent of the coursework consists of independent study, which suits Jan Votrubec and Zbynek Ceska.

"It allows for plenty of discussion time with our classmates and a chance to benefit from their experience," they say.

They feel that the training has lived up to their expectations.

"Although I still have half the training left, I already feel much more confident about which job assignments I should concentrate on when I return home," says Zbynek Ceska.

Jenz Nilsson



Zbynek Ceska and Jan Votrubec are engineers with the mobile phone operator Cesky Mobil in the Czech Republic. Cesky Mobil has plans to eventually install GPRS into its network. In order to learn about the new technology, Zbynek and Jan are taking the Radio Network Features course at EEE in Kista.

FACTS/ERICSSON EDUCATION EUROPE IN KISTA

- Number of courses: 230
- Number of students each year: 25,000 (2000)
- Percent internal: 60 percent
- Percent external: 40 percent
- Ericsson Education Europe has five locations: Kista, Sundbyberg and Mölndal (Sweden), Nesbru (Norway) and Copenhagen (Denmark)

Part of the 3G puzzle

The AXE switch platform has been Ericsson's most successful. Although it is sometimes felt that it has outlived its usefulness as IP is poised to take over, the platform continues to grow and sell as never before.

Today's AXE has changed radically compared with the first system, which was introduced in February 1978.

► Even our competitors agree that AXE is the world's best switch of all time," says Göran Ekman of Ericsson Utvecklings AB, which has overseen work on developing the platform since 1995.



Göran Ekman

Its list of accomplishments is long. AXE is a platform base for almost all larger systems products manufactured by Ericsson, including both mobile and fixed networks. In fixed networks, AXE is used in most points, and the same was true of mobile networks when they first came online at the beginning of the 1980s. A modified AXE switch formed the basis for Ericsson's mobile switch, and in the GSM system, AXE is part of the Base Station Controller (BSC) unit, which keeps track of base stations. The Home Location Register (HLR) nodes found in mobile systems, which keep track of subscribers, were also based on AXE. The only place where AXE has not been a factor is in the digital radio interface between radio base stations and mobile phones.

Impressive history

Several books have been written about AXE. The platform has been described as a technological wonder and the people behind the system are legendary. Bengt Gunnar Magnusson and Göran Hemdal were the system architects, with other key individuals including Bo Hedfors, Kjell Sörme and others. AXE can be considered the start of the digitalization of telecom networks.

The ingenious solution, which utilized modular construction, combined similar functions into module blocks, with a system architecture that included a central processor and several regional processors. A new programming language was also created for AXE. Known as PLEX, it is very efficient.

The platform's strength is based on very careful and well-supported system work, with distinct interfaces between hardware and applications. Its modular structure, which was originally designed to add flexibility in developing products for different markets, has allowed for the successive development of various parts within the system. The stable interface allows for ongoing development of components and the streamlining of hardware, without affecting applications. And just like the world of PCs, an old application can always be run on new hardware.

"During the mid-1990s, we initiated a major AXE modernization program," says Göran Ekman, who oversaw the work. "That resulted in major changes which were most clearly seen in an enormous reduction in size. The transit switch, which previously consisted of 200 two-meter tall cabinets, was able to fit in just 25 cabinets. And in the next generation, the AXE 810, six cabinets are enough."

How is that possible?

"In 1995, we adopted a comprehensive approach for streamlining AXE," says Göran Ekman. "We dared to go into the system-support-

ing components in order to catch up with the general technical advances that had occurred. We chose to focus on two or three key components – the switch and regional processor buses – in other words the circuits that transmit signals within the system. By doing so, we could reduce the amount of cabling, which occupies a great deal of space, and this in turn resulted in several other positive effects. By halving the number of cables, only half as many connections were required on a board, which made it possible to shrink two boards down to one, miniaturizing the electronics. This allowed for microelectronics to be utilized to a greater extent, resulting in lower power requirements and more robust systems."

Digital and powerful

The next stage, which is in the process of being brought to market, is the AXE 810. It has been described by its inventors as a dramatic departure from AXE. This time it is no longer simply about making improvements, but rather about taking the lead.

For one thing, the AXE 810 is constructed almost completely using commercially available, standardized products. It is also now capable of handling ATM for 3G systems and packet-based switching, which is nothing short of a revolution. AXE has previously mostly been responsible for voice traffic over circuit-switched systems, i.e. a conversation between two subscribers occupying the line, as opposed to packet-switched data, where data is transmitted in small packets over available spots on the network.

The AXE 810 has a very powerful group switch, the unit that in digital TDM systems connects a call by linking an incoming time slot to an outgoing one. It will be the first AXE switch that opens the core in AXE with commercially programmable processors. The future APZ 21240 is being made in conjunction with an external partner. The 810 will also have

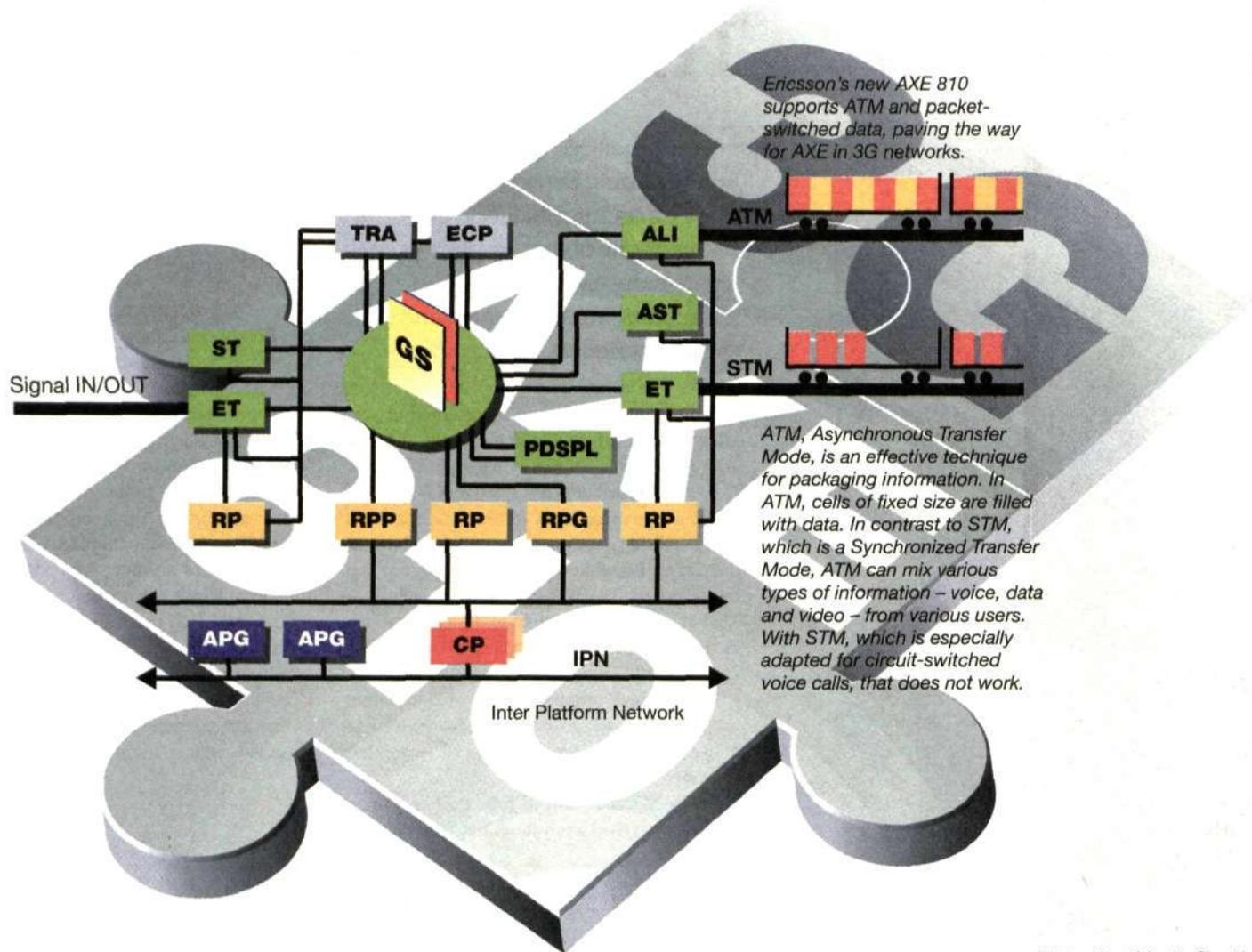


Illustration: Martin Gradén

FACTS/AXE 810

One of the greatest strengths of AXE is its modular structure. Every module is a separate element that has a particular function to fulfill. How that is accomplished, whether with hardware or software, is unimportant for the system. The architecture also makes it easier to identify and deal with any problems.

A basic description of the illustration is that the red object is the central processor, the heart that controls the system (duplicated in order to provide reliable operation). The blue Adjunct Processor Group checks the system.

FACTS/HOW BIG IS AXE

Market data from the beginning of this year indicate that AXE is used in 136 countries. A total of 13,000 switches are in operation, with anticipated growth of 3,000 new switches per year. Mobile users numbered 230 million, with impressive growth of 75 million per year. There were a total of 135 million local lines, with

The yellow units are a number of smaller, regional processors that perform simpler tasks and take some of the load off the central processor. The green unit, which is the actual brain, is the group switch in the center, which sees that the incoming data time slots are connected to the correct outgoing time slots.

Finally, the white unit is the mobile network's addition, an encoder and echo damper. Interesting aspects of the AXE 810 include its incredibly powerful group switch and its ATM interface for 3G networks.

growth of 20 million new lines per year and 35 million transit lines, with 7 million new ones per year. Finally, there were approximately 1,500 control databases in operation.

Read more about AXE:

John Meurling: *A Switch in Time* (1985)

a generic Ericsson magazine, GEM, with a group switch and two regional processors, ready to be equipped as desired. The switch can also be configured as a local switch, a transit switch or a mobile switch.

"I think that AXE will continue to grow for another decade and continue to be the basis for our operations," says Göran Ekman. "At the end of the 1980s, many thought that AXE volumes would level off by the mid-1990s, but sales have continued to grow."

According to the new horizontal system architecture, where the transport layer is common for all access networks, both mobile and fixed, these switches will have a new role to play. The actual switching function is being handled by Media Gateways and the control

function is being placed in the servers. AXE will have a natural role to play in the control layer's mobile and transit stations, which will become AXE servers. AXE is unbeatable when it comes to voice, but will also work for data communications. The future division between platforms is not entirely clear, however. Not only because it is difficult to know what the future networks will look like, but also because the various platforms continue to develop and – to some extent – converge.

"I'm convinced that there is still room for another generation of AXE after this one," says Göran Ekman.

Lars Cederquist

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GSM evolves into new standard

Third-generation does not only involve UMTS. GSM networks are also moving towards 3G. They continue to develop through GPRS and now Geran, which will offer multimedia and convergence with future standards.

► Standardization work with Geran (GSM/Edge Radio Access Network), is currently ongoing within the 3GPP (3 Generation Partnership Project). This new standard is expected to be completed by December of this year. As always, Ericsson is heavily engaged in this standardization work. But first a look back might be useful.

Today, GSM is far and away the world's leading mobile phone standard. Development began during the early 1980s and it was put into commercial operation in 1991. GSM is a second-generation system, where every 200 KHz frequency channel is divided up into eight recurring time slots. Each call is assigned one slot, providing a circuit-switched connection.

When the battle erupted over the next standard, Ericsson selected the WCDMA (Wideband Code Division Multiple Access) radio technology on a new frequency bandwidth, 2 GHz. But GSM, utilizing existing bandwidths, has continued to develop, and will evolve into a third-generation standard. It will not, however, have data transfer rates as fast as WCDMA, although it will offer similar services.

The first stage, which was released in 1997, was GPRS. It offered new switch nodes for Internet and packet data that were flexible enough to utilize a varying number of free time slots. In 1999, it was time for the next step, known as Edge (Enhanced Data Rate for Global Evolution), and now Geran.

Geran with new interface

"The primary purpose of Geran is to provide GSM with new services, to support IP, multimedia, streaming video and so forth, and to converge with UMTS," says Frank Müller, in charge of the technical coordination of



Frank Müller

standardization. Consequently, 3GPP will introduce the new lu interface in Geran – the same interface used in UMTS between the base station system and the core network.

"But lu is not a prerequisite for Geran, and it

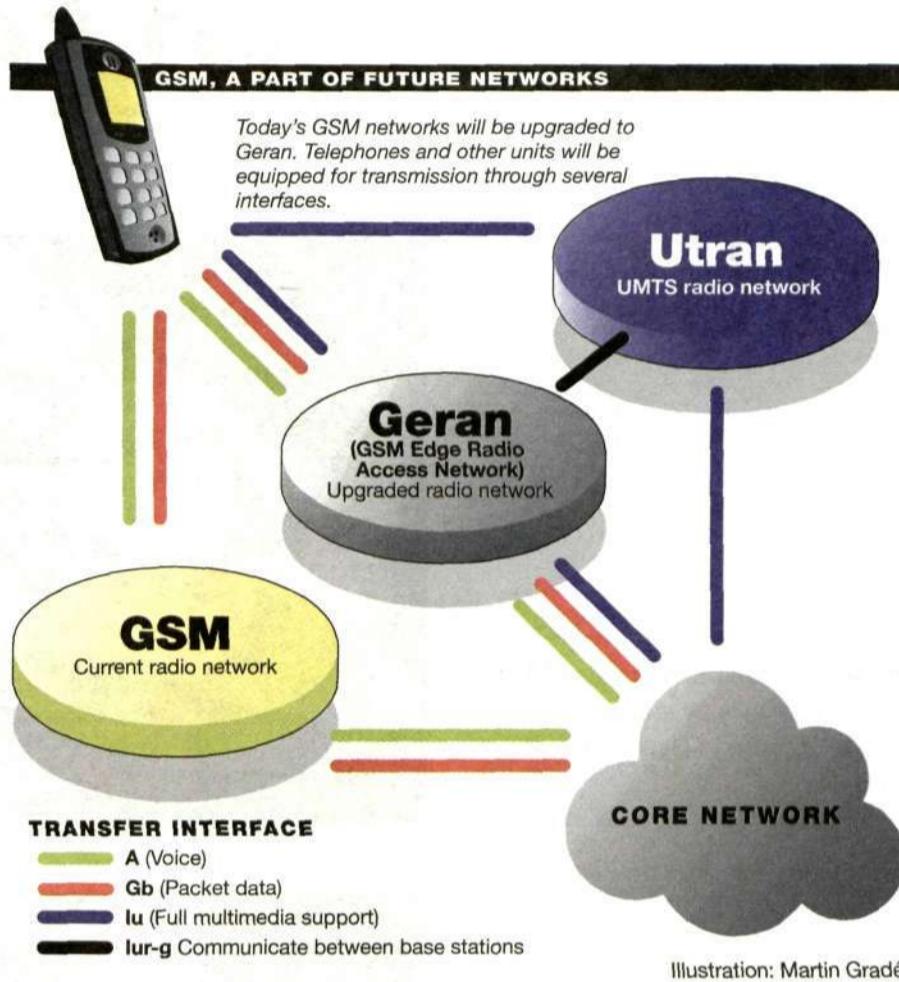


Illustration: Martin Gradén

FACTS/EDGE-MODULATION

As far back as 1993, Ericsson was researching a new modulation method that would primarily improve voice quality when using GSM. The ordinary method for modulating radio carrier waves in GSM is GMSK (Gaussian Minimum Shift Keying), which is based on phase and amplitude modulation, with two modes and one bit per symbol.

The new modulation, 8PSK (Phase Shift Keying) has eight modes and 3 bits per sym-

bol, which triples the bit rate (each symbol represents three bits). In addition to the change in modulation, a number of other improvements have been made in coding and so forth, allowing Edge to provide 5 times the speed of GSM. At the same time, it is more sensitive to interference, but Edge operates so that the modulation reverts to GMSK in the event that radio conditions become too difficult.

is likely that we will see both operators who choose to stay with the A/Gb interface (for voice and packet data respectively) and operators who migrate their networks to lu. Geran will provide better support for packet-switched services such as streaming, but for full support of multimedia over GPRS, lu is required.

The three interfaces will be utilized simultaneously, and users who have a universal mobile phone will not notice whether they are

connected over A/Gb or lu. Starting with Rel-5, which will be ready in December of this year, lu will be supported by the standard. In order to handle the connection between Geran and Utran, an open interface, Iur-g, is also used between BSC and RNC units, respectively. Iur-g, which is only designed for control signals, not for transmitting data, will also make it possible for operators to mix equipment from several suppliers.

Work within 3GPP is being carried out with-

in five areas: systems and architecture, core networks, terminals, radio access networks and Geran. Ericsson is participating actively and has been responsible for a large number of technical contributions.

"Overseeing the standardization process in conjunction with our product strategy is an important part of our work," says Joakim Sorelius, project manager for the Step project, which is responsible for all Geran standardization in 3GPP.

Delivered fully prepared

Nils Viklund, who oversees strategic product planning, says that the improvements resulting from this development process will be introduced incrementally.

"We will launch our base station systems with Edge during the middle of 2002, but even before that we will be able to prepare base stations from a hardware standpoint so that only new software needs to be introduced later on," he says.

"The introduction of various service classes will follow the same pace as for UMTS, which will not be able to offer fully fledged services right from the start."

All new GSM base stations will be delivered fully prepared for Edge and the new Geran services. Moreover, it will be possible to update existing RBS2000 stations using a new transceiver unit, something that only Ericsson can offer operators.

Why bother continuing to develop GSM when third-generation networks are just around the corner?

"In principle, it involves utilizing the enormous base that already exists for GSM," says Jonas Näslund, head of strategy for GSM radio base stations.



Jonas Näslund

"A large operator like Vodafone in the UK has, for example, 22.5 MHz of GSM spectrum and 15 MHz in the new 2 GHz band. They will, of course, want to optimize their entire spectrum," he says.

"WCDMA, which was initially adapted for the 2GHz bandwidth, is now being adapted for 1800 MHz and 1900 MHz, and even 900 MHz has been discussed. But that takes time and we expect that GSM, Edge and Geran will continue to thrive and be developed further, for at least another decade."

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New handbook on Mobile Internet

A handbook detailing the necessary building blocks for the Mobile Internet is now available for purchase. It shows how to avoid pitfalls and create new applications effectively.

► The primary user envisioned for the book is one who has, for example, worked on developing Web pages and now wants to tackle the Mobile Internet, says author Christoffer Andersson.

"I've tried to provide a comprehensive view of the field, with summaries of GPRS, wireless

3G, Bluetooth, WAP, positioning and more in 15 chapters."

Christoffer Andersson has worked at Ericsson since 1997. First with WCDMA, where he holds nine patents for radio algorithms, then as technical manager for Mobile Application Initiative (MAI) for GPRS and 3G. He has also been active at conferences with lectures and written contributions pertaining to GPRS and worked at Ericsson's office in Luleå and in Silicon Valley.

The book, which has been sponsored by Ericsson, was written last autumn and is now available for ordering at www.amazon.com under Books and a search of the keywords GPRS or 3G. Entitled "GPRS and 3G Wireless Applications – the Professional Developer's

Guide," the book was issued by Wiley's, an established computer book publisher.

"It is my hope that the book will reinforce the image of Ericsson as a leader within the Mobile Internet and help developers to get the market moving," concludes Christoffer Andersson.

Lars Cederquist

Christoffer Andersson serves up the Mobile Internet in his recently published guidebook.

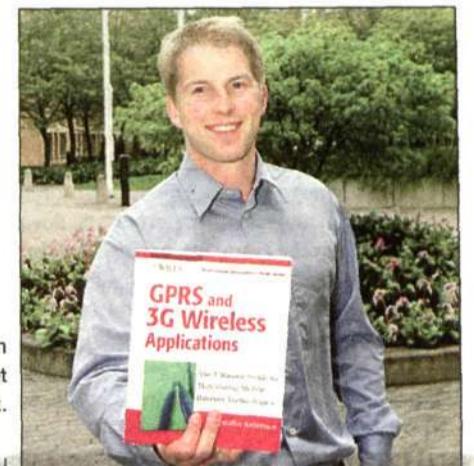


Photo: Anders Anjou

Power for better or worse

What is power? Do men and women exercise power in different ways? And what is it like to have power when you have to save money and let staff go?

Contact met Conni Simonsen, President of Ericsson in Denmark and Bert Nordberg, head of the Global Services division.

► They are simultaneously alike and unlike. At first glance, the contrasts are striking: Conni Simonsen is short and petite, dressed in a short, green leather jacket, a skirt and checked tights. Bert Nordberg is tall and heavily built; he is wearing a classic dark suit and tie. The similarities make themselves known more subtly and become more tangible as the interview proceeds. Both express themselves eloquently and using rich imagery, allow one another to speak when asked questions and eagerly discuss issues that affect them.

Both have firm opinions regarding the meaning with which they themselves imbue the word "power."

"Power means making decisions, having influence, but also taking risks," says Conni Simonsen.

"When people talk about power, the word often has a negative ring to it, but you shouldn't forget that it is important that there are those who are willing to take responsibility and have the strength to do so – it only becomes negative when someone seeks power for its own sake," she continues.

Bert Nordberg nods and adds:

"Power ought to imply that as the possibilities for influence increase, responsibility increases proportionately. Your own behavior is one way of affecting the degree of influence you exercise.

"I'm old-fashioned enough to think age, expertise and how long you have been with the company should affect how much power you are given."

They are agreed that greater maturity is needed of managers during economic downswings, when the company must save money and let staff go.

"Unfortunately, I see many during these times who exercise power by standing on the sidelines," says Bert Nordberg with a sigh. "Now we see who is working for Ericsson and who is thinking most of their own career."

Conni Simonsen is eager to point out the

importance of something which we hear a lot about when belts are tightened but which never seems adequate, namely, information to employees. In addition, one is always forced to walk a tightrope between acting quickly and making wise decisions.

"At Ericsson Denmark, we knew already in March what we had to do, we had to let 12 people go immediately. Otherwise the worst thing in times of austerity is the uncertainty, waiting for decisions which take their time in coming," she feels.

Involvement in the organization

Bert Nordberg wants to create an active organization that would contribute its own proposals for savings.

"Involvement throughout the organization is important – I can't know everything," he says.

"Now it is also important to show good examples – such as the fact that GSM grew by 30 percent at a time when most companies are in decline. This is easily forgotten in the light of the latest interim report," he continues.

Conni Simonsen feels that it is naturally extremely difficult to have to lay people off, particularly people she knows well and who have been part of building up systems that, today, are best-sellers.

"A person's job is such a big part of their life – being let go is dramatic. What encourages me is that so many of the former employees I meet have found new, exciting jobs outside Ericsson."

Despite the cutbacks, she sleeps well at night. She feels that is a necessity to enable her to put as much time into her work as she does.

Is there any difference between male and female leadership?

"The female managers who work with me are better at basing discussions and decisions on facts," says Bert Nordberg.

"It is also a matter of not analyzing too long, but reaching a decision quickly. Just as important is sticking to a decision once it has been made," adds Conni Simonsen.



She concedes that ten years ago, she would not have been able to point to any differences in how men and women exercise power, but today she can.

"Women actually do have better intuition and a greater sensitivity for details, which are good qualities in a manager. They are also better at perceiving how an organization is feeling."

"Women are also better at dealing with conflicts. They aren't afraid to discuss various problems. Men are liable to close their eyes to the problem until it has grown so big that it can't be ignored," continues Bert Nordberg.

Both managers are making efforts to get more women to dare take on managerial roles. Conni Simonsen has observed a tendency for women in their forties, whose children have grown up, to be prepared to invest more in their careers. She has also seen that the recruitment pool has grown somewhat now that more young women are choosing technical subjects at university. She is also working to create a more flexible manager's role – once a manager ought not necessarily to mean always a manager.

"I actually try to force women to take on managerial jobs," says Bert Nordberg.

"It's true," he assures me after seeing my look of surprise.

"I ask them to try out a managerial position for half a year. If they don't enjoy it, they are welcome to move back down again. But no one has ever chosen to go back."

Bert Nordberg explains that he asks his female employees to make three- to five-year plans where they outline their career goals, since usually, male employees have already established such a plan.

Conni Simonsen nods vigorously in agreement.

"Most of my male employees are very good at setting out plans for several years into the future. In two years' time, they want to be managers, driving a Mercedes and owning a detached house," she says laughing a little. "It's more or less the reverse problem."

Combining family and work

Both Conni Simonsen and Bert Nordberg are married and have children. Their professional roles today mean a working week of more than 40 hours. Both employ someone to clean, for example, in order to be able to put more time into their work.

"In order to be able to make a relationship or marriage work, it is essential that both have the same basic attitude towards work. My husband and I agree that it's OK to work a lot, it's nothing strange for us," says Conni Simonsen.



Both alike and unlike. Bert Nordberg was enticed to the job of manager because he wanted an opportunity to carry out his own strategies. Conni Simonsen wanted to work on changing attitudes and establishing new customer relations. They are agreed that mature managers are needed in times of cutbacks and savings.

Photo: Gunnar Ask

"When my son was younger, my husband stayed at home with him more than I did and that worked well for us."

For Bert Nordberg, the family works well as a counterweight to a heavy workload.

"If I had not been married with children, I would certainly have tried to work even more. When I feel overworked, I try to delegate and bear in mind that there are thousands of exciting jobs but I only have one family."

When asked whether it is lonely at the top, both nod.

They agree that it is important to have people to talk to outside work. Conni Simonsen feels that stress is not only a matter of how much you work; in order to be able to reduce stress, one must also have the possibility to talk to someone. Bert Nordberg agrees.

"I talk with my wife and with another divisional manager. That allows me to grumble and express my feelings; I wouldn't want to get really angry in front of my employees."

Bert Nordberg was enticed into the role of manager because, among other things, he was anxious to be able to carry out his own strategies. Previously, he had worked primarily with other people's strategies. Conni Simonsen was attracted by the task of taking over the local company in Denmark when it faced a large-scale reorganization. She wanted to work on changing attitudes and establishing new customer relations.

Before we part, I wonder where the two of them will be in five years' time. They consider this and look a little expectant.

"I will have an exciting job with Ericsson abroad, or outside Ericsson," says Conni Simonsen.

"I have simplified my plan. I will simply be in a warmer place," says Bert Nordberg with a laugh.

Ulrika Nybäck
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Power is making decisions, having influence, but also taking risks

Conni Simonsen



FACTS/CONNIE SIMONSEN

Job: President of Ericsson in Denmark
Number of employees: 1,500
Began work at Ericsson: 1985
Previous two jobs: 1992-1996, manager for customer support at Ericsson in Denmark. 1996-1998, President of Ericsson in Lithuania
Age: 45 years
Family: husband and one son, aged 19 years
Relaxes best by: gardening, and talking with her husband over a glass of red wine and some cheese

FACTS/BERT NORDBERG

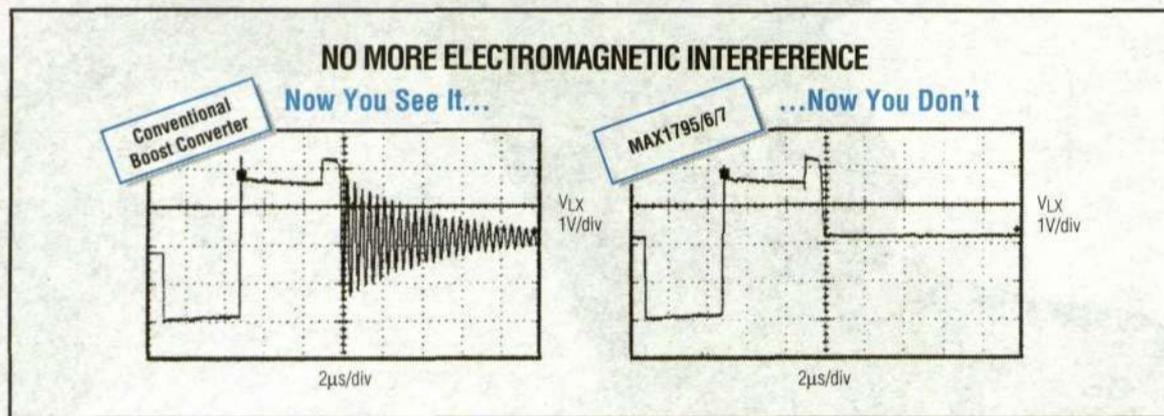
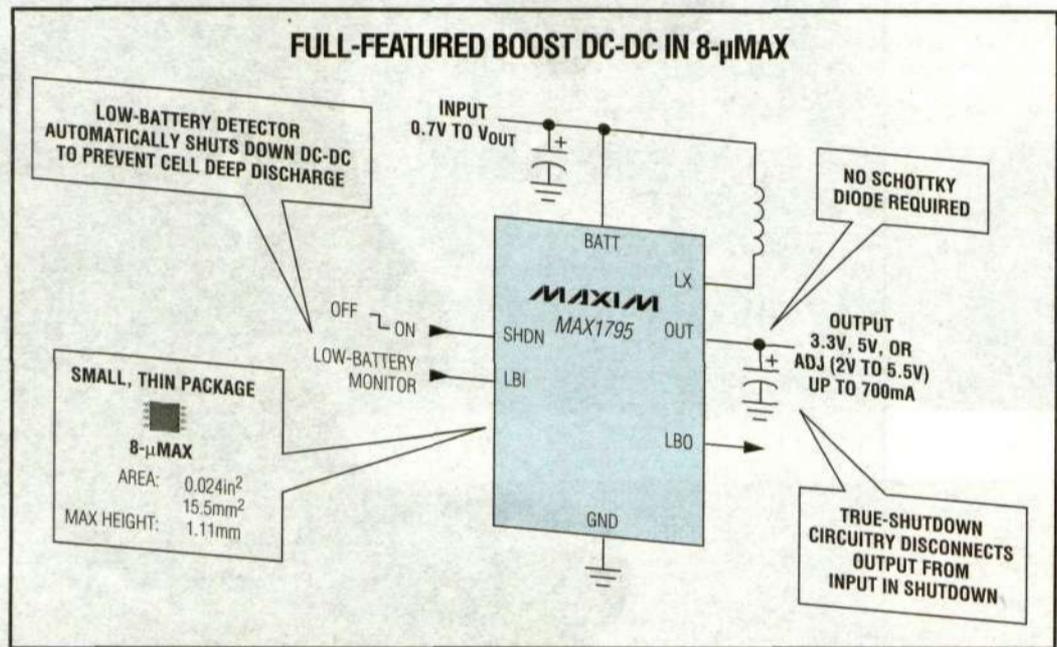
Job: division manager for Global Services
Number of employees: 18,300
Began work at Ericsson: 1996
Previous two jobs: President and service manager at an American IT company
Age: 45 years
Family: wife and three daughters, aged 15, 18 and 21 years
Relaxes best by: being with his family and friends, preferably at one of their summer cottages

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Darter attracts engineers

In Budapest, Hungary, close cooperation is going on between Ericsson and the engineering students in the city. Ericsson has even opened a bus route so that the students can easily get to the company's main offices.

► The "Shuttle" has become the nickname for a very popular minibus in Budapest. Twice daily, the bus pulls up in front of the entrance to the Technical University in the southern part of the city. The bus fills with students and then continues on its way to the Ericsson offices in the northern part of the city.

At Ericsson, the students receive professional advice on their degree projects and are given an opportunity to practice their knowledge in a



Shuttle around Budapest.

"real" working environment. The background to the bus service is the fact that it has been difficult for Ericsson in Hungary to find enough engineering students to carry out their degree projects with the company. The management of Ericsson Research and Development in Hungary therefore wanted to create a closer collaboration

with the university. This was how the idea of a dedicated bus route between the university and Ericsson was hatched.

"It is a mutual exchange. The students can benefit from all the knowledge we have and we obtain contact with many truly talented students," says Gabriella Liptay, information manager at Ericsson in Hungary.

About 90 students use the bus route regularly. These days, it is very popular among students to carry out their exam projects at Ericsson, which has also benefited staff recruitment.

"Most students who visit our offices are inspired and are happy to continue working with us when they have completed their engineering degrees," says Gabriella Liptay.

Jenz Nilsson

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Newton at the CeBIT exhibition

► Newton is the name of a popular Norwegian television science program for young people between 8 and 18 years of age. When Newton, which is 25 minutes long, was broadcast on April 29, it dealt mainly with Ericsson's products and solutions in mobile communications.

The Newton editorial staff contacted Ericsson in Norway and were given the tip to visit the CeBIT exhibition in Hannover, Germany. The result was a 17-minute item where, among other things, GPRS was demonstrated –s both the basic technology and an application for booking tickets via mobile phones. Games in real time were demonstrated and even WCDMA was included via a live link with the demo car in Kista, Stockholm. Several of the items were presented by young, Norwegian-speaking Ericsson employees.

Greeks won trip to Sweden

► Post-graduate students at universities around Greece have good reason to work extra diligently on their final projects. Ericsson recently rewarded a number of students, for the fourth successive year, by awarding them prizes for their theses.

The prizes are called the "Ericsson Awards of Excellence" and awarded annually for the three best theses from ten departments of telecommunications.

The students received a diploma and a symbolic sum of money at a formal ceremony. Ten first-prize winners were also rewarded with a trip to Sweden.

"This is a fantastic way to motivate students and to increase expertise in the field of telecommunications. Several previous winners are already employed at Ericsson," says Antony Rosseaus, marketing manager at Ericsson Hellas.

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CONTACT NO. 10 2001 UPDATED 18 MAY

ERICSSON BANGLADESH

Ericsson in Bangladesh has achieved a unique position by being awarded contracts with all 3 GSM operators. There is a huge potential for GSM Systems in Bangladesh with a large population and an under-developed fixed network. It is expected that the number of mobile phones will exceed the number of fixed lines by the end of 2001.

We now need to further build our relationship with our customers and are looking for candidates for the following positions.

Key Account Manager

● We are looking for an experienced manager capable of handling commercial negotiations in a multinational environment. Your responsibilities will include building of a good relationship with the customer, identifying new opportunities, submitting commercial offers, negotiations and customer presentations. You will also be responsible for introducing new technology ie GPRS and 3G.

The KAM must have at least a 5 years experience of GSM sales with a proven track record. You must also be capable of handling a customer in a multicul-

tural environment. Excellent analytical, relationship building and negotiation skills are necessary as well as fluent English.

Technical Manager

● We are looking for an experienced technical manager who can support the KAMs in driving the sales and marketing activities; provide strategic product information and system proposals. Another important task is to advise our customers in their expansion plans by providing a good technical solution.

The technical manager should have a very good technical knowledge of GSM systems. It is also valuable if you have experience from working with new products as GPRS, WAP, IN and DATACOM. You can work independently, take initiatives and communicate well with others.

You must have an extensive network within Ericsson as well as a good commercial understanding. We expect you have been working in a similar position for several years.

Contact: Mats Bosrup, Managing Director, +880 17 524880, mats.bosrup@bbd.ericsson.se

ERICSSON TELECOMUNICAÇÕES LDA.(SEP) - LISBON/PORTUGAL

Ericsson Telecomunicacoes Lda in Portugal is looking for a PPS system support engineer to join the IN support team in our Customer Services Division, based in Lisbon. We offer you a long term assignment in a warm and nice country.

Ericsson in Portugal is supplier of AXE equipment for all three GSM and two wireline operators. Our support organisation is established since 1992.

PPS Support Engineer

● Main responsibilities: You have to be involved in all main FSC customer support processes: CSR Handling (TR and Consultation), Emergency service, SW update/upgrade. A very important role is to transfer competence to the local staff.

Requirements: At least 3 years technical experience working with GSM PPS system, mainly with the PPS SDP applications (PPS3.0/PPS3.1). Good system knowledge and SW troubleshooting skills. Knowledge of support processes and tools. Good english and communication skills. We will only consider candidates employed by Ericsson.

Contact/Application: Eduardo Maro, eduardo.maro@sep.ericsson.se, +351 214466283, Ericsson Telecomunicacoes, Lda., Edificio Infante D. Henrique, Quinta da Fonte - Porto Salvo, 2780 - 730 Paço de Arcos, PORTUGAL

MU CARIBBEAN - DOMINICAN REPUBLIC

The MU Caribbean is responsible for marketing and deliveries of Ericsson products in the Caribbean region covering an area of 230,000 square kilometres and with a population of 27 million people.

In the Dominican Republic Ericsson has established a branch office (BDO).

GSM NSS BSS System Expert

● We are looking for one GSM NSS/BSS expert to work with our first line support group in the Caribbean, Dominican Republic. The candidate must have a good support experience in some or all of the following products: SS, BSS, IOG20 plus some knowledge in WAP and GPRS is appreciated.

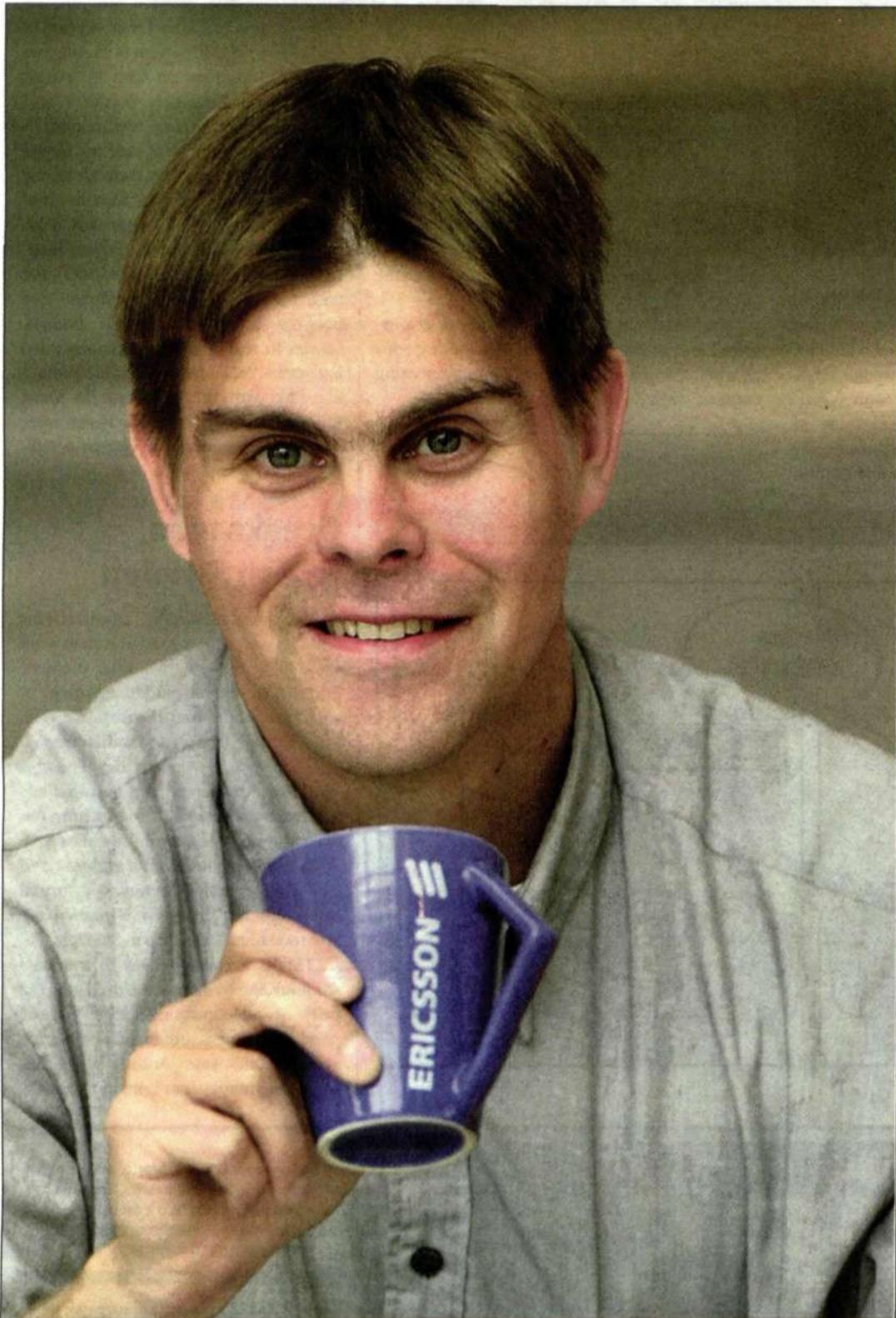
The candidate will be based in the Dominican Republic to form part of the local support organization ELS responsible to provide first line support towards our customer(s); Helpdesk attention, TR (CSR) handling, troubleshooting.

The incumbent will also be interface to other internal and external customers.

Candidate should have a BBA or engineering degree and minimum three to five years experience working in support environment. Must be able to work under pressure at times and be a team player but also able to work independently when required. Good knowledge of english language is a must and some spanish or french knowlwgde is a plus.

The successful candidate is expected to start during April or May 2001.

Contact: Enrique de la Cruz, ELS Manager, +1 809 683 7700 or Mats Skoglund, General Manager BDO, +1 809 683 7700. Application: Human Resources Department, noelia.borrego@ericsson.com.



It all started at daycare. Johan Runnquist has been with Ericsson since his childhood.

Photo: Ecke Küller

Getting an early start

For some, life seems to have been predestined from birth. Johan Runnquist began his Ericsson career while still in daycare. Now, only a major football lottery win will be able to end that career.

► When Johan was a kid, both of his parents worked at Ericsson. His father was an engineer and his mother a secretary. Consequently, Johan attended daycare at Telefonplan, in Stockholm, a short distance away from his parent's workplace.

"It was probably not an official Ericsson daycare center at the time, but children of Ericsson employees were practically the only ones there," Johan recalls.

At the end of the 1970s, his father landed a contract job for Ericsson in Saudi Arabia. The entire family went along, living there for two years in an Ericsson village that had been

constructed in the middle of the desert. Behind the high walls, the contract employees and their families lived their lives: working, going to school, shopping and playing sports. Johan, who was nine at the time, enjoyed it.

"The had everything. A large swimming pool, a soccer field, a squash hall. I was never bored."

During his teenage years, it was time to find a summer job. Of course his choice fell on Ericsson. During his first summers, Johan worked as a messenger, taking out the mail. Eventually, he was given more qualified

tasks at various Ericsson companies around Stockholm. During his final summer job, he was involved in building AXE switches.

"The people who worked there were also able to travel to different countries to assist with installation. I thought that would be fun, so I applied for full-time employment, but there was a hiring freeze on so I didn't get a job."

Instead, he began working as a tester at Ericsson Hewlett-Packard, where he still works today. Johan believes that he will work at Ericsson for the rest of his career.

"There are so many different things you can do at Ericsson, so I'll no doubt be here until I retire," he says.

"Unless, of course, I win the football lottery!"

Tonya Lilburn

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UPCOMING

June 3-7: The Supercomm exhibition takes place in Atlanta, GA.

June 7: 3G Tour TransContinental visits Johannesburg in South Africa.

June 5-8: The Internet Society is organizing the INET 2001 conference in Stockholm. Ericsson is the main sponsor and Kurt Hellström one of the main speakers. The Internet Society is a collection of more than 150 organizations and 6,000 individual members.

Ⓞ <http://www.ericsson.com/inet2001>

Ⓞ <http://dms.ericsson.se/events/inet2001>

June 19-22: CommunicAsia in Singapore.

Ⓞ <http://inside.ericsson.se/communicasia01/index.html>

UPDATES

May 23: Representatives from trade publications as well as financial and industry analysts were invited to the Technology Summit in New York.

May 26-27: Ericsson sponsored the Ericsson@Home-lands dance festival at The Bown, Winchester, in the UK. During the festival, groups such as Pulp, Orbital, The Orb, Paul van Dyk and Sonique performed.

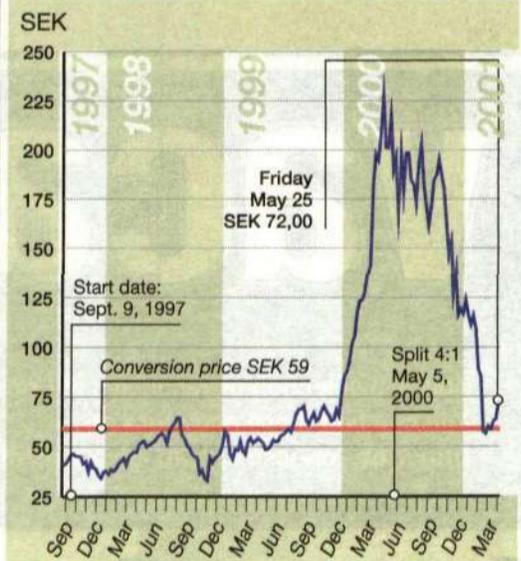
Ⓞ <http://insideuk.ericsson.se/news>

NEW ASSIGNMENTS

Sten Fornell, Ericsson's Chief Financial Officer, has received the CFO Europe Best Practice Award 2001, in the category of Knowledge Management.

Within the Western European market region, **Peter Olson** has been named Corporate Officer for Austria and **Ragnar Bäck** has been named Corporate Officer for Belgium, Greece and Portugal.

THE ERICSSON B SHARE



An Extraordinary General Meeting of shareholders on September 9, 1997, approved a proposed convertible debenture program. The conversion period extends through May 30, 2003. For additional information, access the website: <http://inside.ericsson.se/convertibles>

