

# contact

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NO. 4 · MARCH 16 2000



Knowledge of African culture is important for business success in Africa. Telecommunications play a leading role in the development of African countries, but as privatisation occurs and new licences appear, the competition becomes more fierce. Photo: Lars Åström

## Competition fires up African market

Business in Africa is built upon long-term, personal relations. Cultural knowledge is the key to success. Ericsson has operated in the African continent since 1894 and is dominant in many countries. But now the competition is in hot pursuit. Of today's 900 million inhabitants, only two-percent own telephones, something changing rapidly with the privatisation of the telecom market.

11-13

## New Orleans sees phone premiere

At CTIA Wireless 2000, Ericsson unveiled its first CDMA-standard phone, predominantly for the North American market. The new A1228c is a WAP phone loaded with features. This was just one of the events that took place at North America's most important wireless exhibition, held in New Orleans.

7

## Ericsson Open attracts tennis stars

The fifth largest tennis tournament in the world begins at the end of this month. The Ericsson Open, to be held in Florida, will see the best of the world's players competing in the multi-million dollar event.

24

## GSM user group forum

Chairpersons of the regional GSM user groups met recently in San Francisco to discuss, among other subjects, how to further the development of their work.

16

### NEWS

#### Pirate copies sink at CeBIT

A dozen companies received written warnings for displaying pirate copies of Ericsson products at the CeBIT fair in Hannover, as Ericsson takes a firm hand against the illegal trade.

4

#### Phone project in Bangladesh

Ericsson is partaking in a project to supply rural areas of Bangladesh with telephony. Today, just 0.4 percent of the population has access to a phone. Contact highlights one woman's story.

14-15

#### WAP banking partnership

Ericsson and the Swedish SEB's Internet bank are working together to develop wireless banking services. WAP users will be able to buy and sell stocks, check their balance and pay bills.

9

#### Top riders team up

Three of Ericsson's corporate values, respect, professionalism and perseverance are reflected in the sponsorship of six of the world's best horse-riders. The team's first event took place in Paris.

5

#### CORPORATE

Björn Boström, Senior Vice President of Corporate Supply and IT, explains how the delivery chain must adapt for future success.

3

#### ERIC AND SON

Eric and Son take a greener look at car pooling.

# VoIP now we're talking

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# Delivery commitments require procedural changes

The virtually explosive growth in the number of mobile-telephony subscribers is naturally a good thing, but it has also caused delivery problems for all of the suppliers in the industry.

"To succeed in the future, we must create a faster, more cost-efficient delivery chain, and we are doing that through the TTC Global program," says Björn Boström, Senior Vice President, Corporate Supply and IT.

TTC stands for Time To Customer – that is, the time required to deliver products to customers after they have ordered them.

As an eloquent example of the industry's prodigious development, Björn Boström cites operator AT&T's system in New York, in which traffic increased by 500 percent last year. Growth of that order involves great stress on the entire delivery chain, for Ericsson and its competitors alike. The situation in the components sector, where the world market is strained, is particularly problematic. The problem is not alleviated by customers' reducing their lead times.

"We're working hard to increase production capacity even further, but we will continue to have difficulties for a few months. The reason we're in this difficult situation is that we didn't change our work procedure fast enough. In a longer-term perspective, delivery problems will disappear with the new way of working created through the TTC Global program," explains Björn Boström.

## More time for customers

TTC Global is currently one of Ericsson's most important projects. The aim is not only to minimize the time from order to placing the system in operation on customer premises, but also to improve delivery precision and quality, and improve flexibility. Costs are also favorably affected.

Moreover, the market units gain more time to devote to customers and work on value-creating system solutions for customers, instead of having to steer the flow of volume in detail.

"The basic concept of TTC Global is product packages," says Björn Boström. "For the customer, standardized products result in faster systems construction, systems adaptation and service to the end-users. Our customers are also increasingly global and they expect the same processes and products everywhere."

The new procedure is made possible by the new products involving new technologies suitable for presentation as product packages and, consequently, deliverables. Customers order product packages based on their function requirements – "fast-track packages."

"Ericsson has no choice," says Björn Boström. As an example, he names the case of Vodafone AirTouch, which stipulates many



"Developing product packages enables us to reduce time to customer and makes us more flexible," says Björn Boström, Senior Vice President, Corporate Supply and IT.

Photo: Ann Ek

requirements that are essentially the cornerstones of our TTC Global project.

"We have to work this way now. The operators are becoming larger, transactions are becoming more extensive and complex, competition is tightening and lead time is becoming increasingly important. The operators themselves have difficulty predicting future changes and demand regarding capacity and functions. This is why the product packages are so important. They are what enables us to be more flexible."

Ericsson's share price is rising. Does this mean everything is fine?

"The share price has performed favorably. That reflects everything we've accomplished so far, but it also shows expectations that Ericsson live up to future challenges. We must arm ourselves to meet future demands that will continually increase. And this means that the transition and changes we are currently implementing will hardly be complete by then. New demands and improvements are appearing constantly in a process of continual improvement, we're shooting at a moving target. Change im-

plementation must become an integral part of our daily lives. This means enormous improvements regarding delivery precision, lead times and flexibility, a 100-percent improvement every two years, at least!"

## What is the greatest challenge?

"Many people are involved, in many locations and in different companies with different functions, where work methods must be radically changed. Previously, when customers purchased AXE switches, they might have had to complete hundreds of lines on an order form. It was extremely difficult to establish customers' requirements with this specification process, which was a gigantic task for them and for us."

## Downloading from the Internet

"For many transactions, TTC Global saves Ericsson much of this work, by introducing the better-defined product packages that eliminate the enormous amount of manual work. The product packages are linked directly to customers' requirements for certain functions.

This enables the customer to order several products directly from a website. Previously, an AXE switch might consist of maybe 150 cabinets. Now, the switch can be fitted into a single truck, and the customer downloads the software from the Internet."

"There is still a great deal of work to be done, primarily in developing product packages for more products, particularly application software. However, TTC Global has the full support and enthusiasm of corporate management," Björn Boström promises.

"The result is a dramatic improvement in delivery-flow quality and the possibility of establishing even better relationships to customers. We are determined to be the best in understanding our customers' requirements and delivering solutions for the future."

Christian Wigardt

Freelance journalist  
Edited by Gunilla Tamm

ttcglobal.ericsson.se

## contact

### Corporate editor

Lars-Göran Hedin, + 46 8-719 98 68  
lars-goran.hedin@lme.ericsson.se

### Senior editor

Patrik Lindén, + 46 8-719 18 01  
patrik.linden@lme.ericsson.se

### Editorial Staff

Thord Andersson, + 46 8-422 03 16  
thord.andersson@ebc.ericsson.se

Lars Cederquist, + 46 8-719 32 05  
lars.cederquist@lme.ericsson.se

Publisher: Lars A. Ståhlberg, phone + 46 8-719 31 62, lars.stalberg@lme.ericsson.se

Ulrika Nybäck, + 46 8-719 34 91  
ulrika.nyback@lme.ericsson.se

Nils Sundström, + 46 8-719 93 83  
nils.sundstrom@lme.ericsson.se

Gunilla Tamm, + 46 8-757 20 38  
gunilla.tamm@lme.ericsson.se

Matthew Tapsell, + 46 8-719 32 02  
matthew.tapsell@lme.ericsson.se

Mia Widell, + 46 8-719 41 09  
mia.widell@lme.ericsson.se

### Address

Telefonaktiebolaget LM Ericsson,  
HF/LME/I  
SE-126 25 Stockholm  
fax + 46 8-681 27 10  
contact@lme.ericsson.se

### Distribution

Solveig Sjölund, + 46 8-719 41 11  
solveig.sjolund@lme.ericsson.se

### Layout and web design

Paues Media, + 46 8-665 73 80

### External advertising

Display AB, + 46 90-71 15 00

### Internal advertising and vacancies

Suvi Nurmi, + 46 8-719 10 58  
suvi.nurmi@lme.ericsson.se

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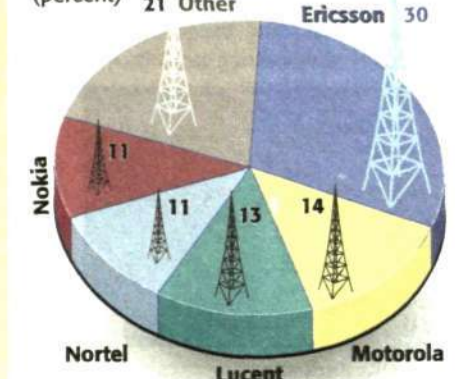
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## DID YOU KNOW THAT...

Ericsson is no. 1 in mobile infrastructure  
Shares of estimated sales in 1999  
(percent)



## IN BRIEF

## Wireless Car to offer e-solutions

► Ericsson has formed a new company, together with Telia and Volvo, that will develop and market total solutions for wireless services aimed at auto manufacturers and transport companies.

News of the new company, to be called Wireless Car, was announced at the auto fair in Geneva. Services that could be made available include roadside assistance, Internet access, remote diagnostics of a car's functions and remote updating of vehicle software.

Wireless Car will offer auto manufacturers around the world the opportunity of providing their customers with wireless electronic services in their cars.

"In the past, wireless electronic services were only a dream. Now we're going to make those dreams a reality," says Jan Hellåker, head of the new company.

## Libertel orders GSM on the NET

► The Dutch firm Libertel will become the first operator to buy Ericsson's GSM on the Net solution. Combining mobility and GSM sound quality with IP-services, the solution works by connected a company's local data network (LAN) to a GSM coverage area. Libertel believes that some of the first users will be major international corporations and companies with many telecommuters.

## Latest 3G contract awarded in Finland

► Finnish operator Ålands Mobiltelefon AB has chosen Ericsson as the sole supplier of a 3G system. Ericsson will supply a fully integrated solution for the 3G system and a GSM system, including Ericsson's GPRS system.

This means a crucial role in all network and systems integration that will cover the island of Åland and its 26 000 inhabitants.

"Ericsson is the market leader and is able to offer seamless and total systems solution for our needs. This is the beginning of a co-operation, with the goal to bring new and unique services to all of Åland," says Stefan Olofsson President of Ålands Mobiltelefon AB.

Åland, situated in the Baltic Sea between Sweden and Finland is fast becoming a test-bed for technology and applications. Finland was the first country in the world to issue 3G licenses, in March 1999.

## Billion kronor deal with Saudi Arabia

► A declaration of intent has been signed with the Saudi Arabian operator, Saudi Telecommunications. The deal is worth approximately SEK 2.63 billion (more than USD 300 million).

Ericsson will expand the existing GSM network, increasing capacity by one million subscribers. The expansion will more than double existing capacity.



Photo: Nils Backman

# CeBIT crackdown on pirate copies

**During the recent CeBIT trade show, Ericsson once again cracked down hard on companies that were displaying pirated copies of mobile phone accessories.**

About a dozen companies received warning letters informing them they were in violation of Ericsson trademarks, and that legal measures would be taken should the violations not stop. In three cases, German courts issued orders for the companies to immediately stop displaying the products at the trade show.

Pirate copies are a problem in many industries including watches, perfume and clothing to name but a few. Trademark violations can either involve the illegal use of recognized trademarks on other companies' products, or the copying of a particular design. Pirate manufacturers take advantage of the good reputation of an established brand, which conveys a certain aura of exclusivity or quality. Over time, there is a risk that a trademark can become devalued.

"We own our trademarks. When someone else makes pirated copies, we no longer have control over what the Ericsson brand name represents. There's a risk that the brand could become associated with inferior quality," says Jan Ahrenbring, head of marketing at Consumer Products.

### Direct consequence

There is also a more direct consequence of pirated copies, according to Niclas Almgren, attorney and head of design and trademark infringement protection at Consumer Products.

"We lose billions through lower

sales of original accessories due to pirate copies. That, along with goodwill losses, is the reason we're pursuing these issues," he says.

Niclas Almgren, together with a dozen of his colleagues, conducted the blitz at CeBIT.

"When we go out looking for pirate copies at CeBIT, we have to act fast. The show only lasts a few days, and there's not a lot of time to check out all the exhibitors, gather material and inform companies of their violations," says Niclas Almgren.

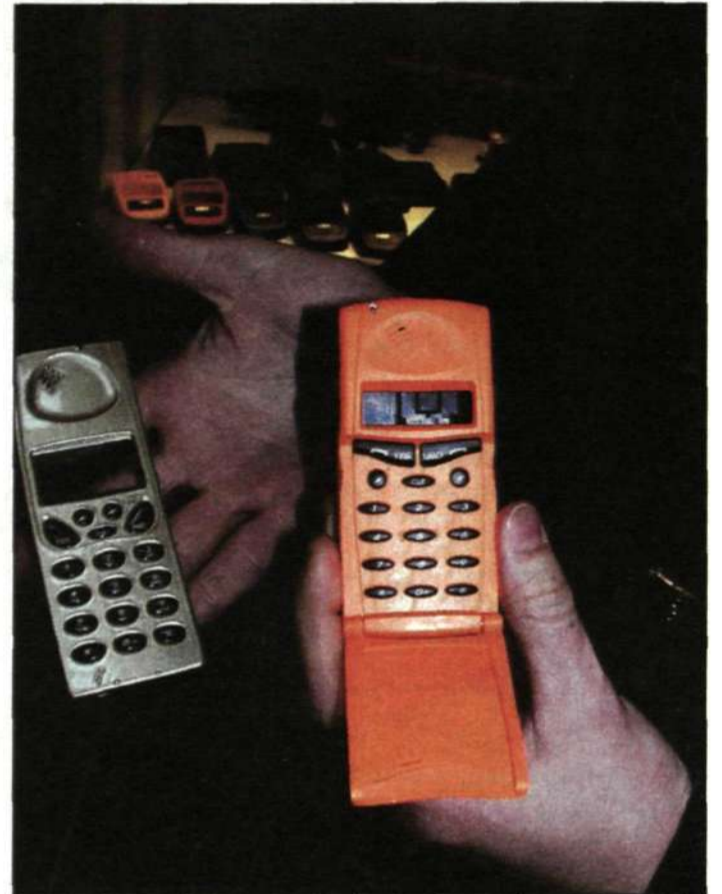
### Preventative measure

It is mobile phone accessories that are at especially high risk of being copied by disreputable manufacturers – chargers, batteries, hands-free equipment, front panels, for example. Pirate copies cost perhaps half of what the originals do, since the manufacturers' chief competitive advantage is usually low manufacturing costs.

"Uninformed customers often don't see the difference between a copy and an original product, or perhaps don't care. Problems arise, however, when those copies are not of the same quality, in which case they can even be dangerous. There have been instances where pirate batteries have exploded since they didn't contain the fuse found in the original version," says Niclas Almgren.

This is not the first time that Ericsson has conducted these kinds of activities, and it was clear from this year's show that previous efforts have had an effect. The number of companies violating Ericsson trademarks has dropped considerably compared with previous years.

"In that regard, we're seeing the



There are many firms testing their luck by manufacturing pirate copies of accessories for Ericsson products. Several companies now risk legal action, following the CeBIT trade exhibition.

Photo: Niclas Almgren

results of our labors. Unfortunately, that is not true of the market as a whole. On a global basis, the number of violations has not decreased, rather just the opposite," says Niclas Almgren.

The action at CeBIT is just a small part of Ericsson's efforts to prevent trademark infringement. In Southeast Asia, for example, Ericsson is pursuing legal action against several companies that

have committed violations.

"By conducting inspections at CeBIT, we're demonstrating that we take these issues seriously. CeBIT is the world's largest trade show. However, we can't exclude the possibility that we'll check other trade shows in the future," says Niclas Almgren.

Henrika Lavonius-Norén

henrika.lavonius-noren@lme.ericsson.se

# Ericsson mobile portal personalizes Internet services

**Ericsson is making mobile Internet more personalized. At CeBIT Ericsson announced its mobile portal solution, which simplifies the users access to its most wanted Internet services.**

**With the solution, operators can create additional revenue streams and increase customer loyalty.**

Mobile Internet will be a new window on the world. This will create a boom of new services reachable anywhere, anytime. To help the user to easily access its most wanted services, Ericsson has created a mobile portal, named the Ericsson WISE Portal.

"For the operators this is an es-

sentential tool to attract their customers and to be well positioned for the 3G market," says Anders Wåsterlid, Manager, Ericsson Mobile Portal Solutions, and Director, Solutions and Technology for Communicators and Smart-phones.

"With prepaid and telephone number portability, operators are losing their hold on the customers. This way the end-user can easily change between different operators. Therefore, many operators will offer a high level of personalized services that address the users' needs. And that is what our mobile portal is made for," Anders Wåsterlid continues.

Ericsson WISE Portal will make it possible for operators to tailor a

mobile portal for a variety of customer categories.

"The mobile portal will be the operators face for the end users. It provides a single site for accessing IP-based services through any Internet-connected device, such as a WAP phone or a PC," says Anders Wåsterlid.

At CeBIT, Ericsson displayed how services on the Web are mirrored on the WAP phone, and how WAP services for e-commerce, news, booking tickets and checking timetables are already here.

"As the mobile phone has a limited display and not a full keyboard, it is most important that your favorite applications are not more than just a few clicks away," says Anders Wåsterlid.

Different portal solutions are now being offered by many of the big telecom suppliers, but also by other players like Oracle and Yahoo.

"We are entering an interesting world, where our new competitors also could be our potential partners" Anders Wåsterlid concludes.

Ericsson's mobile portal solution was developed as the eMode project as a cooperation between the Consumer Segment and the Operator Segment. Scandinavian operator Telenor is now testing the solution. Ericsson's mobile portal will also be tested by other operators during the second half of this year.

Nils Sundström

nils.sundstrom@lme.ericsson.se

# 3G to Japan Telecom

**Ericsson will supply a WCDMA network to Japan Telecom. Together with its partners Vodafone/AirTouch and BT, the operator will build a third generation network with nationwide coverage.**

"The fact that Japan Telecom se-

lected Ericsson as its 3G supplier once again confirms our leading position in building the mobile Internet," says Morgan Bengtsson, who heads Ericsson Japan.

Ericsson will build the access network and supply parts of the backbone network. This work is expected to be completed during next year. Ericsson delivered a test

network to Japan Telecom as early as 1998.

Japanese subscribers will be able to surf the Net faster with mobile terminal, while improved roaming will make it easier for them to communicate with others.

"Japan is at the forefront with respect to WCDMA deployment. The country is also one of Ericsson

foremost markets," says Magnus Bengtsson.

One million mobile telephone subscribers are being added each month in Japan. The Japanese are also pioneering the mobile Internet with the iMode mobile data service.

Mia Widell Örnung  
mia.widell@lme.ericsson.se

## Eat and sleep well with new WAP service

**Vacationing in Europe? Don't know where to eat or sleep? Together with Michelin Travel Publications, Ericsson is developing a WAP service that provides information about 60,000 restaurants and hotels.**

With a WAP telephone you can easily access the new service, which is called Guide@Michelin. Ericsson's positioning system and WAP technology and Michelin's database provide the foundation for the new service, which is currently designed

for the GSM standard, GPRS systems and tomorrow's 3G systems.

The positioning system allows that Michelin database to identify where the user is located. Via the WAP telephone, the user can access Guide@Michelin and search for various types of restaurants in various price classes. It is also possible to get information on opening times and menus and to reserve a table. Driving directions from the user's current location can also be received on the phone.

"We can now offer mobile oper-



**Detailed travel plans are no longer necessary. All you need for your journey is a WAP phone to be able to surf into Ericsson and Michelin Travel Publications' WAP service, which has listed and graded 60,000 restaurants and hotels.**

ators a complete application that we believe end users will really find useful," says Karl-Erik Moberg at Ericsson Internet Applications.

Michelin Travel Publications is well known for its Internet-based restaurant and hotel guide and for

the Red Guide in which stars are used for ranking restaurants.

Ulrika Nybäck  
ulrika.nybäck@lme.ericsson.se

www.michelin.com

## Ericsson values reflected in sponsorship

**Respect, professionalism and perseverance – three of Ericsson's corporate values. These are clearly reflected in show jumping, which is why the company has signed a three-year sponsorship contract with six of the world's best riders.**

The newly formed Ericsson team comprises of young, promising riders alongside established world-class riders. Maria Gretzer of Sweden joins world and Olympic champion Franke Sloothaak, who is also a world-renowned trainer, on the team. The first competition in which the team participated took place in Paris, at the Palais

Omnisports, from March 3-5.

The show-jumping riders will compete in 25 team competitions and another 15 to 25 individual competitions, in both cases with the Ericsson name displayed on their saddle pads, horse blankets, horse vans and trailers.

"Riding is extremely popular in many countries. In Sweden, it is the second largest sport based on the number of active participants," explains Kristina Forsman, who works with market communications at Corporate Sponsorship and Social Marketing.

"The Ericsson brand gains a lot from a long-term approach to sponsorship. The Ericsson name will be seen for three years. In ad-

dition, equestrian sports reflect our corporate values, such as professionalism and perseverance. Other values to which the company should be linked with these personalities and which are also mirrored in the sport are teamwork, leadership, ambition and integrity," continues Kristina Forsman.

The aim of sponsorship is to strengthen the Ericsson brand and create customer loyalty through various events in conjunction with the competitions. The Ericsson riders will compete on three continents in such cities as Las Vegas, Sydney, Paris, Rome, Aachen, Montreal and Amsterdam.

Ulrika Nybäck



Maria Gretzer is shown competing with her horse Feliciano.

## Alliance program for developers

Ericsson wants to recruit companies to jointly develop business opportunities for the mobile Internet. This is the intention behind the newly started Ericsson Developer Alliance Program. The alliance program is part of Ericsson's strategy of working with open standards for the mobile Internet and supporting developer and content companies in developing applications and services.

The program offers third-party developers seminars, product information and development tools for solutions based on such technologies as WAP, Bluetooth and Epc. Development of solutions for

GSM on the Net, iPulse and mobile positioning will soon also be included in the alliance program.

Information on the alliance program and the various technologies is available on a special website. The site also includes the Ericsson Developer Zone where private persons who wish to contribute to developing applications for the mobile Internet can register. To date, more than 27,000 individuals have registered. Ericsson's strategic partnerships with companies, however, are included in the new alliance program.

www.ericsson.com/developerzone

## Talking machines soon here

Tomorrow's world in which gas and electricity meters can be read remotely and cars themselves can call for help following an accident came a little closer at CeBIT, where Ericsson showed four new wireless communication modules.

The units allows equipment and devices to be connected to the mobile network in the same manner as conventional phones.

Two of the modules, GM25 and GM22, are dual-band modules for GSM and are able to handle voice, SMS and fax.

D10 is a dual-mode unit for 850 MHz AMPS and TDMA for

voice, SMS, fax and data, while the DM20 version can also use the TDMA 1900 MHz band.

The OEM modules can be built into most types of equipment and devices, including household appliances and cars or industrial equipment.

"OEM modules are already used in a wide range of products. Soon they will be as common as microchips are today," says Jan Ahrenbring, marketing manager for the Consumer Products business segment.

The modules will be available during the spring.

## HELLO THERE



### Katrin Van der Spiegel

**Head of Ericsson's work with telecom regulations and policies, an area where 3G licenses are a hot topic.**

► In March of last year, the first 3G licenses were awarded in Finland. What country is next in line?

"In March, licenses will be awarded in Spain. The UK, the Netherlands, German and Italy are also getting ready, as is Japan. EU regulations stipulate that all operators who wish must be able to take their systems into operation in the beginning of 2002. To meet this deadline, licenses must be awarded during this year or early next year, which means between 55 and 60 licenses in Europe and Japan. In North America, the 2GHz band was already allocated for 2G a few years ago. Latin America is considering whether to follow the American or the European model."

► How will licenses be awarded?

"In some countries there will be auctions in which the license is awarded to the highest bidder, although companies must meet certain requirements to participate in the auction. Another method, often called a beauty contest, is that the company considered most suitable by the authorities receives the license for free or at a fixed price. Auctions risk becoming extremely expensive for operators. In the UK, the Netherlands and Germany there will be auctions, while the Italian telecom authorities will hold a beauty contest."

"In certain countries, such as the UK, the telecom authorities have decided to award five licenses, while the number will be three or four in other countries."

► What is your job?

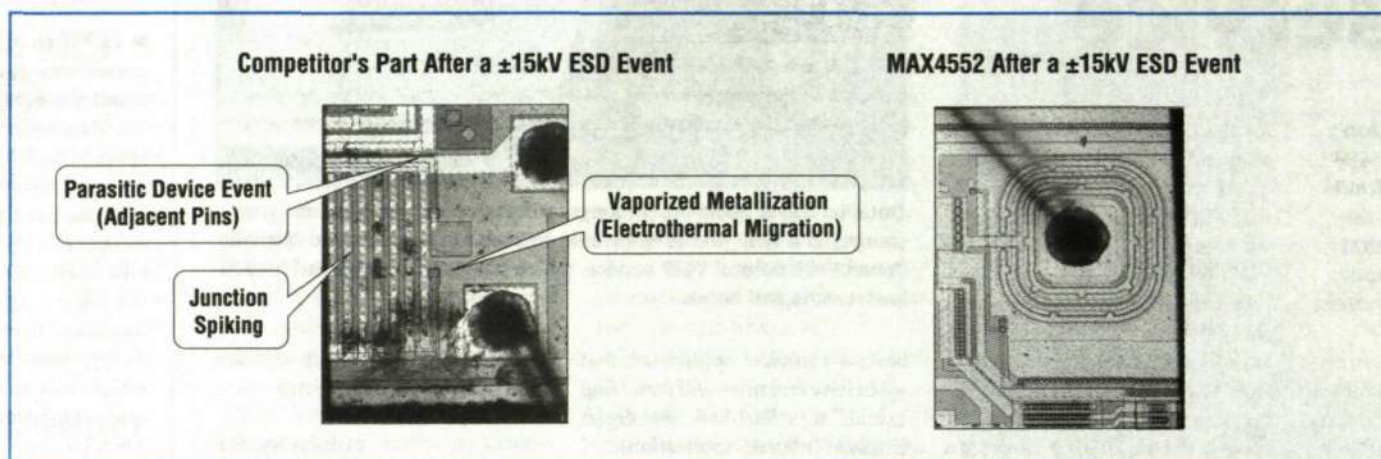
"I spend a lot of time in the UMTS Forum, which is an independent group for increasing knowledge about UMTS and its services which includes manufacturers, operators and regulatory bodies from as many as 40 countries. Our work included how the regulations should be adapted to make UMTS a success. TABD, Transatlantic Business Alliance, is another group in which I participate. Its task is to eliminate trade barriers between North America and Europe due to incompatible regulations. In telecom, the hot issues are 3G and licensing procedures. I travel a lot in my work, particularly within Europe. It's an exciting job. There is a lot happening and to keep up, you need to have a broad contact network."

Gunilla Tamm  
gunilla.tamm@lme.ericsson.se

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MAX4552	Quad NO SPST	120	4	8	110/90	±1	+2 to +12	16-DIP/SO/TSSOP/QSOP
MAX4553	Quad NC/NO SPST	120	4	8	110/90	±1	+2 to +12	16-DIP/SO/TSSOP/QSOP
MAX4558	8-Channel Mux	160	6	8	150/120	±1	+2 to +12	16-DIP/SO/TSSOP/QSOP
MAX4559	Dual 4-Channel Mux	160	6	8	150/120	±1	+2 to +12	16-DIP/SO/TSSOP/QSOP
MAX4560	Triple 2-Channel Mux	160	6	8	150/120	±1	+2 to +12	16-DIP/SO/TSSOP/QSOP

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# 3G for North America steals the show at CTIA

**CTIA Wireless 2000 is North America's most important data and telecom exhibition. A number of 3G applications and a product portfolio for CDMA were the main attractions at the Ericsson stand.**

The only thing "spicier" than Ericsson's CTIA Wireless 2000 exhibit in New Orleans was the famed seafood gumbo found along the city's historic Bourbon Street. Like CeBIT is for the European market, the CTIA (Cellular Telecommunications Industry Association) exhibition, which ended on March 1, is Ericsson's largest trade show in the North American market.

## Stand cooperation

The focus was on users as Ericsson joined with partners in the Internet industry such as MapQuest.com, Ticketmaster Online City Search and iVillage.com at its Partner Pavilion, to demonstrate third generation value-added services.

"Joining forces in this way benefits all parties," explained Rob Dressler, Director of Wireless Marketing at the MapQuest Internet company. "It helps us find out what kinds of services Ericsson customers want and how to integrate what we offer with Ericsson products."

"Ericsson's objective in working with these innovative content and applications providers is to drive the market for mobile Internet solutions," said John Giere, Vice President of Marketing and Branding at Ericsson in the US.

## Most significant show to date

Ericsson CyberLab in New York had been working with these third party content, services and applications developers over the past several months, educating them about Ericsson's mobile Internet technology platforms, including WAP, Bluetooth, EPOC, GPRS, Mobile Positioning and 3G. Ultimately, CyberLab's efforts are geared at bringing these newly developed mobile Internet applications and services to Ericsson's customers - mobile operators and enterprises - so they can give the consumers

what they are already asking for.

According to Mark Wightman, Ericsson US's Director of Marketing Communications, this was the most significant CTIA show to date with attendees crowding in to see Ericsson's third generation solutions, the Partner Pavilion, the 3G show, and the kind of new products that make people look twice.

"Mobile Internet is real now," says Wightman. "The 3G messages weren't as well received in previous years because it seemed far off and their customers weren't asking for it yet. Now everyone is asking for it and we offer it in a variety of colors and flavors."

## Entertaining news show

Despite competing with over 700 exhibitors in the most attended show in CTIA history, Ericsson was successful in drawing in record crowds which kept the booth full at all times.

A comic Saturday Night Live news-style show - aimed at helping customers understand the migration to 3G - made the exhibit light and interesting.

But it was the new consumer products and accessories, which kept attendees hanging around after the show.

Ericsson's T18d, the latest mobile phone for TDMA systems, was well received as it provides a solution for America's multi-band, multi-mode system complexity.

Other attractions of note were



**CTIA is North America's largest exhibition for mobile telephony. Products demonstrated by Ericsson included a CDMA phone with a web browser. 3G applications kept the Ericsson stand crowded at all times.**

Photo: Ted Johnson

the MC218, MP3 Player, FM radio attachment, and the Chatboard demos.

## First showing in the US

The WAP technology team showed consumers how they could order a pizza or check their bank account with their WAP phone or handheld PC.

Ericsson's Bluetooth team showed visitors applications that included dial-up capabilities from their I 888 mobile phone or laptop and ways to send images from their phone to a friend's laptop.

"This is the first telecom show for

the Americas where we have introduced Bluetooth technology," explained Skip Bryan, Director of Technology Market Development for the American Standards business unit.

"There's still a new audience that needs to understand the basic principles behind this technology. They seem to immediately grasp the freedom of motion it brings, but that's just the tip of the iceberg. This is a very hot market right now."

Traci Pollard

traci.pollard@eus.ericsson.se



**Annette Jörgensen, product manager for mobile Internet applications impressed visitors with Ericsson's Mobile Internet Advertiser concept that can send targeted advertisements to users.**

Photo: Traci Pollard



**Skip Bryan from TDMA Systems demonstrated Bluetooth technology.**

## Demanding consumers always want to be online

**During CTIA Wireless 2000, Ericsson demonstrated iPulse, an intelligent communications tool that allows users to communicate over different networks from a single location.**

This solution integrates Internet services with the PSTN and various wireless networks.

Users can choose to send a text

message, make a conventional voice call or start a web conference in which everyone sees the same web page. The system makes the necessary connections for the desired form of communication without requiring the user to dial any numbers.

It is also possible to quickly change the communications medium from a text-based chat channel to an IP-based voice call, for example.

"We serve a market of consumers who are very demanding," explains Russ Sharer, Director of Product Marketing at Ericsson Datacom Networks. "These sophisticated consumers are putting new demands on us and they expect certain features, along with the ability to get information anytime, anywhere. Ericsson offers solutions in each of the technology platforms that will give consumers what they need."

A special mobile van called the WaveLab transmitted live video and data from the French Quarters downtown while attendees watched this "real time" application on the big screen.

Other major attractions at the exhibition included demonstrations of various 3G applications using Edge technology.

Traci Pollard

## Ericsson's first CDMA phone

► Ericsson's first phone for the CDMA standard was presented last week at the CTIA Wireless 2000 exhibition in the US.

The new A1228c is a WAP phone that is loaded with features, including talk time of more than five and a half hours, a large display and 26 different ring tones. The new CDMA phone will be available during the third quarter.



**The A1228c is Ericsson's first CDMA phone.**

## New campaign tailored to US

► New Orleans saw its share of Ericsson ads during CTIA week with WAP and Bluetooth billboards moving rapidly from one block to the next, parading simple messages that displayed Ericsson as a 3G leader.

During CTIA Wireless 2000, Ericsson took the opportunity to launch its Power of Mobility campaign in the US.

"We're connecting the buzzwords of the industry with Ericsson so when people talk about Bluetooth or WAP, they'll talk about Ericsson," says Director of Strategic Marketing, Keith Shank, who helped lead the advertising effort. "We're going to blow the doors off the competition because we've got a really solid message."

The ad campaign was adapted from an existing Canadian campaign with the aim of increasing awareness of Ericsson in the US market. In addition, this campaign aims to increase the association of Ericsson with vital leading technologies and position Ericsson as an innovator or pioneer. The campaign will particularly target strategic partners, but will also create an impact with the general consumer.

For a complete list of the products and applications shown at CTIA, visit: [www.exu.ericsson.se/EUS/marketing/](http://www.exu.ericsson.se/EUS/marketing/)

## New base stations for cdmaOne

► Five new products for the cdmaOne standard were shown during the CTIA exhibition in New Orleans.

The new products included base stations and infrastructure equipment for existing cdmaOne networks that will ease the transition to the third-generation cdma2000 cellular network. There are currently 50 million cdmaOne subscribers around the world.

## VOICES FROM CEBIT

Patrik Lobergh, demonstrated mobile Internet applications using Ericsson's new prototype communicator and an R380.



"At last, we no longer need to stand there talking about WCD-MA, Edge, and GPRS while our poor listeners look at us with questioning faces. We've now managed to create a link between our 3G message and what the new products and services will mean for ordinary people."

"That is one of the reasons why Ericsson has received such positive press and favorable opinion. While journalists and analysts can understand, just like everyone else, the utility of wireless phones equipped to receive on-line stock quotes and news, they're not as good at understanding the implications of various abbreviations."

Daniel Ljunggren, A2618 product manager.



"Expectations have been enormous."

"I realized as soon as the curtains were lifted from the consumer products display after the press conference, that the A2618 was a big hit."

"Everywhere I looked, I saw beaming smiles. I wish that the display had been twice as big in order to satisfy all the pressure to look and touch."

Christian Friedl, Enterprise Partner Area.



"The decision to treat all of our partners as VIPs was definitely the right one. Even though this was the first time we've devoted a special area at the Ericsson display for our business partners, and few people knew what to expect, we received very positive feedback regarding that initiative."

Ulrika Näs-holm, Ericsson CeBIT 2000 Press Team.



"The press team had everything planned in detail, but with 34 interviews scheduled at the display during the first day alone, chaos was inevitable. Interest was enormous and included interviews with CNN, CNBC, CBS Marketwatch, the Wall Street Journal, Reuters, the Financial Times and Bloomberg TV, to name just a few."

# Electronic shopping makes life easier

One of the few applications at CeBIT with a high impact on daily life was the e-living solution, one of Ericsson's mobile e-commerce solutions. With a web-connected refrigerator, a WAP phone and a shopping cart, Ericsson has succeeded in developing an application that simplifies one of our most common chores: putting food on the table.

"The e-living concept is about life quality. We want to make it easier to choose and purchase products and organize work in the home," says Finn E Olsen, who heads the group at Ericsson in Denmark that is working with Ericsson's Eurolab in Aachen, Germany to develop this application.

"We have combined concepts for communications in the home with wireless technology to create tomorrow's consumer-friendly way of shopping," adds Friedhelm Ramme, head of applications research at Ericsson Eurolab.

## New total solution

Parts of this solution have been presented previously, such as the refrigerator jointly developed by Electrolux and Ericsson. This total solution, however, is something new.

From the web screen on the refrigerator door, users can surf the Net, get tips on current movies and restaurants, download recipes and get dinner suggestions. The display can also show the family's calendar, the children's school schedules and personal reminders.

The CeBIT demonstration showed how a shopping list could be downloaded to a WAP phone. Thereafter it was sent to a shopping cart, which has a display showing information on current specials and indicating where items are located in the store. To simplify matters, the CeBIT shopping cart was



Electronic shopping – an e-living application – is not really as boring as it sounds. On the contrary, it attracted many smiles when it was presented at Ericsson's stand at the CeBIT exhibition. Photo: Lars Åström

already filled with goods. Each item is equipped with a small radio chip, an ID label that communicates with the RFID radio technology.

When the cart is full, the shopper simply wheels it through a turnstile, where sensors register which items have been selected and how much they cost. The system functions much like a cash register with a bar code scanner with the advantage that the items do not have to be removed from the cart.

"In the future, both the total and the receipt will be presented on the phone. You will only need to press a key to approve the purchase, and the amount will be deducted from

your bank account. It will also be possible to send the shopping list directly to companies that provide home delivery, or why not to your husband, who can run by the store on his way home?" says Ericsson's Henrietta Boyter with a smile.

## Refined technology

This type of ID labeling with the help of radio technology is not quite ready, but Finn Olsen is convinced that it will become common in a few years. WAP, payments via a mobile phone and network security are all being refined and improved.

"The technique of labeling

goods with RFID chips is not yet advanced enough for retail application, but it is in use commercially at large airports to keep track of baggage," Friedhelm Ramme explains.

"The important thing now is to get collaborative work started quickly throughout all of Ericsson and to establish partnerships with everyone working with this type of application. We know that there are many ideas worth pursuing," says Henrik Ackermann from Ericsson in Denmark.

Mia Widell-Örnung  
mia.widell@lme.ericsson.se

# Wireless e-commerce quickly

Ericsson devoted a large section of its display at CeBIT to wireless e-commerce, and for good reason. That is the engine driving the wireless Internet.

"We're seeing an explosive rate of growth in Internet commerce. We're going to see that same sort of development in the field of wireless e-commerce as well. Already by 2003, we believe that there will be more people shopping from mobile terminals than from fixed connections," says Cecilia Öberg, who outlined Ericsson's vision and market outlook for wireless e-commerce at the CeBIT trade show. She is involved in wireless e-commerce, working at Ericsson's newly formed Internet Applications business unit.

E-commerce has launched a whole new global economy. Wireless e-commerce will bring about even more changes. It is now clear that wireless terminals will have a significant impact on how people buy goods and services in the future. Not only will they enable commerce anywhere at anytime, wireless phones are also highly personalized, enabling retailers to adapt to the needs of individual users.

For many consumers, mobile phones are the only terminal available for electronic purchases. In southern Europe, for example, home computers are still uncommon, while mobile phone ownership is much more widespread.

It is Ericsson's ambition to be the leading supplier of e-commerce so-

lutions in the field of wireless e-commerce, both in terms of systems and of consulting services for customers who want to build portals and services for wireless e-commerce.

## Golden opportunity

That the market is viewed as a golden opportunity is especially apparent from the fact that most farsighted IT companies are quickly entering the field. Some of these companies have their roots in the mobile arena, others are involved in wired e-commerce while still others are involved in designing security solutions. Many of the companies are entering into partnerships with each other. Nokia and Brokat, for example, recently announced that they intend to collaborate.

"Ericsson is in a strong position, not only because we have good mobility skills, but also because we're focusing seriously on security issues. Security is the key to e-commerce success. People have to be confident that ordering and payment of goods over the Internet is secure. This is not only about technology, but also about conviction," explains Cecilia Öberg.

Ericsson is actively involved, as a founding member, in the global industry initiative Radicchio – whose aim is to promote secure wireless e-commerce. Ericsson is advocating that the industry adopt the highest level of security, so-called PKI level, for those services that require high-level security.

GSM networks also provide a greater degree of security than the



The banking world will be rapidly transformed by the mobile Internet. Together with SEB Internet, Ericsson is developing a number of wireless banking services in which the R380 WAP phone will play a central role. Leading this effort are Anders Bons, business development manager at SEB Internet, and Philip Nyströmer, business development manager for the banking and finance sector at Ericsson. Photo: Peter Nordahl

# Mobile bank revolution

Ericsson and the Swedish SEB's Internet bank are working together to develop wireless banking services. With a R380 WAP telephone, users will be able to buy and sell stocks, check their bank balance, transfer funds and pay bills.

The Internet is transforming the banking industry. Access via the Net is changing customer behavior and banking services. With WAP technology, the bank is in your pocket.

"Ericsson's technology and our expertise in financial services is a superb combination for building the bank of the future," says Anders Bons, who is business development manager for SEB's Internet bank.

"Being able to use a mobile phone for banking services is an excellent complement to the Internet bank that further increases availability and customer satisfaction."

SEB was one of the pioneers in using the Internet for network-based financial services for private cus-

tomers. Today, three years after the start, 25 percent of SEB's customers use the Internet bank. With 380,000 Internet customers, SEB has been transformed into an e-bank, which is among the global leaders with respect to the proportion of customers using Internet services.

"One consequence of this success is that SEB during 2000 will close some 50 offices, corresponding to 20 percent of the total number," says Johan H. Larson, who heads SEB Internet. "This will mean a major change for us, and wireless banking services will play an important role in the transition. Increased mobility will also be an important factor in our global expansion strategy."

Ericsson is supplying both infrastructure and terminals for the Internet bank's WAP solution. The WML coding for the service is being done by Ericsson Business Consulting in cooperation with SEB Internet.

"This is an excellent example of the type of collaboration found in the banking and finance sector. For

us, it is important to refine our systems and products so that they are optimized for this type of service," says Philip Nyströmer, who is responsible for Ericsson's business development in the banking and finance sector in the newly formed Internet Applications business unit.

"Operators are still our main customers," continues Philip Nyströmer, "but we must work higher up in the value chain so that we can identify the best methods for devel-

oping both our own and the operators' business."

Ericsson also has a partnership agreement with the credit card company VISA regarding the development of secure solutions for mobile transactions.

The tests are being carried out on the Mobile SET and Wireless Wallet product concepts.

Nils Sundström  
nils.sundstrom@lme.ericsson.se

## MOBILE BANKING USING THE R380

SEB Internet's wireless banking services, which have been developed for Ericsson's R380 WAP phone, will be launched this summer. The user-friendly menu is linked to both the tab system on the phone and to the services that can be accessed via a fixed connection to SEB Internet. The user can easily choose among three types of services in the menu: unpaid e-bills, account balancing and stock



portfolio management. All transactions are confirmed by a code.

Mia Widell-Örnung  
mia.widell@lme.ericsson.se

# gains momentum

Internet itself. It is simply easier for hackers to break codes on the Internet than on GSM networks. Many portals will be run by mobile phone operators.

"Mobile networks are a good platform, but security needs to be increased further," points out Cecilia Öberg. "Security, however, is still not the biggest issue. It will also take quite a bit of time before the new business logic is fully functional."

With a large number of new players, it who should pay whom is no longer a foregone conclusion. Wireless e-commerce will provide numerous new opportunities for operators, Internet service providers and content and service providers to make money. Consumers will either pay for time used, amount of data transmitted over the

network, or for each transaction or service. Some WAP sites will be financed through advertising. Content providers, such as operators, will also subsidize terminals and offer certain services free, if consumers buy their products or services.

## Banking services first

The first wave will consist of business-to-business commerce. According to most observers, within three years the products and services that businesses purchase over the Internet will be worth more than ten times the amount consumers are buying. Wireless e-commerce will increasingly take place between businesses and individuals, since mobile phones are personal.

The first to arrive will be banking,

financial and brokerage services. There are already a couple of banks offering services over mobile networks in most European nations as well as in the U.S. Many others have already started WAP testing. Sweden's SEB bank, for example, utilizes Ericsson solutions for its banking services. HQ is offering stock brokers mobile e-commerce services incorporating an Ericsson solution, and Charles Schwab in Hong Kong will be doing the same, to name just a few examples.

Scandinavia has probably advanced the furthest when it comes to wireless e-commerce. Bank customers in Finland have been able to pay their bills via SMS for several years.

Mia Widell-Örnung

# Mobile e-Pay for secure payments

To accommodate the tremendous developments waiting just around the corner, Ericsson has launched e-Pay, a product portfolio for security and payments over the Internet. First unveiled in Cannes, it was one of the hot e-commerce solutions at CeBIT.

With Mobile e-Pay, operators or Internet Service Providers (ISPs) can select the modules and security levels that suit them best. In addition to the improved security that mobile networks offer compared with the Internet, it is possible to add functions to further increase

## Ericsson breaks records at CeBIT

► Twice as many customer visits, more scheduled interviews with journalists and more favorable publicity. Those are some of the signs of Ericsson's success at this year's CeBIT trade exhibition. Moreover, Ericsson shares rose SEK 90, from SEK 756 to SEK 858 during CeBIT week, probably because the market liked what it saw.

One of the most important reasons, of course, is that Ericsson presented a number of new consumer products. Ericsson also had a clearer message at this year's CeBIT trade exhibition. Work began already prior to Telecom99 and has continued ever since.

"Our goal was to focus on strategically important products, the so-called 'prime product offer,'" says Christer Wiklander, responsible for Ericsson's participation at CeBIT.

"We've largely succeeded in doing so, and we'll continue along these lines at future trade exhibitions. But the most important factor in our success was still all the people who worked the display and did such a good job," he says.

This year, the Ericsson display received visits from 340 customer groups and other visitors, including everyone from the Swedish Minister for Communications Björn Rosengren to major operators such as Mannesmann, AT&T and Sonera to smaller operators such as PTT Bosnia and Herzegovina and Sweden's Telet.2.

"CeBIT is also very important for the German market. Historically speaking, this trade exhibition has been German, now it is semi-international. Still, it is very important for us in the German market. CeBIT is Ericsson in Germany's main annual exhibition. We make appearances at a few others, including ISA in Berlin, but otherwise not that many," says Kalle Alsmar, head of Ericsson in Germany.

Operators in the German market are now in the process of choosing suppliers for 3G. Licenses for 3G will be auctioned off later this year.

"That's why it's great that our message about the wireless Internet was clear here at CeBIT," Alsmar adds.

Mia Widell-Örnung  
mia.widell@lme.ericsson.se

security. These can be anything from simple passwords to Wireless Public Key Infrastructure (WPKI). Payments occur using direct links to banks, credit cards or through special accounts where users already have money.

Mobile e-Pay is designed for use by customers, operators, ISPs and large companies that want to establish portals or separate services for wireless e-commerce.

Ericsson is also working hard to develop solutions for individual companies such as banks (see the article on SEB).

Mia Widell-Örnung

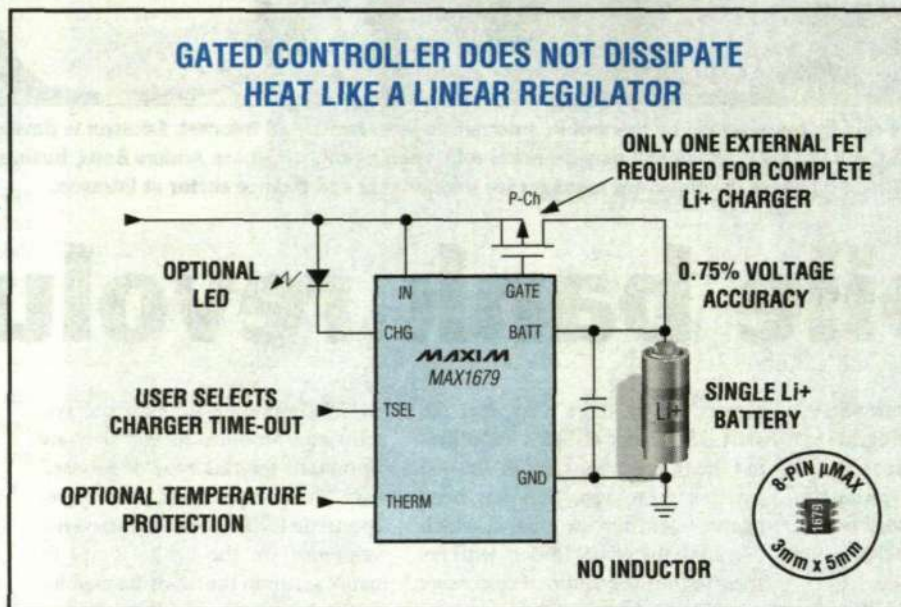


# SMALLEST Li+ BATTERY CHARGER DISSIPATES NO HEAT

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NO CHARGER POWER DISSIPATION IN HANDSET



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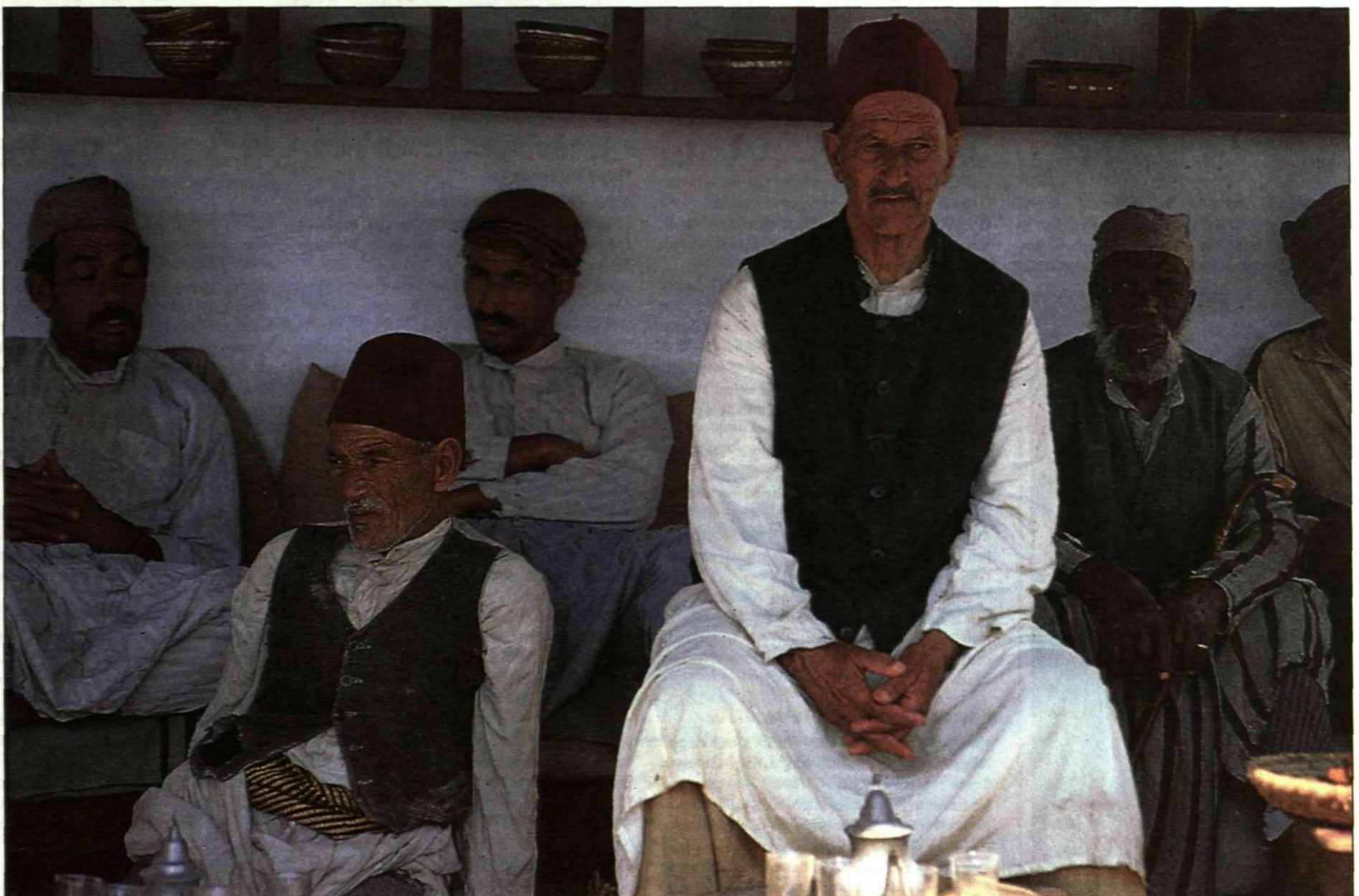
# Cultural knowledge is the key to success in Africa

Engage in small talk before meetings and find out everything you can about local artists and authors. Like it or not, long-term personal relationships are an important asset in conducting business in African nations. Sometimes this means that family matters take priority over work, but it also means that good business relationships are not readily broken.

Ericsson has been operating in the African market

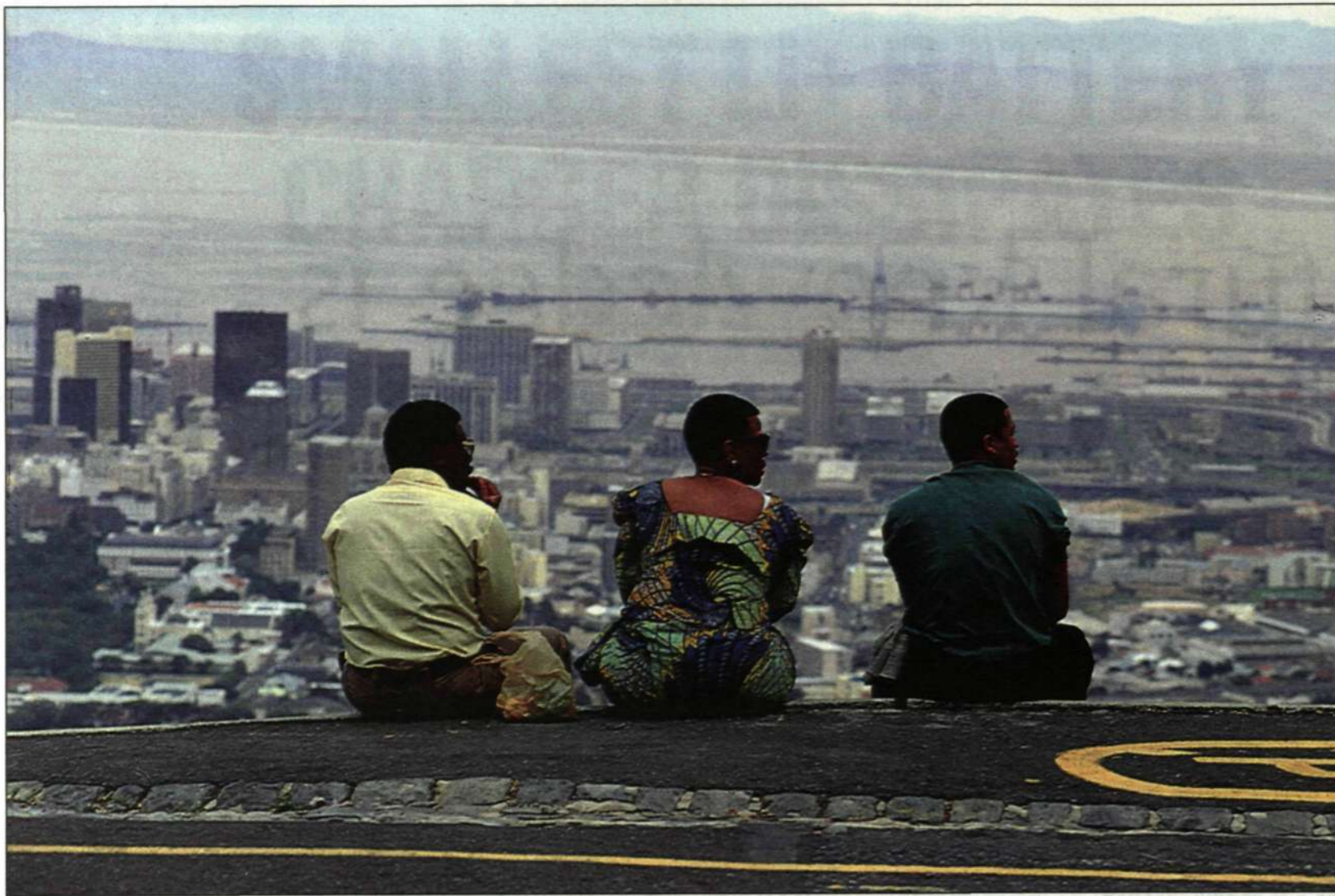
since 1894 and has representatives in 30 countries. Now, with a trend towards privatization in the African telecom market, competition is heating up and many operators are fighting over new licenses that are being auctioned off.

Ethnologist Gillis Herlitz has plenty of good advice for those who wish to conduct business on the African continent.



Old age is associated with experience, which is why older people enjoy positions of status in most African nations. "That can be a good thing to keep in mind when deciding who to represent the company during negotiations," says Gillis Herlitz.

Photo: Lars Åström



A promising outlook. South Africa is Ericsson's biggest market on the African continent.

Photo: Lars Åström

# Dialog essential to business

Lecturer Gillis Herlitz is a hard man to track down. Almost every day of his schedule is booked, a whole year in advance. I was able to meet with him for an hour and a half at the airport in Stockholm, in-between lectures. He knows just about everything regarding cultural interaction, especially between various African cultures and Sweden. Spending two and a half years in Kenya, a year and a half in Tanzania and a half year each in Zimbabwe and Ethiopia has given him broad knowledge about

many African cultures. Moreover, he has traveled through 15 different African countries.

An ethnographer by training, he worked for the Swedish International Development Authority (SIDA) and the United Nations for fifteen years. For the past ten years, he has been self-employed, traveling around the world giving lectures. Despite his extensive experience, he doesn't look a day over fifty, although I don't have time to ask him about that before we launch into the subject of prejudice.

"It upsets me when I notice how many people still consider Africa to be a single country and not a region of the world with 55 countries containing numerous cultures, religions and languages. Kenya, for example, is home to some fifty different ethnic groups and just as many languages. Ignorance is dangerous, it fosters prejudice."

Cultural differences are both logical and complex at the same time.

"There are no simple cultural structures. Rather, differences are drawn up along the lines of education, urban vs. rural and age differences, rather than along national identity," explains Gillis Herlitz.

"Differences between Swedish and Kenyan officials are fewer than those between Kenyan officials and Kenyan farmers, due to widespread contempt of farmers among African civil servants."

### Knowledge of country is key

Knowledge about a country's history, culture and religion is important when conducting business in a non-western country. Curiosity, openness and sensitivity are even more important. In African societies, the individual does not play as prominent a role as in western societies. The collective, which includes close family ties, relationships and the forming of relationships, is fundamental to most African societies.

"Don't get stressed out or be surprised if the African businessman - women are still rare in these positions - wants to chat about home and family during the first hour of the meeting. He

wants to get to know you and form a relationship before conducting business," explains Gillis Herlitz.

It all boils down to building up confidence before forming a long-term business relationship.

### Three key phrases

Although he prefers not to generalize, Gillis Herlitz has found three Swahili phrases that summarize the cultural phenomenon occurring in many African countries. "Hakuna Matata," is understood by anyone who has seen the Disney film, The Lion King, and means "no problem," a widely held attitude.

"Once you've established a good relationship with an African, there's an incredible desire to support and encourage each other. I often run across an 'anything is possible' attitude," explains Gillis Herlitz.

Although anything might be possible, many African nations require a long-term planning perspective with generous timeframes. "Bahati Mbaya", which means bad luck, is a response one can hear if something has not been taken care of, such as a report not getting finished on time.

"That doesn't mean that the person in question is lazy. Instead, incorporate the phenomenon into your planning. Make earlier deadlines. This is also an example of how the relationship is more important than the business itself."

### 'Perhaps tomorrow' means no

"If a close relative dies or a cousin comes to visit, those matters take priority over finishing up a report. It's not always a good idea to get angry and berate the person in question, since you might be sabotaging your long-term relationship."

"Labda Kesko," is the third phrase, and literally means "perhaps tomorrow." In reality,

however, it means no, at least not right now.

"You should take that as a 'no' and ask someone else for help. This person doesn't have the time, at least not by tomorrow, as you perhaps expected," says Gillis Herlitz.

"To say no outright could damage your good relationship, so avoid doing so."

### Family ambassadors

When accepting an overseas contract, everyone in the family should look forward to traveling and residing in the country.

"A nightmare example is what happened to an Ericsson employee in Israel recently, when a family member made an anti-Semitic remark during a leisure activity. This incident shows that people have to choose their words carefully, 24 hours a day, whether working or simply traveling abroad."

Gillis Herlitz has a few good pieces of advice for those traveling or conducting business in Africa.

"Learn as much as possible about local artists and authors. This is incredibly valuable in countries which are struggling with their national identity. By demonstrating your knowledge, you are showing respect."

In most African countries, there is no need to downplay one's appearance. A suit and tie are customary for many business meetings. During dinner, however, it is important to choose one's words carefully.

"Never criticize the country's government while dining out. You could be endangering both yourself, as well as your business partner, should the wrong person overhear the conversation."

"If national politics comes up, discuss foreign politics instead, without sounding overbearing," suggests Gillis Herlitz.

"People who accept and respect a nation's culture will almost always be met with an incredible amount of assistance, kindness and friendliness," says Gillis Herlitz.



Gillis Herlitz



You can show respect with your knowledge of a country and its culture. For example, learn everything you can about local artists and authors. Artist C.O. Hult en shows off one of his African masks.

Photo: Sven-Erik Sj berg/Pressens Bild

# Africa - a growing telecom market

It's a large market with huge business potential. The region consists of 55 countries with 900 million inhabitants. Currently, less than two percent of the population has access to a telephone, something that will be changing rapidly. We're talking about Africa, of course, a market that's on the move.

Join the World was the theme of last year's Telecom 99 trade show in Geneva. The UN agency and host of the show, the International Telecommunications Union (ITU), together with the participating companies, discussed how business and government can work to overcome disparities such as the information gap.

### Helps stimulate economies

What can be done to avoid excluding developing nations from the opportunity to communicate via telephony and data traffic?

During these discussions, a consensus was reached that support for developing nations cannot simply consist of subsidies, but that trade with these countries is just as important.

Dan Ekman, head of the African market at Ericsson, states his views on the subject.

"By conducting business in African countries, we're helping to stimulate their economies, which is the foundation of social prosperity."

"A functional telephone and data network is at the basis of almost all commerce today," according to Dan Ekman.

Democracy and prosperity are based on knowledge.

"In every country where Ericsson has a local company, we're continually training local company employees, with the aim of getting them into key positions," he explains.

Dan Ekman thinks that the media provides too much of a one-sided view of this part of the world.

"Sure, war and other atrocities occur here, but it is unfortunate that the media seldom reports on all the positive things that are taking place on the continent. Single-party nations are disappearing and being replaced by democratic governments in many countries. Egypt, Nigeria, Tunisia, Uganda, Ghana and Tanzania are a few examples. Moreover, infant mortality is falling in almost every country and literacy rates are on the rise."

### New regional offices

Currently, Ericsson has local companies and branch offices in Africa. New for this year are so-called regional offices.

They will operate as skills centers and have been given the task of supporting local companies, providing specialized expertise in several areas.

One of the new offices has been assigned the task of organizing customer seminars. Regional offices will also be able to handle the implementation of new systems.

This year, three new offices will be established in the region, although locations have not yet been disclosed.

A combination of peace in most countries and the ongoing privatization of telephone networks have made Africa an attractive market for many companies.

This can be most clearly seen in the number of operators which are bidding on both wireless and wireline licenses being auctioned off. This year, approximately twenty African nations are auctioning off five or six licenses during the first part of this year.

"I see huge market potential. Sales on the mobile telephony side will increase by approximately twenty percent this year," predicts Dan Ekman.

Ericsson's competitors in the African market are familiar from other countries and parts of the world - Alcatel and Siemens within infrastructure, and Nokia and Motorola within telephony.

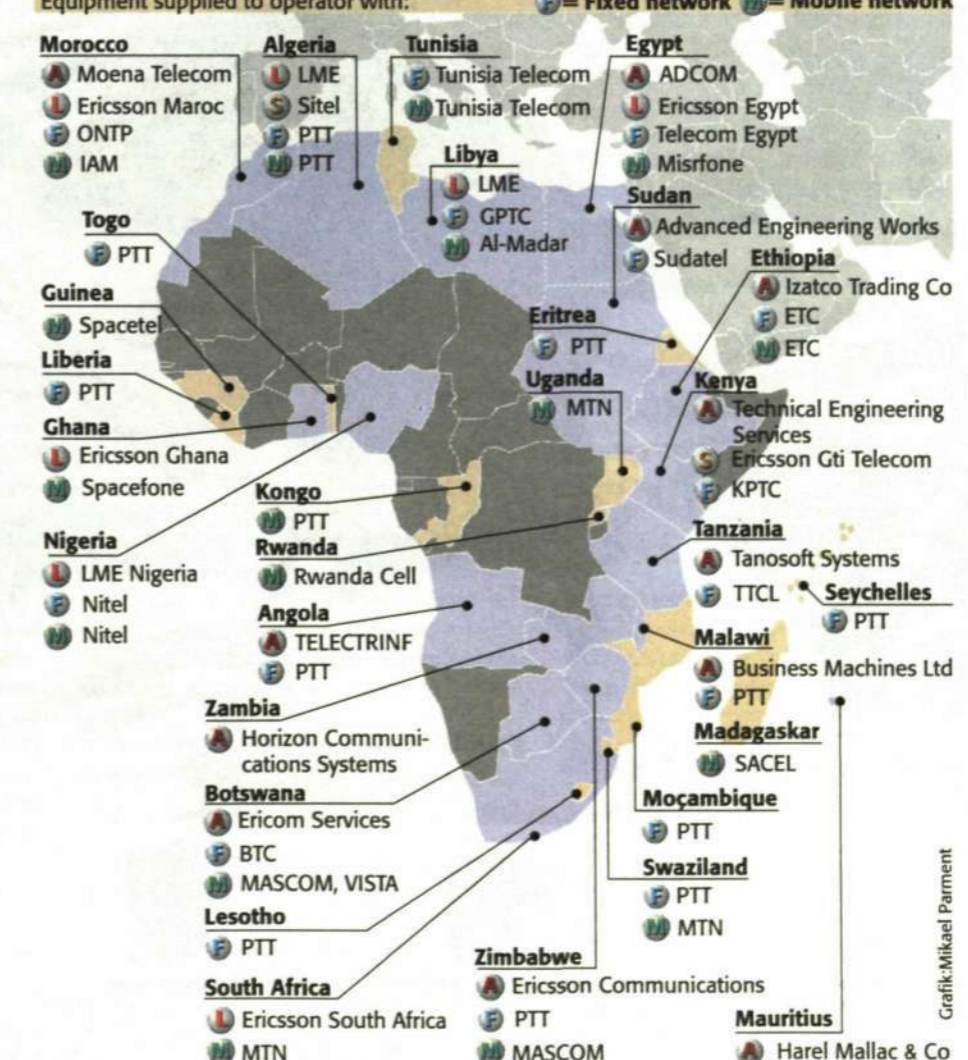
Ulrika Nyb ck

### ERICSSON HAS OPERATIONS IN 30 OF AFRICA'S 55 NATIONS

The top five countries in terms of sales are South Africa, Morocco, Algeria, Egypt and Libya

Representation via: Agent Local company Partnership

Equipment supplied to operator with: Fixed network Mobile network



### THINGS TO KEEP IN MIND

- Will you be traveling or conducting business in an African country? Here are some things to keep in mind:
- Be diplomatic, sensitive and curious.
- Learn a few phrases in the local language.
- Read as much as you can about the country you will be visiting, from government to local culture.
- Old age equals status and clout in almost all African countries.
- Never discuss politics during meals in public.
- Gifts are appreciated, but use common sense (a pocketknife for a farmer, rather than a crystal vase).
- Take along pictures of your family.

# Ericsson's monopoly in Algeria threatened

For forty years, Ericsson has sold telecommunications equipment to Algeria. This year, GSM network capacity is being doubled using Ericsson systems. A liberalization of the telecom market and a more stable political climate mean that more operators want to enter the market.

"We can't expect to retain our dominant position forever, at most a few more years," explains Dan Ekman, head of the African market.

"The challenge this year, and especially in the coming years, will be to maintain as large a market share as possible. When a second GSM operator establishes itself in the country, we hope to be able to supply products and systems for them as well."

In terms of geographic area, Algeria is Africa's second largest country, after Sudan. Some 30 million people live here and only eight percent have access to telephones. That is changing rapidly, however, as the telephone network is being expanded.

Ericsson has been operating in the country since the 1950s and has supplied almost all the equipment for both the wireline and wireless networks.

### Privatization brings competition

That forty-year monopoly is now being threatened. Siemens and Alcatel are working hard to enter the market as suppliers. Their chances are fairly good since the state-run telco, the Algerian Post and Telegraph Administration (AP&T), is in the processes of being privatized.

AP&T is working hard to expand its telephone infrastructure. Last year, Ericsson landed five new contracts for expanding both the wireline and wireless networks. Around 700,000 more subscribers will have access to the wireline network this year and even more during 2001.

Ericsson in Algeria has a branch office with approximately 30 employees. A manufacturing plant is also located here, producing enough switches each year to handle 400,000 lines. The plant is owned by the joint venture company Sitel, of which Ericsson owns 35 percent of the shares. The remaining shares are owned by various state-owned companies.

### Increased stability

Since 1992, Algeria has been torn by a bloody civil war, costing many lives. Various Islamic terrorist groups have attempted to assume power.

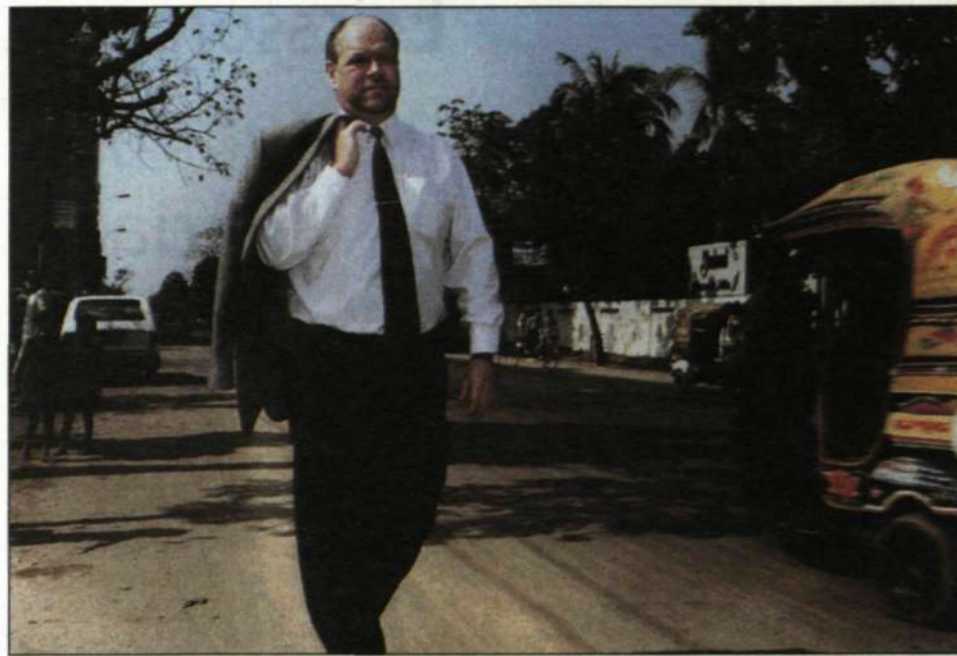
Since the presidential election last year, when the current president, Abdelaziz Bouteflika, was elected, the situation has stabilized.

Dan Ekman confirms this observation. "I feel as though there is a feeling of optimism about the future among Algerians, now since the new president has come to power. In recent years, things have been relatively calm in Algiers, the capital city."

President Bouteflika has the parliament's support for his peace plan, which mainly provides amnesty and less severe punishment for those Islamic militants who have not committed serious offenses such as murders or bombings.

His plea for terrorist groups to relinquish their weapons has been heeded by a few, including portions of the GIA, one of the most radical groups.

Ulrika Nyb ck



Jan Campbell, site manager for Ericsson in Dhaka. "It's obvious that a company such as Ericsson needs to take a certain amount of social responsibility."



Mossamat Anwara's life changed dramatically after she bought a mobile phone. Today she receives much more respect, even from the village elders. Ericsson is involved in a project that loans money to women to buy mobile phones, allowing them to earn money selling phone calls.

A few years ago, Mossamat Anwara was just one of many poor women in Bangladesh. Today, the village elders come to borrow her mobile phone. Mossamat is one of thousands of women who have gained access to modern communications through a unique project in which Ericsson is involved.

## Mobile phone changed Mossamat

### What do people in the mobile communications dream about?

They dream about coverage in difficult areas, perfect sound quality, increased battery life and decreased output power in mobile phones.

LGP Telecom offers wireless network solutions that help bring those dreams a little closer. LGP combines microwave components with digital hardware and software into sophisticated high-quality systems that have set an industry standard. In addition to being the world's leading supplier of Tower Mounted Amplifiers, LGP also supplies OEM Subsystems, Tower Mounted Boosters, Filters, Combiners and indoor and outdoor antennas. LGP is a leading supplier to major international wireless communications companies such as Ericsson.

LGP is committed to products that help our customers stay ahead. And that's what it's all about.

*After all, bearing is believing.*



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can increase indoor and outdoor coverage by 40% while increasing revenues by as much as 20%.



**LGP Tower Mounted Boosters**  
for coverage enhancement in both up and down links can increase existing cell coverage by 60% or, for new networks, reduce the number of base-stations by 30%.



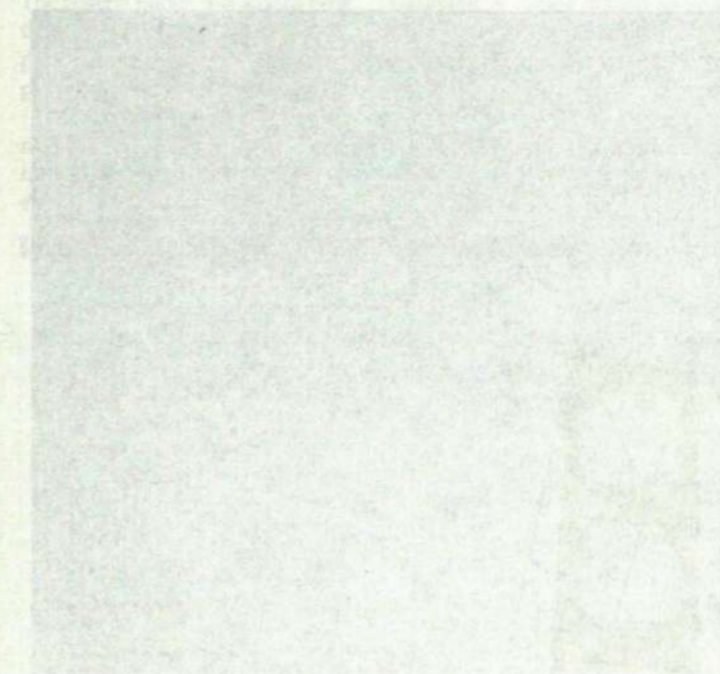
**LGP OEM Subsystems**  
such as Filters, Compact Transceiver Front-Ends, Cavity Combiners and Auto Tuned Combiners designed according to OEM customer requirements.



**LGP Indoor Antennas**  
increase coverage and capacity in-building. Designed to be practically invisible, these antennas further minimize aesthetic impact, as one antenna covers several frequency bands.

FROM THE  
Ericsson  
as early as in 1935

This year will mark the centenary of the first mobile phone call, which was made in 1917. The first mobile phone call was made in 1917.



## Anwara's life

The road to Mossamat Anwara's village passes through a lush, green, undulating landscape. The fields are plowed by farmers using oxen, and old men sit along the side of the road drinking tea.

Into this ancient landscape, Ericsson is installing base stations. Over the past few years, thousands of poor people have been given the opportunity to communicate with the outside world. The addition of phone service has also improved the social status of women, while increasing prosperity in the villages.

"This is a project that benefits everyone involved," explains Jan Campbell, site manager for Ericsson in Dhaka, Bangladesh.

When it comes to telecommunications, Bangladesh is an extremely underdeveloped nation. Only 0.4 percent of the population has access to a telephone. The wait for new service is ten years.

That is changing rapidly as mobile phone operators plunge into the market. Until recently, development had been concentrated in the cities, since there was no demand from rural areas. Now, however, rural women are being offered favorable loans to buy mobile phones.

Ericsson is supplying the base stations and telephones and the Swedish International Development Agency (SIDA) is considering providing support for the project through export credits.

The project was initiated by mobile phone operator Grameen Telecom, 51 percent of which is owned by Telnor of Norway and 35 percent by the local Grameen Bank. For the past decade, the latter has been involved in providing micro-loans to women throughout Bangladesh.

### Wireless phone offer

At her first contact with the Grameen Bank, Mossamat Anwara was a very poor woman.

She and her husband did not even own a house, living instead in a hut. Mossamat Anwara borrowed money to buy a cow and her children sold its milk at the market.

A few years later, she took out another loan, this time to buy a small plot of land where she could grow vegetables. Eventually, she was able to afford building a house.

In 1997, she received the offer to buy a mobile phone.

"I had never even seen a telephone before, much less thought about owning one myself," she proudly explains, holding her phone.

### Focal point of the village

Her home is now the focal point of the village. Every day, at least fifteen people come to her home to make phone calls. Just as frequently, Mossamat Anwara goes out into the village to get someone who has received a call. She charges a fee for every call and is allowed to retain one third for herself.

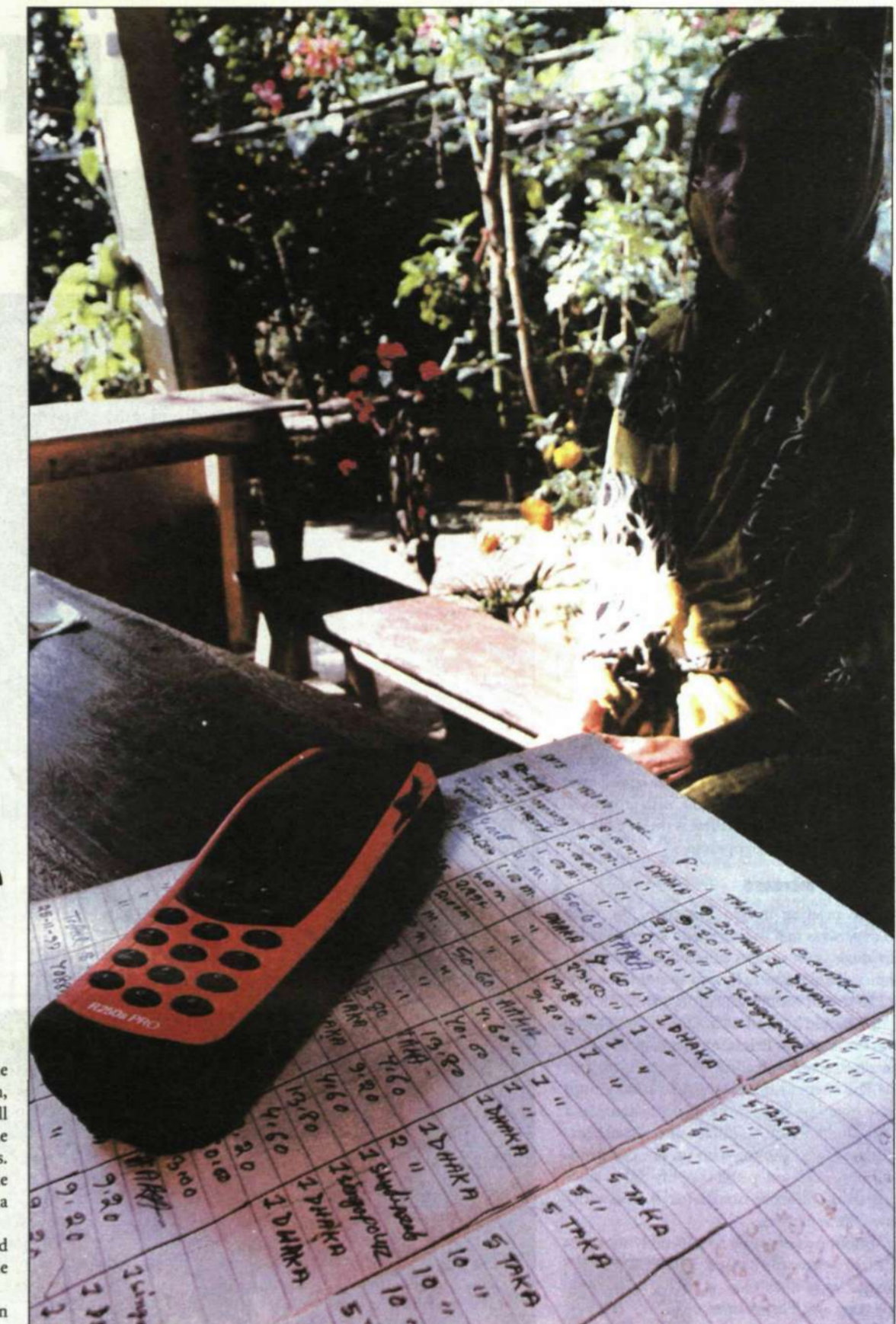
"In two years, I've earned 200,000 taka (SEK 33,000)," she explains with satisfaction.

With the money she has earned from her mobile phone, she has been able to pay for university education for her two children. At the same time, her image within the village has improved.

"People who have more status, people who didn't even talk to me before, now come to my house to make phone calls," explains Mossamat Anwara.

Generally, the status of women in Bangladesh is low. They do not have the same legal rights as men and should preferably not leave the house without good reason. A study has shown that women involved in the mobile phone project have become more involved in making family economic decisions.

Moreover, telephone access has increased the standard of living in the village. For example,



Only 0.4 percent of the population in Bangladesh have access to a telephone. Mossamat Anwara earns a living selling mobile phone calls from her Ericsson R250 Pro phone. Photo: Sameera Huque

the price of eggs and rice is higher in villages that have access to mobile phones.

"In the past, buyers from Dhaka could deceive me. Today, I've got the ability to call and check on current prices and know exactly what I should charge," explains Halima, a woman in the village who sells eggs to Dhaka.

Communication with relatives has improved for village residents, as has health care. They also have more reliable access to diesel fuel and fertilizer.

Hens even live longer in villages that have a mobile phone. Currently, 1,100 women in as many villages have purchased a mobile phone. The goal is to involve 50,000 women in the project within five years.

### Helping the country

For Jan Campbell, the collaboration with Grameen Phone has resulted not only in a profitable business arrangement, it has also given him personal satisfaction. From his office on the twelfth floor of one of the tallest buildings in Dhaka, he can look out over the seemingly endless expanse of people and houses.

"Sure it can be difficult to see the poverty in Bangladesh, but by working here we can help the country move several steps forward," he says.

During the severe floods that affected Bangladesh almost two years ago, Ericsson distributed a couple dozen telephones with free subscriptions to various relief organizations.

"It's obvious that a company such as Ericsson needs to take a certain amount of social responsibility when the country looks like it does," says Jan Campbell.

Mossamat Anwara's next goal is to buy a computer. Perhaps she will start Bangladesh's first rural Internet café.

Ylva Johanson  
Freelance journalist

### ERICSSON IN BANGLADESH

Ericsson in Bangladesh is currently supplying GSM systems to two mobile phone operators and wireline AXE systems to the state telco BTB.

During 1999, Ericsson also sold 10,000 mobile phones in Bangladesh. The goal this year is to double sales. Approximately 30 people work in the office, mostly local employees.

# GSM user groups form links to end-users

Important forums for building networks, exchanging information and placing demands on suppliers. That is how some customer representatives summarize the work of the GSM User Group Meetings, to which Ericsson is also invited.

When the chairpersons of the regional GSM user groups recently met in San Francisco, one of the subjects they discussed was how to further develop the work of these groups.

At the very first GSM user meeting, held eight years ago, there was only one group and only technical issues were discussed. Since then, the number of groups has increased, with user groups being established for mobile standards other than GSM as well.

"There are three regional GSM groups, with the European one being the biggest and oldest. It includes 38 operators and has around a hundred participants," explains Olle Setterberg of GSM Systems, who is in charge of collaborating with the group. "The second largest user group is for Asia and Oceania, with around 20 operators, while the smallest is the one for the Americas, with seven operators."

## Resource increase

At the meeting in San Francisco, the three chairpersons met together with several key individuals from various subgroups. Among the topics discussed were how to coordinate activities between various user groups and how new issues should be dealt with. One of those issues was the desire for Ericsson's local companies to become more involved in user group meetings.

"The suggestion that various user groups have only one contact area with Ericsson is a good one since it translates into a more systematic way of dealing with us. For our product units, such a step will simplify things since they'll only have one counterpart to deal with," says Olle Setterberg.

"Ericsson is devoting considerably more resources towards user group work now than a few years ago. There's been a change in attitude for the better, which shows that the company is taking this work very seriously," says Gerard Meijwaard, of the Dutch operator Libertel, one of the participants at the GSM User Group meeting in San Francisco.



**Gerard Meijwaard, Libertel, the Netherlands**

"During these meetings, we operators exchange information, network and put up a unified face towards Ericsson. We're living in a constantly changing world, where new products and solutions are being introduced at an increasingly rapid pace. These meetings allow us to notify Ericsson about these changes."

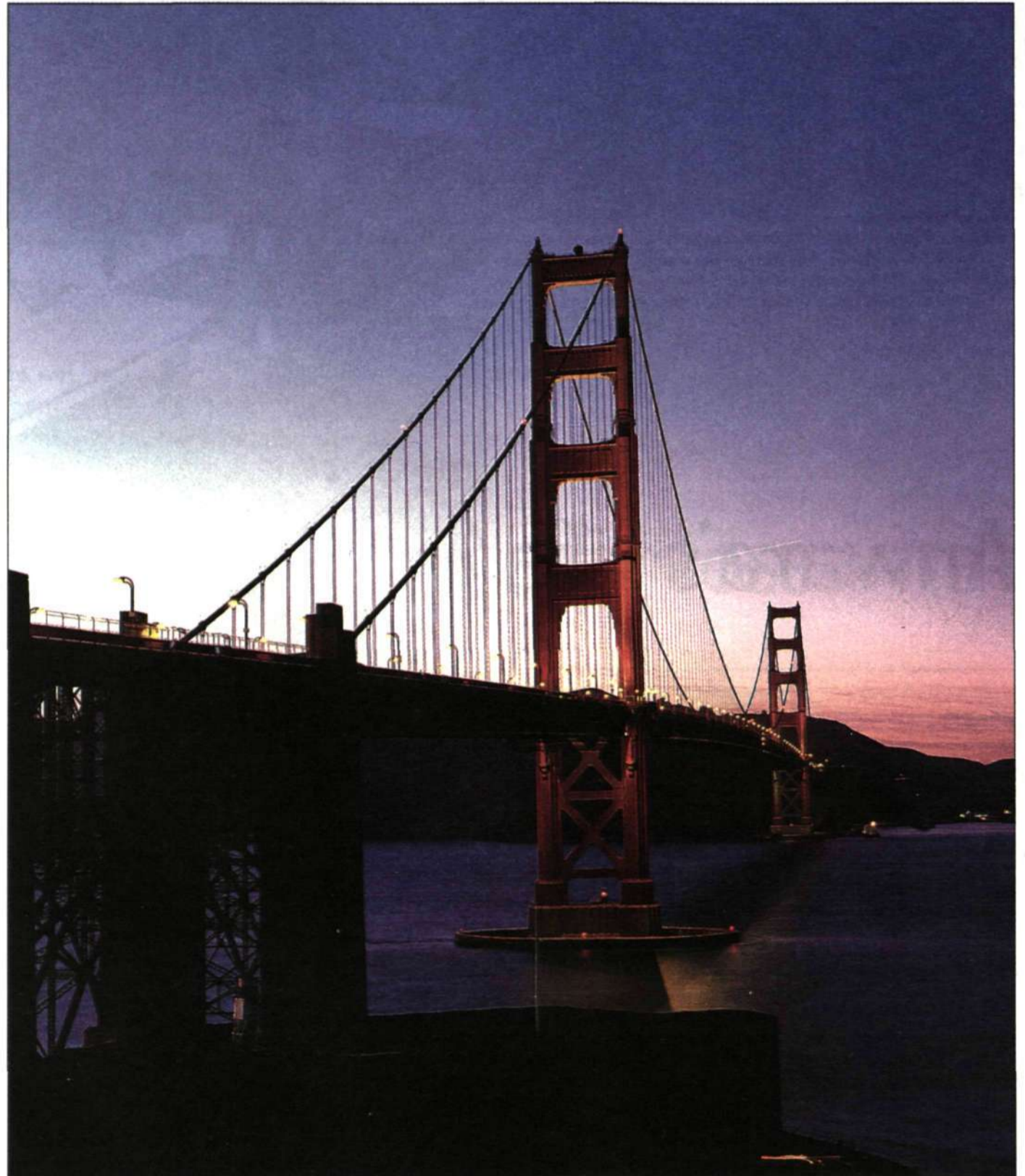
## Global operator

David Williams, of Pacific Bell Wireless in San Francisco, is chairperson of the Americas region of the GSM User Group.

"I believe that these user meetings are becoming increasingly important, as operators become more global. For Ericsson as a supplier, this has to be an outstanding forum to find out how to develop products. By listening to us, suppliers can find out how subscribers utilize their products and what kind of demands they have," he says.



**David Williams, Pacific Bell Wireless, USA**



**User groups for various mobile phone standards form a link with customers. Recently, the chairpersons of the regional GSM user groups met in San Francisco. Currently, there are six million GSM users in North America.**

Photo: Steve M. Alden

The number of GSM users in North America grew significantly last year, and international roaming is now available in the U.S. At the end of 1999, Pacific Bell Wireless had one and a half million of the six million GSM subscribers in North America. The operator has plans to launch GPRS in its network this autumn.

"The meetings have become much better and we've found our role as a user group," says Wichian Mektrakran of AIS in Thailand.

"Equipment will be replaced at an increasingly rapid pace, and since it is our ambition to be on the cutting edge when it comes to new products, that places demands on our suppliers to be on the cutting edge as well. When 3G is introduced, the number of operators will



**Wichian Mektrakran, AIS, Thailand**

increase and competition will become even more fierce. That will place greater demands on Ericsson to keep up with development, and our GSM user group can help to promote that development," he says.

Prepaid calls have been a big success in the nations where the service has been introduced. A special user group for that service was formed last April, with Philip Hill from MTN in South Africa, serving as chairperson.

"In the beginning, Ericsson didn't listen enough to us, but things have gotten much better now," says Philip Hill.

Since the company's reorganization last year, the prepaid calling product has received much more attention. Neither Ericsson nor the operators



**Philip Hill, MTN, South Africa**

were prepared for how successful the service would be.

Philip Hill believes that user groups should be involved, not only in technical issues, but also in discussing new business opportunities and marketing.

"User groups are a unique meeting ground where we're able to exchange ideas, experiences and information with our customers," says Cecilia Uebel-Blomgren, head of user groups and business opportunities at GSM Systems.

"It's extremely unusual to have the communication that we have with up to a hundred customer representatives simultaneously. The information we receive from user groups helps to improve both existing and future products and solutions. There's a great deal of potential in the user groups that we can further develop in the future."

Gunilla Tamm

gunilla.tamm@lme.ericsson.se

## FROM THE PAST

# Ericsson broadcast TV as early as in 1935

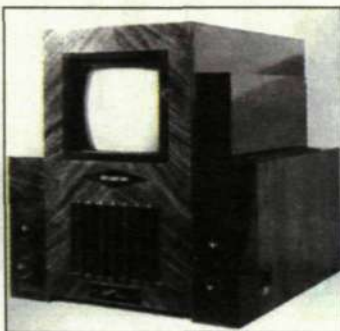
This year will mark 65 years since the first television transmissions were broadcast in Sweden. Svenska Radio Aktiebolaget (SRA), which eventually became Ericsson Radio Systems, pieced together the components necessary for a complete system.

The general public was able to view these broadcasts at, among other places, the Dagens Nyheter newspaper office in Stockholm.

The reason television test transmissions were conducted so early in Sweden was that test transmissions had occurred in the UK and

Germany. A rumor quickly spread in Sweden that regular Swedish TV broadcasts would soon be starting up.

For SRA, whose most popular product was the Radiola radio, sales stagnated. In order to demonstrate to the general public how far televi-



Sweden's first TV set went by the name of Loewe and weighed 40 kg. Svenska Radio Aktiebolaget, now Ericsson Radio Systems, was involved in the first Swedish test transmissions in 1935.

sion had come, test transmissions were arranged.

Ivar Ahlbom, SRA's president, interviewed in the Dagens Nyheter newspaper, discounted the rumors about Swedish TV transmissions.

"You can't expect that people will willingly sit night after night looking at television images...radio provides the opportunity to do something else at the same time," he said.

In 1956, regular television programming began in Sweden.

Gunilla Tamm

gunilla.tamm@lme.ericsson.se

## NOTEWORTHY

# New mobile plant opened in Malaysia

Ericsson's new mobile phone plant in Malaysia, situated just outside of Kuala Lumpur, was inaugurated on February 21.

Ericsson has operated a plant in Malaysia since the end of 1997, but quickly outgrew it. The new plant has been ready since the end of last September.

Approximately 1,200 of Ericsson 1,800 employees in Malaysia work at the new plant, which manufactures telephones in the T-series – the T10, T18 and T28 – as well as accessories such as Chatboard, among other products.

Operations are expanding rapidly in Malaysia and the number of employees is expected to grow significantly this year. The Consumer Products business segment's design center in Malaysia is also expanding.

# Change of overseas emergency number

The telephone number for Mondial Assistance is changing effective April 22, due to new area codes in the UK. Mondial Assistance is a service for Ericsson employees working overseas. It is a 24-hour service providing medical and emergency assistance.

The new telephone number is +44-208-666-9220 and the new fax number is +44-208-686-1707.

## ERIC & SON



# Work better. Travel lighter.

Ericsson MC218 featuring mobile Internet and the Symbian™ operating system.



When it comes to business travel, every gram counts. That's why we came up with the Ericsson MC218. Together with your Ericsson phone, it offers a total mobile office solution that

means that on your next trip you can keep in contact with the office without needing that bulky laptop.

With the MC218 you're always in touch – whether it's via e-mail or fax. Thanks to its Outlook synchronizer you can access your mailbox, send and receive e-mails and keep your schedule and appointments list right up-to-date.

## WAP – What you need, when you need it.

At CeBit this year the whole world was talking about WAP – and the MC218 is the first Ericsson product to feature this groundbreaking new technology. It is easier

than ever to get the information you need, whenever you need it. Add an HTML Internet browser and you'll see that the MC218 is a powerful communication tool for all your business needs.

Ericsson employees should be at the forefront of mobile Internet use, so we're offering the Ericsson MC218 at a special price. We're also giving you the chance to work with Ericsson Business Consulting to create MC218 applications specific to your workgroup or unit's needs.

## Want to know more?

Check out our intranet site for information about pricing, ordering, and how we can help you work better by travelling lighter:

<http://sc-communicators.ericsson.se/mc218>

Special offer for everyone at Ericsson.

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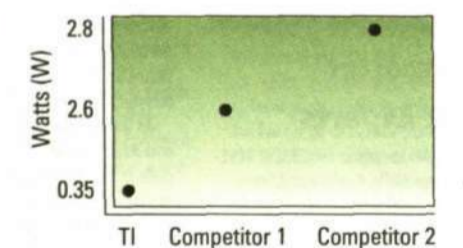
# SERIAL GIGABIT CMOS AT 2.5 Gbps.



## GET A JUMP ON THE COMPETITION. (BY LEAPS AND BOUNDS.)

2.5 Gbps or CMOS. Until now, you've had to choose one or the other. Texas Instruments introduces the TLK2500, a 2.5-gigabit transceiver in CMOS. This transceiver solution delivers ultrahigh-speed I/O at a reduced per-port development cost and at 350 mW uses one-sixth the power of its closest competitor. The TLK2500 provides several on-chip system and manufacturing tests and is housed in a thermally enhanced PowerPAD™ package that allows heat to dissipate efficiently.

This new technology exceeds the boundaries set by other data transmission solutions. And with TI as your partner, your serial backplane designs are sure to spring ahead.



Device	Description	Parallel Bus Width	Rate (Gbps)	V <sub>CC</sub>
TLK2500	1.5-2.5 Gbps Transceiver	16 bit	1.5-2.5	2.5 V
TLK2201	Single 1.25 Gbps Transceiver	10 bit	1.0-1.5	2.5 V
SN65LVDS93/94	Quad LVDS Tx/Rx Pair	7 bit	0.2-0.45	3.3 V

For more information, free data sheets or application notes, visit  
or call 1-800-477-8924 (North America), +886 - 2 - 23786800 (Asia) or +44 - 1604 - 66 33 99 (Europe).

[www.ti.com/sc/serdes](http://www.ti.com/sc/serdes)

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To advertise: mail your adverts to employment.adverts@lme.ericsson.se.

Contact No. 4 2000

Updated March 6

### CHONGQING ERICSSON TECHNOLOGY LIMITED, CHINA

Is an Ericsson joint venture in South-west China. Located in Chongqing Hi-tech Industrial Development Zone, started on Jan. 1st, 1999, CET today has more than 70 employees.

CET mainly provides customers services in three areas: Implementation services for Ericsson customers. Network services for Ericsson customers. Training services for the China market.

Welcome to Chongqing Ericsson Technology Limited (CET), the modern joint venture. WE ARE IN THE ENTRANCE OF THREE GOREGES AND THE PANDA & PEPPER LAND SICHUAN, close to Tibet.

Do you want to continue to develop your management skills in a high-tech office environment in one of the world's biggest city? Chongqing Ericsson Technology Ltd, China has a vacancy for a

### Network Service Director

● The Network Service Division in Chongqing is responsible to provide technical support with emergency support for GSM, TACS and PSTN for Ericsson customers in Chongqing and Chengdu.

The general responsibility for the Network Service Director is to plan, lead and supervise the operation of the division. The Network Service Director is additionally responsible for managing the IS/IT department.

As a suitable candidate, you are an Ericsson employee and should have at least 5 years within leading position such as PM, line manager, supervisor etc. You should have experience from work within Ericsson support organization within any of our system products.

At least 2 years international experience, preferable from Asia.

Though we are a high tech office you must be good in using Ericsson standard ISIT environment for management administration. The Network Service Director reports directly to the Managing Director of the company.

The position requires initiative, good communication skills, open-minded with an edge in customer focus thinking and a good ability to work under pressure. Fluency in written and spoken English is required. Transfer of knowledge to the local staff is of high importance.

The position will be placed in Chongqing.

We expect the successful candidate to start June 1, 2000. The duration of the assignment is at least 1 year.

Contact: Ellen Gao, HR Manager, +86 23 686 350 60 ext 134, mobile +86 13 608 304 113, ellen.gao@cet.ericsson.se, fax +86 23 686 331 41.

### ERICSSON TELECOM, MEXICO CITY

#### 2 AXE Support Experts

● Time: 1 year. Start Date: ASAP. Location: ERICSSON TELECOM TIM, Mexico City. Language Skills: English and/or Spanish.

The main responsibilities for this position will be to manage, coordinate and participate in networking investigations and problems at highest technical level and to address customers expectations/needs. Provide technical competence for resolving complex problems in the switches. Provide technical advice and assistance to support engineers and managers. Transfer trouble shooting skills and competence to system support staff.

Also participate in emergency services. The competence requirement are: Minimum 6-7 years working experience on AXE 10 Digital Switching application Systems.

Qualification: Degree in Computer Science or Electronic or Telecommunications Engineering.

Contact: TIM/SW Mylly Hernandez Solis, +52 57 26 20 41, Fax +52 57 26 23 85, mylly.hernandez@tim.ericsson.se. Application: Ericsson Telecom, Gustavo Baz 2160 Col. La Loma Tlanepantla, Edo. de Mexico C.P.54060 Mexico City.

### ERICSSON LTD, UK

#### Product Manager, Mobility Solutions - UK

Enterprise Systems in the UK has a strong enterprise base and is looking to develop opportunities for mobile solutions. This has traditionally been based on DECT technology but is

now crossing into WAP, GSM on the Net and wireless internet technology.

● As a member of the Product Management team, you will be responsible for the strategic direction of the Enterprise mobility portfolio, working with other areas of the Ericsson business in mobile networks and Ericsson Consulting, through the implementation of marketing programmes.

You will be responsible for developing marketing messages around our mobility strategy and will need to maintain a focus on the external market demands and shifts, and competitor activity, devising appropriate programmes to exploit opportunities and counter threats.

Requirements/competencies: At least 5 years experience in IT or telecommunications, with at least 2 years experience in product management or similar.

This candidate should possess excellent communication skills, demonstrate a strong ability for team working, a flexible approach to change and be highly results driven.

Contact: Jo James, +44 1444 256019, Joanne.James@etl.ericsson.se or Human Resources, Clare Cheal, +44 1444 874561, Clare.Cheal@etl.ericsson.se, Telecommunications Centre, Burgess Hill.

### NIPPON ERICSSON K.K., JAPAN

#### Senior Data Transcript Engineer

Japan is one of the fastest growing mobile markets in the world. Our DT engineering team is responsible for production and support of exchange data to our Japanese operators and to our own testplants.

We actively perform research on new functionalities and improve our methods, in order to provide quality services to our external and internal customers.

Some of the upcoming projects include implementation of packet data services, IMT-2000, and enhancement of CMS30 new functionalities. We are currently providing services to 6 J-Phones operators throughout Japan.

● As a senior Data Transcript engineer, you will be responsible to research on future projects, to improve our current processes, to educate local DT engineers, and to investigate and develop new and existing DT method and tools.

You should be self-motivated, initiative, working independently. As this is a demanding position, you must be flexible and sensitive in your relation toward the customers and team members. Occasional presentations and meetings with the customers will also be expected.

Applicant should have at least 6 years of AXE experience, in data transcript production, testing and related areas, preferably in CMS30. You should be computer literate in MS Windows environment. Experience in UNIX Windows environment is a plus.

As the position requires extensive contacts with external and internal units, good coordination and communication skills in English are essential. Reasonable amount of domestic and international travelling should be expected. Experiences in DTSS, GREGER, DTH, PPDC and IMT-2000 are good assets.

This is a unique opportunity for one to experience a distinctive culture and to acquire experiences in working in one of the most dynamic market in the world.

Contact: Hitoshi Kawasaki, DT Manager, +81 45 477 5518, hitoshi.kawasaki@nrj.ericsson.se or Raymond Mui, DT Supervisor, +81 45 477 5515, raymond.mui@nrj.ericsson.se

### ERICSSON CARIBBEAN, PUERTO RICO

#### Account Manager / Netherlands Antilles

Market Unit Caribbean covers an area of 15 countries and 15 dependencies with some 27 million people. The telecom markets in the area is in the process of deregulation with a number of possibilities within mainly cellular and datacom networks.

● The candidate will be responsible for the Ericsson's cellular operation in the Netherlands Antilles Regional office, reporting to the KAM in Curacao.

Candidate should have a BBA degree and professional experience of sales and marketing, project implementation and excellent customer service support skills. Responsibilities also include the coordination of expansion activities in

the region. Operation activities are coordinated with the regional head office in Puerto Rico. We expect the candidate to have a drive for result, teamwork and excellent interpersonal skills. Candidate must be able to work in a multi task style with innovation and creativity characteristics. As the area is multicultural, fluency in English and Spanish are essential.

We expect the successful candidate to start during March 2000, preferably.

Contact: Juan Rangel, General Manager/KAM, Netherlands Antilles, +011 599 9 560 4417.

#### FSC Engineer/Jamaica MU Caribbean

● We are looking for an FSC Engineer to work with TDMA. The candidate must have experience in AXE, AP, Prepay & Jambala troubleshooting for the customer; Cable & Wireless based in Jamaica.

The candidate will: Be part of the support team in our Caribbean FSC responsible for first line support to customer Helpdesk activities. Interface to other (internal or external) parties when the reported problems need to be escalated. Solve CSR's reported by the customers. Monitor follow up of support requests escalated to the FSC.

Candidate should have a BBA degree and a broad experience in different system/product areas as necessary. Knowledge of AP & Jambala is greatly appreciated as well as experience with emergency corrections and trouble report handling. Must be able to work under stressful conditions at times. Must be a team player or able to work independently when required. Good knowledge of English language is a must, Spanish language will be appreciated.

We expect the successful candidate to start during March 2000.

Contact: Jerry Barrera, FSC Director, Arne Palmkvist, Operations Director, +1 787 771 1700.

Application: Noelia Borrego, HR Representative, noelia.borrego@ericsson.com

### ERICSSON TELECOMMUNICATIONS PTE LTD, SINGAPORE

Ericsson Singapore is the market leader in mobile system. Singapore is likely to be the first country in SE Asia to implement 3G cellular networks. We expect 3G licences to be awarded during later half of year 2000. We expect to see a number of 3G networks operating in Singapore by year 2003. Our goal is to be the number one supplier for 3G in Singapore.

We are now building strong 3G core teams in our existing accounts and new accounts. We are looking for the best people, people who are extremely motivated and can work independently, strategically and analytically to fill the following vacancies:

#### Sales / Business Managers 3G

● Your ultimate task is to win the 3G contract with the customer assigned to you. You need to be able to develop quickly an extensive and relevant customer network and able to use your contact network to identify your customer needs, requirements and last, but not least, able to use your network to help you to win.

You need to be able to develop and implement an effective sales strategy. You need to be able to communicate effectively to the customer and also to your colleagues. You need to have good commercial acumen.

Finally, you need to be able to lead and motivate your colleagues to support your activities and assist you in meeting your customer needs.

A good track record in selling mobile telephony systems is essential.

#### Solutions Managers 3G

● You will be a member of a 3G core team. You have the responsibility to perform all tasks related to technical coordination, product management, network design, sales support for the customer.

You will have a solid technical education, working knowledge and relevant experience as a technical solution manager in GSM/WCDMA mobile telephony.

You need to be able to work independently, take initiatives and communicate well with others. You must have good creativity in developing solutions/services and excellent presentation skill.

Good knowledge of spoken and written English is mandatory. We are looking for people who are attuned to a fast paced environment and undaunted by new and constant challenges.

Contact: A. Ling, alfred.ling@ericsson.co.nz, +65 3501 318. Application latest 000331: Tan Poh Hoon, Senior Director of HR, Ericsson Singapore, Recruit@eno.ericsson.se.

### TELEFONAKTIEBOLAGET LM ERICSSON

#### Experienced in Financial Accounting, Customer Projects and Logistics for Implementation of SCALA

We need to improve the administrative processes and procedures for finance, logistics and customer projects in many Ericsson subsidiaries during a few years. The implementation of SAP R/3 will cover the large companies, and the smaller companies and representative offices will adopt SCALA as the only recommended system.

A system template for SCALA, based on the Common Financial Model (CFM), has been developed together with process descriptions and implementation plans.

In order to implement the Ericsson Scala Template in more than 100 companies and representative offices we will create expert teams to support company projects. We now need a number of such team players with hands-on experience to: educate colleagues in the financial model, help them understand and implement new business processes, safeguard a result by supporting the change project over the first closing and reporting event.

● We need experts in one or more of the fields financial accounting, logistics or customer projects, with experience from practical work in Ericsson operations. It is an advantage if you have been working as a manager or project leader. The job will be tough with lots of travelling and much work, but on the other hand there will be new experiences, meetings with new cultures and new friends. Much of the job will be to educate, explain and train colleagues and last but not least to build a platform for the future growth.

The participation may be arranged either as a temporary expert employment during a certain time or a long-term employment.

Contact: gunnar.bidner@lme.ericsson.se, +46 8 71 95610, mats.wehlin@era.ericsson.se, +46 8 585 34618. Application: maria.clewemar@lme.ericsson.se.

### ERICSSON TELECOMMUNICATIE B.V., NETHERLANDS

Innovation and teamwork are key success factors in the telecommunication world. Products are in the current market place more and more resulting from intensive co-operation between multiple disciplines.

At Ericsson especially the Research & Development Division is working hard to create the technology of tomorrow and also the day after tomorrow.

Thanks to the combination of the right talents we continuously surprise the market with even more intelligent solutions.

Within the R&D division the department ETM/BL/RE works on the development of FOS and IP Charging applications. FOS formats charging data on the adjunct-processor (AP) and supplies this to post-processing systems.

The department works also on setting up an application platform for the AP, where we make use of our unique homemade development process (IDIOM). In this area we are ahead of the rest within Ericsson and do we even belong to the European top-3. Besides these activities we are moving our way into the New Telecoms World merely with IP Charging applications.

Other IP solutions might be part of our portfolio in the near future. We have received the first orders in the Mobile IP world already and expect to enhance our responsibilities in this area.

#### Software Designer Object Oriented

● In the function of Software Designer you are part of the core of our department, the design teams. Together with your colleagues you design, implement and test object-oriented packages.

The teams are responsible for the work, for the planning of the work and also of keeping the competence's up-to-date with the rapidly changing market demands.

Education on higher technical level or academic level in Computer Science or Electronics gives a proper base for this function. Specialization or experience in telecommunication or datacom is preferred.

Finally we prefer knowledge in C++, object-orientation, JAVA, CORBA, UNIX, Windows NT and Internet applications.

#### Software Test Designer Object Oriented

● In the function of Software Test Designer you are the link between design teams and the customers.

You test new object-oriented products, you are involved in keeping existing software in a proper state and give technical support to our customers.



To ensure that the new products are testable, you are also intensively involved in the development process. Besides IDIOM you also have an extensive test environment to support professional work.

With a higher professional degree in a technical direction, affinity with testing software and experience in telecommunication, this job might be suiting your needs. Knowledge in C++, object-orientation, JAVA, UNIX or Windows NT is preferred. Being a perfectionist you will not take it easy before all bugs are removed from the product. Therefore you also need to be analytical and precise.

**Contact:** Paul Swart, Manager Software Development, +31 161 252 595.

**Application:** Ericsson, Recruitment department, P.O. Box 8, 5120 AA Rijen, The Netherlands.

#### ERICSSON TAIWAN LTD

### Chief OSS Support Engineer

The ERT Customer Network Support Group (NSG) is seeking the service of OSS support engineer for Taiwan's GSM customers. The role is to take on responsibility for Customer Service Request (CSR) and Trouble Report (TR) handling, Help Desk activities, 24 hours Emergency Support and Software update/upgrade.

● As an experienced OSS Support Engineer, you must have worked with implementation and/or support of CME20/CME40 OSS systems for at least 3 years. And have board knowledge of UNIX SW and HW, Sybase system administration, TCP/IP, X.25, script programming using C shell, Perl and other UNIX tools. Candidates with BCGW, SOG experience will be a plus.

Primary responsibilities include but are not limited to: Trouble shooting and telephone support, on-site support if needed. Maintain Trouble Reports throughout MSS and MHS system. Participate in the 24 hours on-call emergency schedule. Create, document, verify and distribute work around and resolutions. Implement, document and verify update and upgrade packages. Coordinate OSS support activities with operator's representative and maintain a good customer relationship.

Fluent in English, Mandarin knowledge will be appreciated. Excellent interpersonal skills, customer-oriented and service minded, with strong quality orientation.

**Contact:** Ann Wang, Manager, Ann.Wang@ert.ericsson.se, +886 2 2746 1910, mobile: +886 931 161 910.

#### ERICSSON WIRELESS, PLEASANTON, CA, USA

For our RTAC supporting a major GSM customer in California we seek a:

### BSC Customer Support Engineer

● Work in a group of twelve customer support engineers providing support to the major GSM customer on the West coast of the US.

We need an Engineer with in depth knowledge of the BSC, as you will be the group expert in this area. Looking for a long term contractor or will support coming as local.

**Contact:** Joe Compton, +925 737 5850, joe.compton@ericsson.com.

#### ERICSSON (CHINA) COMPANY LTD

Ericsson (China) Company Ltd. with support from local government and universities has established a first Open Laboratory for Mobile Multimedia R&D in Nov. 1999.

The main objective of this lab is to boost the development of mobile multimedia services and application specific to China market, and support local Chinese SW application developers to reach international mobile internet arena.

The Open Lab demonstrated co-operatives efforts of Ericsson and its Chinese partners in accelerating the migration of China's telecom industry to the 3G mobile communications and pursuing knowledge of what Chinese customers will be able to do with the next generation mobile telephony.

### Director of Open Lab

● We are looking for an experienced business driving leader who can establish strategic partner relationships with internet content providers, internet service providers, promote Ericsson mobile internet (WAP) business in China market and coordinate cooperation within Ericsson different business units.

Requirement: University degree in IS/IT, MBA is a plus. More than 5 years of consumer marketing experiences. With character of self-driven, initiative, open-minded and business oriented. Strong leadership and interpersonal skills. Fluent in spoken and written English.

**Contact:** Ken Zhang, ken.zhang@etc.ericsson.se, Bjorn Zethraeus, bjorn.zethraeus@etc.ericsson.se.

#### ERICSSON EMEA LTD, REGION MIDDLE EAST

The newly established Ericsson Regional Office for the Middle East is seeking experienced, competent, and highly motivated persons for an exciting career in the world of Wireless Communications. The following positions are currently available:

### Project Manager

● The Project Manager is responsible for implementation aspects of the tender.

### Technical Manager

● The Technical Manager is responsible for all technical aspects of the tender, which includes Network Configuration.

You will be a part of Ericsson team working on GSM / GPRS tenders for the Middle East region.

We expect the candidates to have a strong background in telecommunications specifically in area of mobile networks infrastructure, and 6+ years of working experience in a related field.

The ideal candidate will have a Bachelor degree in Electrical Engineering (M.Sc. is a plus), and a working experience with GSM systems.

**Application:** Christine Andrea, Human Resources Manager, xtine.andrea@ericsson.com. Please note that the terms of the employment are on a Local Contract basis.

#### ERICSSON CHINA COMPANY LTD.

### System Engineers, MSC/HLR/VLR/BSC

● Main responsibilities: Responsible for all telecommunication systems agreed on with the customer within MSC/HLR/VLR/BSC. The modification of existing system routines and creation of new temporary routines as well as follow up of all software contents of the system. Send/ receive/ follow up with trouble reports sent to the second line support /customer and also prioritise the trouble reports, including incoming TRs from the other system engineers.

Offer expert knowledge concerning system problems in MSC/HLR/VLR/ BSC well as expert knowledge regarding parameters and configuration. Support technical interfaces with external equipment, i.e. SMS, VMS etc and to interpret switch statistical reports like processor load, traffic recording, etc.

Requirements: The successful candidate will have a basic technical education and experience from Ericsson GSM mobile system, as System Engineer not less than 3-4 years. Experience from OSS is better. Good knowledge in English and good analytical ability.

**Contact:** Ericsson (China) Company Ltd, Region North, Mr. Kan Wang, Sr. Manager, Core Services, Customer Service Center, kan.wang@etc.ericsson.se, Mr. Urban Anderson, General Manager, Customer Service Center, urban.p.e.anderson@etc.ericsson.se, Mr. Zhang Yuanzhi, HR Manager, yuanzhi.zhang@etc.ericsson.se.

#### ERICSSON SLOVENIA, D.O.O

### SS CME20 Trouble Shooter

● The objective of the job is to provide technical support for the system nodes that are operational in the customer network such as MSC/VLR, SCP, HLR, AUC/EIR.

You will take pride in maintaining Mobitel Slovenija's GSM 900 system at the present high quality level. Mobitel is very successful operator, implementing all high-tech features, such as GSM Pro, VPN, VASP, WAP and GPRS. They have signed UMTS letter of intent with Ericsson, first such letter ever.

Ericsson is the sole supplier and we will support around 20 AXE nodes in the near future. All existing nodes have been upgraded to the highest functionality level. They are all located in Ljubljana, 10 min. walking distance from the office.

The customer's technical staff is both very professional and friendly. You will be a part of the Ericsson Local Support located in Ljubljana. The work includes classical support tasks and requires deep knowledge on MSC and BSC.

Requirements: You have experience of working within Customer Support, a good knowledge of support activities such as: Troubleshooting, writing Plex/ASA, APZ/IO recovery, trouble report handling (MSS or MHS) and system upgrades.

Your skilled group of colleagues will be a few other expatriates, and several Slovenian support engineers. An important mission is to teach your local colleagues to quickly become full-fledged world class support engineers. To support you Ericsson Slovenia has modern premises and tools.

To be successful you need to be a quality oriented, analytical, and teamworking person. You have at least five years of similar working experience and appropriate Ericsson training behind you. Only Ericsson employees will be considered for this position.

**Contact:** PETER VEBER, Manager Technical & Field Support Department, +386 61 174 04 26, peter.veber@evn.ericsson.se or MARIJA KAJBA, Manager Human Resources, +386 61 174 04 20, marija.kajba@evn.ericsson.se.

**Application:** Si.info@evn.ericsson.se.

#### ERICSSON INC, US - ASO DALLAS

The ASO Americas has open positions in the Ericsson Global Support (EGS - BSC/BTS) and in the BSC/BTS System Verification group.

Support: We provide a high level of support to the 1st-line organizations (FSC/RTAC/ELS) and to the GSM operators in North and South America.

Our customers are located in Chile, The Dominican Republic, The USA (including Hawaii) and Canada. We currently sharing 12 hour shift support with EPA (Australia).

Verification: We are responsible for verification of the CMS40 BSS, for the GSM 1900 markets. GPRS and IP-BSS are some of the big challenges for the coming year. Third-line support is provided by experts in the BSS organization. You will be joining an enthusiastic and competent team in a dynamic working environment.

Our office is located just north of Dallas in Richardson, also known as the Telecom Corridor. The Telecom Corridor is quite an exiting place with great atmosphere where all the big telecom and datacom competitors are present. To live here, in this sunny and warm climate, with friendly people, cool nightlife, all the big sports teams to watch (Cowboys, Stars, ...), vast variety of restaurants, never ending golfing season, great outdoors and the affordable living, which makes life here in big D very enjoyable.

The Dallas metroplex is one of the fastest growing in the US. The northern suburbs boast some of the best schools in the nation. Travel within the U.S. and abroad may be required for all positions.

### Group Manager, Ericsson Global Support (BSC/BTS), The Americas

● The main responsibilities for this position will be to: Continue the exciting work to setup a true 'follow the sun' support organization between the EGS hubs in Dallas, Melbourne and Europe. Provide leadership within taskforces regarding technical issues. Provide technical guidance to less experienced CSE's. Ensure that the staff follows the processes and procedures relevant to the functions of the group. Continuously strive to improve existing processes, and suggest new as needed. Day-to-day and long-term planning for the group as well as resource planning. Performance appraisal of subordinates and approval of time reports of subordinates. Monitor progress and report periodically to department manager about progress. Ensure all individuals have an Individual Development Plan and follow it. Assign work according to existing competence and development needs. Recruit candidates for positions in the group. Assist in establishing contacts with outside organizations. Provide input to the budgeting process. Maintain on-call roster, where applicable.

### Outage/Event manager

(24 Hour)

### BSS Coordinator

(Handle incoming CSR/TR and delegate them to appropriate Customer Support Engineers)

### Sr Customer BSS Support Engineer

Ericsson Global Support (BSC/BTS), The Americas

● The main responsibilities for this position will be to manage, co-ordinate and participate in investigations and trouble-shooting activities in the BSS area at the highest technical level and to address customers expectations and needs. Provide technical competence for resolving complex problems in the radio networks. Provide technical advice and assistance to engineers and managers. Transfer knowledge to less experienced team members. Curiosity, interest and the ability to learn new features/functions is important. You will need to participate in the 24-hour emergency support on-call roster periodically. Job rotation between Support, Verification and supply is part of each engineer's objective.

The candidate should preferably have a Bachelors/Masters degree in computer science or electrical engineering and 4 years experience in related work activities, of which at least 2 years experience should be on CME20/CMS40 systems preferably verification and/or support/supply. In depth knowledge in the use of the Test System, writing corrections, and using TEMS and OMT are a plus. Special consideration will be given to candidates who have worked in a support organization.

Candidates with excellent trouble shooting skills and experience in other mobile application systems/product lines will also be considered for this position. The candidate must have excellent communication skills.

### 2 BSS Software engineers, ASO Americas BSS

● As a BSS SW engineer you will be performing System Verification, application system Upgrades and Application System Acceptance tasks for GSM Base Station System (BSS). Tasks include, performing technical analysis, planning, Test Design and execution, test reporting, coordination with other test organization, trouble shooting of software and hardware faults and correction writing in assembler.

The candidate should preferably have a Bachelors/Masters degree in computer science or electrical engineering and 3 - 5 years of experience in related work activities. The candidate should possess strong problem solving and analytical skills, be quality minded, have ability to perform multiple tasks, have excellent communication skills and be a team player.

**Contact:** Henrik Fagerlund, Group manager, Ericsson Global Support (BSC/BTS), ASO Americas, +1 972 5831 745, henrik.fagerlund@ericsson.com or ASO America, Anders Urban, Group Manager, BSC/BTS verification, +1 972 583 3243, anders.urban@ericsson.com or Lalin Sourjah, Manager, Product Unit BSS, +1 972 583 1639, lalin.sourjah@ericsson.com.

#### NIPPON ERICSSON, JAPAN

### Senior Test Engineer

In order to meet new challenges in the IN, Internet and WAP service application areas in Japan the CMS30 Development unit (NRJ/RD) within Nippon Ericsson is looking for an experienced verification engineer with leadership ambitions. The position is based in Yokosuka Research Park (YRP), 60 kmsouth of Tokyo. YRP is a centre for 3rd generation mobile telephony in Japan. For more information regarding the unit please visit our homepage at: <http://www.nrj.ericsson.se/inside/dep/nrj/rd/index.html>.

Currently, we are looking into new service application areas connecting internet based services with IN. Furthermore, we are responsible for Function Test (FT) and Network Integration Test (NIT) of the IN services CVPN and MCB. The test group to cover these areas urgently needs highly skilled verification engineer to manage the group, train the group members, perform testing and test coordination.

● The successful applicant should have a profile covering some of the areas: 3-5 years experience of AXE System Verification and/or Function Test in mobile networks. 1-2 years experience of IN service related testing. 1-2 years experience as Test Coordinator. Experience of testing UNIX/NT based service applications. Experience of SCP, SSP, SMAS, SMABase and ING (SIG/IWS) nodes. TSS2000, SEA and UP-SIM test tools.

Fluency in spoken and written English is an absolute requirement as well as the ability of working well in a truly multi-cultural environment. Short-term (min 6 months), long-term or freelance contract can be offered to the suitable applicant.

**Contact:** torbjorn.boltshauer@nrj.ericsson.se, Project Manager, +81 468 47 5282, fredrik.janson@nrj.ericsson.se, Project Manager, +81 468 47 5279, noriaki.irino@nrj.ericsson.se, Senior Manager, +81 468 47 5280, tommy.naslund@nrj.ericsson.se, HR.

#### ERICSSON LTD, UK

### Service Delivery Manager, South (UK based)

The Services & Support Unit is responsible for providing core support to UK wireline customers as well as developing and delivering new service opportunities. We are presently looking for a new Service Delivery Manager to join our team.

● This challenging role assumes a pivotal position between nominated customers and the Services & Support Unit. You will be required to provide the key customer interface in day to day management of support & service issues ensuring that both customers needs and Ericsson obligations are met.

This will require you to build strong relationships with your customers, key internal contacts and appropriate third party suppliers. You will manage the resolution of day to day problems and management queries, as well as form part of the formal management escalation chain. In building relationships you will be expected to anticipate your customer's requirements in relation to support & service delivery, develop an ongoing dialogue about their future needs and feed this information into the Company.

You will be responsible for conducting regular technical, management and operational reviews with your customers, monitoring contractual performance, highlighting deficiency and arranging appropriate action.

In order to perform this role we expect you to be able to demonstrate a proven track record of managing and developing customer relations and it is likely that you will have a minimum of 5 years of experience in the telecoms industry. You should also be able to demonstrate good communication skills; a commercial and technical awareness and; skills in managing people and delivering results. Knowledge of the full range of Ericsson products and its service portfolio will be an advantage, as is exposure to the delivery of customer services in a telecoms/IT environment.

**Contact:** Recruiting Manager, Mark Fletcher, Mark.Fletcher@etl.ericsson.se, +44 1444 234372 or Human Resources, Clare Cheal, Clare.Cheal@etl.ericsson.se, +44 1444 874561, Telecommunications Centre, Burgess Hill.

#### ERICSSON LTD, UK

#### VODAFONE

Vodafone is the no. 1 cellular operator in the UK with over 7m customers. Vodafone AirTouch with its global headquarters in Newbury, England is the world's largest cellular operator with operations in over 27 countries.

This high profile account is working in close cooperation with Vodafone to maintain their market leadership through the deployment of innovative solutions and services. Ericsson is supporting Vodafone in the launch of Packet Data services and their migration to third generation systems. The account is one of the largest and most demanding cellular accounts within Ericsson. The account is based in Newbury and resides in a new showcase wireless office promoting Ericsson's latest solutions. GPRS enables a more than ten-fold increase of the current network speeds. With GPRS, bringing packet switching to mobile networks, it is also an important step for operators in the evolution to 3G (third-generation) networks.

GPRS is a common step for both GSM and TDMA networks to handle higher data speeds and offer 3G packet

capabilities. With this common technology, GPRS combined with the speed-increasing radio access technology, Edge, form a major step in the convergence of the two standards and enables users to access services in both networks. We require:

## 5 x GPRS Software Verification Engineers

● Key Responsibilities: A dedicated GPRS Centre of Excellence is being set-up in Newbury - close to the Vodafone/AirTouch international headquarters. The new organisation will focus on joint Ericsson/Vodafone customer trials and ultimately develop into a GPRS application proving facility. We are looking for a number of skilled and ambitious software engineers to work in this new organisation.

Competencies: It is essential that you have a minimum of 3 years experience of software verification or support activities. You will have solid technical knowledge - having worked with either AXE, mobile systems or datacoms products such as routers/ATM. Location: Newbury.

Contact: Recr. Managers, Clive Oates, clive.oates@et.ericsson.se, Goran Andersson, goran.andersson@et.ericsson.se.

## ERICSSON GMBH, HERZOGENRATH/AACHEN, GERMANY

### CSS/GSM Operations

EED in Herzogenrath/Germany, close to the university city of Aachen, is a young and growing company with an open working atmosphere high motivated colleagues. The CSS/GSM Operations has the overall responsibility for the Circuit Switching System (CSS) in all GSM based applications. This covers all classical GSM implementations for the different frequency bands: GSM 900, GSM 1800 and GSM 1900. In addition CSS will play a key role in introducing the 3rd generation mobile systems, UMTS, on the world market.

EED/X/R department at EED has the overall project responsibilities within CSS for the complete CSS node deliveries. We are about to embark on one of the most exciting and challenging projects within Ericsson. GSM R9 project, and our first UMTS delivery, have been combined together in order to maintain our strong market presence and ensure that we are FIRST-TO-MARKET with the UMTS package. We now need strong and experienced individuals to support our project and department team. The following positions are now open.

### Process, Methods & Quality Manager

● The general responsibility of this position is to set up and maintain the processes, methods and quality measurement tools for the overall CSS projects.

The main authorities and tasks are: supply the CSS projects with suitable methods and processes to enhance the system and software design process, initiate the use of improved and/or new methods and processes within the CSS organization, take process and quality measurements, plan and perform project / process audits, monitor and evaluate methods and processes used in other organizations in order to identify potential process improvements, support the project office in all methods, process and quality related activities.

We see that you have a solid background in management and/or project management in Ericsson operations. Also flexibility and willingness to change is a must. Background in managing improvement programs in development environments would be advantageous. Any previous experiences with methods, tools, processes, audits and project work is appreciated. Last but not least you should have a high interest in methods work and see this job as a challenge for you and the company.

You will be able to set clear goals, define messages and strategies and see through the implementation of the strategic improvements. Experiences with improvement work and deployment of new technologies would be a clear advantage.

### Group Manager MSC Project Office

● The general responsibility of the group manager is to plan and lead the operations of the MSC Project Office in EED/X/R.

Main authorities and tasks are: implement personnel policies and general rules, assure that all communication is executed with highest integrity and quality, perform appraisals and frequent personal development talks, plan and ensure competence development of the staff, participate in recruitment and introduce new personnel, provide the department with resource plans and forecasts, support the project teams, ensure that planned quality assurance activities are implemented, participate in the EED/X/R Management Team.

As a suitable candidate, you have a sound Ericsson network knowledge. You should be familiar in working in projects. Managerial experience (e.g. as group manager, team leader or project) is a clear advantage. The position requires initiative, good communication skills a good ability to work under pressure.

### Project Quality Manager

● The main responsibility of this position is to establish and maintain the quality system for R9/UMTS projects.

The main authorities and responsibilities are: quality coordination of R9/UMTS projects (pro-actively drive quality

assurance activities within the R9/UMTS projects), establish a quality management network within the R9/UMTS projects, provision and implementation of project quality plans and quality reports, plan and perform project / process audits, measure and evaluate the quality of the R9/UMTS projects, support project management in all quality related activities.

The quality coordinator reports to his/her line manager and to the respective CSS manager.

Potential candidates shall have a sound background in wireless and/or wireline AXE SW development projects. Any previous experiences with quality systems and processes are appreciated. Last but not least you should have a high interest in quality work and see this position as an opportunity for improving our products and our ways of working.

### Configuration Manager for CSS/GSM R9/UMTS Project

● The CSS/GSM Operations has the overall responsibility for the Circuit Switching System (CSS) in all GSM based applications. This covers all classical GSM implementations for the different frequency bands: GSM900, DCS 1800 and PCS 1900. In addition CSS will play a key role in introducing the 3rd generation systems, UMTS, on the world market.

The main tasks and objectives will be: Development of necessary CM process updates. Support for implementation of Clearcase. Chair CCB meetings.

In this position you will gain a lot of insight on how CSS plans, organizes and runs projects. You will learn which organizations are involved in decision making and how their roles and interfaces are defined. Thus acquiring valuable competence and knowledge for future career opportunities.

As a configuration manager you will need strong initiative, good planning, co-ordination and communication skills and the nature to never give up. We hope that we can attract your attention and look forward to receive your application.

Contact: Human Resources, CSS/GSM, EED/H/R, Christina Schneidawind, +49 2407 575 89447, eedcsch@eed.ericsson.se or Project Office, EED/X/RJC, Jan-Owe Johnsson, +49 2407 575 7872, eedjoj@eed.ericsson.se.

The International Project Office for SW Support (EED/X/Y) within CSS International Operations at EED are looking for a candidate to take the role as

### Project Manager, Prepare CSS UMTS/GSM PLM & Support

for the combined CSS R9, GSM & UMTS project.

The CSS R9 project is divided in two major parts, the 1st having main focus on UMTS and the 2nd having focus on both UMTS and GSM, planned end date for both parts is Q4 2001.

Within CSS R9, new products are developed (MGW, CNOS) and existing products are updated (MSC/VLR, GDB, SOG/BGW).

The function reports to the Main Product Introduction Manager as are the Product Introduction managers per FOA market and Project managers. Prepare SW Supply and HW Supply.

● Responsibilities includes: Study how following activities shall be handled from an individual Product and Core Network view: TR- Handling, SW-Updates, HW-Updates, Help Desk. Consider 3rd line, 2nd line and 1st line support. Consider and Execute the FOA customers support (RFA to GA). Identify needed changes to above processes. Identify needed methods, tools and competencies. Alignment of support on Product, Core network, UMTS and GSM level.

Coordinate with other Product Units, part of the total UMTS system offering, and find best practices between the PUs' how to support the UMTS products as a system to the FOA customers and possibly a number of "first wave" customers.

Expected Results: Study, plan and execute the FOA Support (RFA to GA). Prior to CSS R9, GA, CSS shall have an agreed and approved PLM and Support proposal for all CSS products and processes for GSM and UMTS.

We are looking for a candidate with experience from AXE Support (preferably GSM), Supply projects and who has worked with customers in 2nd line or first line support.

The candidate shall have project management or line Management experience at a medium to high level and must be familiar with the SW Support processes. The work involves frequent contacts with a number of internal Ericsson functions, both technical and commercial.

He/She will work extensively with PLM functions for the different CSS products, ASO and SAFSC organizations, other product units support responsibilities and Network Support.

He/She must be fluent in English, have good presentation skills, have a drive to deliver results with many organizations involved, be able and like to have many simultaneous activities, work excessive hours if required and handle extensive travelling within and outside Europe.

Contact: Human Resources, Christina Schneidawind, +49 2407 575 89447 Christina.Schneidawind@eed.ericsson.se or EED/X/YOC, Anders Briandt, +49 2407 575 7473, eedabri@eed.ericsson.se.

EED/X/D is the overall responsible within Circuit Switching Systems (CSS) for system level activities. This includes overall CSS System Management (SM) coordination in the international CSS system management network.

In addition EED/X/D has the system responsibility for the MSC node in the Core Network. The system responsibility for the GDB nodes (HLR, AUC, EIR, FNR and ILR) is located at EEM, MGW at LMF, CNOS at EEI, and for the GW nodes (SOG, BGW) is located at EPK. CSS General System Management is located in EED/X/DE and is responsible for the Core Network in GSM900/ 1800/1900 and UMTS mobile networks. EED/X/DE works in partnership with the CSS System Management International. For the GSM/UMTS Core Network evolution of the MSC we are looking for a

### PC-MSC Chairman

● The expansion of CSS with new product responsibility and the ongoing development of UMTS Core Network require a person to work as PC-MSC for CME20/CMS40.

As a suitable candidate is familiar with Ericsson product handling principles and you should have worked with AXE10 development in the mobile area on system level. Very good understanding of the GSM MSC is needed for this position. To apply for the job you need to have at least 5 years of qualified experience from design and/or testing of the MSC. As you will be chairman of the PC-MSC inspection body you need to be well organized and be prepared to take decisions.

Tasks for PC-MSC chairman is to organize the PC-MSC inspections of the System Level 1 documentation, assist the source system responsible in technical issues, prepare system documentation, etc. Normally, the job as PC-MSC chairman is combined with other system engineering tasks in the General System Management section, e.g. participate in technical investigations or pre-studies.

### TC-CSS Chairman

The expansion of CSS with new product responsibility and the ongoing development of UMTS Core Network require one additional person to work as TC-CSS chairman for CME20/CMS40. The TC-CSS team works in a network fashion with members from EED, EEM, EEI, and LMF; chairman of the inspection is rotated pending on the area.

● The suitable candidate is familiar with Ericsson's mobile systems, has a solid background in systems design and is used to take technical decisions. The main tasks for TC-CSS are to review requirements and technical reports. New transmission capabilities (ATM, IP), new web-based O&M and new HW for CSS products are example of what TC-CSS reviewed last year. For year 2000 we will focus on requirements for UMTS Core Network based on 3GPP R'00 specifications.

For this position we require that you have a very good knowledge of the GSM/UMTS system. Formal education is university degree (Master's of Science or similar), minimum 5 years of qualified system work, and willingness to learn new areas.

Contact: EED/X/DEC, Per Ljungberg, +49 2407 575 609, Per.Ljungberg@eed.ericsson.se or Christina Schneidawind, HR, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se.

The Platform Management & Dimensioning group, EED/X/DD, is looking for

### System Designers, Hardware Platform Management

● The task of HW Platform Management is to ensure that the portfolio of platform products meets the present and future needs of CSS (in terms of functionality, characteristics and cost) and to evaluate the system impacts of new or improved platform products. This work involves a broad range of system level activities such as:

Long-term platform strategy studies. HW (pre-) pre- and feasibility studies. HW technical coordination within CSS projects. Requirement specifications and assignments to HW platform providers. Continuous monitoring of one or several platform product areas. Tollgate assessments of HW delivering projects.

Suitable candidates possess a relevant engineering degree (e.g. telecommunications, electrical, or software engineering) with a minimum of 2-4 years of experience in design, testing or system level technical development. Experience in platform related work (AXE-10, OTP, TelORB, AXD301, ...) is an advantage, but not absolutely necessary. Good verbal and written communication skills, a high level of personal initiative and the ability to work autonomously are essential for this position.

Contact: HW Platform Management, Pieter van Rijnsoever, +49 2407 575 172, eedpvr@eed.ericsson.se or Christina Schneidawind, HR, +49 2407 575 89447, christina.schneidawind@eed.ericsson.se.

The EED/U/T department is part of the Core Product Unit CAPCand is responsible for design and maintenance of the wirelessTCS subsystem. We are looking for a

### Maintenance Engineer

● The maintenance engineer is responsible for investigating and proposing solutions on problems reported by our customers. This is done in close co-operation with support centers all over the world.

The main authorities and tasks are: Analyse and investigate trouble reports on released TCS products. Write and verify corrections in both target and simulated environment. Propose solutions. Design and verify TCS subsystem products according to the RPC process.

As a suitable candidate, you are an Ericsson employee and should have experience in design maintenance activities. Any test experience in simulated and target environment as well as experience in the traffic control area is a clear advantage. Furthermore, the position requires initiative, good communication skills and the ability to work under pressure

Contact: EED/U/TTC, Maurice Van Mulken, +49 2407 575 701, eedmava@eed.ericsson.se or HR, Simon Seebass, Simon.Seebass@eed.ericsson.se, +49 2407 575 163.

General Packet Radio Service (GPRS)

### Configuration Manager (technical)

● The challenge for configuration management is to keep control over all objects which are produced and used during the software life-cycle. This includes source code, executables, released products, trouble reports, requirements, test data, third-party products.

Technical means to support configuration management are special databases (CVS, RCS, ClearCase). These provide the basics to differ between versions of objects. Tools like labels, triggers, branches, views etc. help to keep the different version under control. Through scripts these tools become a powerful instrument to control projects and products.

For persons interested in technical CM, we provide a good opportunity to quickly speed up in a technically skilled team and take over own responsibility after a short time. We are working with future-proof technology. ClearCase, MultiSite and DDTs (ClearQuest) are not only Ericsson's choice for configuration management but industry's standard. Perl, a scripting language we use to adapt the tools to our needs, is the most popular programming language in the WWW.

Persons interested in this field should have a structured and disciplined approach to tackle problems. The ideal candidate has an understanding of software development. Background in UNIX and scripting languages is a plus as experiences with any kind of configuration management tool.

Contact: EED/D/QC, Stephan Jacobs, +49 2407 575 627, stephan.jacobs@eed.ericsson.se or HR, Simon Seebass, Simon.Seebass@eed.ericsson.se, +49 2407 575 163.

### Strategic Product Manager Transit

Proj.No 80/399

The Strategic Product Manager (SPM) works with the competitiveness and economical performance of the Transit products in CAPC. For this the SPM requires extensive contacts with the SPM's from our internal Ericsson customers and with the ongoing CAPC projects. The CAPC customers are the mobile applications GSM, UMTS, TDMA and PDC and the mobile systems NMT and TACS as with the wireline applications for common areas.

● The main tasks are to represent Transit area in the CAPC Product Management Network, to identify trends in product development in cooperation with our customers, to propose long term development strategies for the Transit product areas, to see to that competitiveness and economical performance of the products are best possible over the product life-cycle and to perform business opportunity tracing.

In the area of requirement handling your main tasks are to evaluate incoming requirements and to initiate system studies, to evaluate and act upon assignments received for the product area, to issue Transit requirement specifications, to validate RS's and FS's and being involved in requirements issues in running Transit projects in CAPC.

Required qualifications are a strong technical background in telecom or database industry with experience in AXE10 development and/or system design. Good knowledge of mobile telephone systems. Being able to take initiative and work in a dynamic environment. Excellent communication and interpersonal skills.

Competence in one or more of the following areas is essential: AM System development, Signalling and Protocols, Traffic Control, (Wireless) Charging or ATM.

### System Manager Transit

Proj.No 81/399

The main target is to provide technical and system competence to preserve the Transit development in the Application Core (CAPC).

● Your main tasks would be to perform system studies or design in before or in early project phases, to provide technical expertise related to prestudy and feasibility study on Transit products, to provide technical and system competence to support the GSM, UMTS, TDMA and PDC product lines, to participate in prestudies and feasibility studies for the Transit projects in CAPC, to give support in the design activities in his/her area of competence, to give support to analyze trouble reports on system module level, to participate in RS and other technical inspections regarding his/her areas of competence, and to act as Technical Coordinator in Transit (sub)projects, coordinating technical issues involving several subprojects, involving the related mobile applications projects or involving associated projects.

Required qualifications are a strong technical background in technology, telecom or database industry with experience in AXE10 development and system design, good knowledge of mobile telephone systems. Able to take initiatives and work in a dynamic environment. Excellent communication and interpersonal skills. Competence in one or more of the

following areas is essential: AM System development, Signalling and Protocols, Traffic Control, (Wireless) Charging, ATM or SDL.

**Contact:** HR, Simon.Seebass@eed.ericsson.se, +49 2407 575 163 or U/T System Group, EED/U/TG, Joe Wilke, eed-jow@eed.ericsson.se, +49 2407 575 399.

## Group Manager Wireless TCS Design

Proj.No 79/399

The Transit Development Department in EED is looking for a group manager to establish a new group for Traffic Control design in the Application Core (CAPC).

Traffic Control products are part of the new Transit-AM (TRAM) that is introduced to the mobile product lines UMTS, GSM, TDMA and PDC. CAPC and Transit responsibility is located in EED/U.

● Tasks: The general responsibility of the group manager is to plan, lead and the operations of the design group in EED/U/T. He/she has to that the required goals are fulfilled, the needs of the company satisfied, the group is efficient and competitive.

Main authorities and tasks are to implement personnel policies and general rules, to assure that all communication is executed with highest integrity and quality, to perform appraisals and frequent personal development talks, to plan and ensure competence development of the staff, to participate in recruitment and introduce new personnel, to provide the department with resource plans and forecasts, to set-up and coach design teams, to ensure that planned quality assurance activities are implemented and to participate in the EED/U/T Management Team

As a suitable candidate, you are an Ericsson employee and should have a of 5 years AXE-10 software design knowledge. You should be familiar in working in projects. Managerial experience (e.g. as group manager, team leader or project) or experience in the traffic control area is a clear advantage.

**Contact:** Transit Development Department, Norbert Floeren, +49 2407 575 228, Norbert.Floeren@eed.ericsson.se or HR, Simon.Seebass@eed.ericsson.se, +49 2407 575 163.

The EED/X/SG section within CSS system house is responsible for Verification and Maintenance of the Ericsson Global Packet Radio System.

We host projects for node and network verification prior to system release and take care of GSN node and network maintenance after worldwide availability.

Our vision is to take responsibility in network verification of mobile datacom networks. In order to strengthen this network competence we are looking for a

## BSS Test Expert

● For this position we are looking for a skilled technical person with at least 3 years Ericsson experience in the verification or maintenance of GSM BSS nodes. You will be working in a BSS core team providing the competence to drive our datacom verification activities to success.

Activities in GPRS Network level Testing. Interface verification. Integration of BSS. Trouble shooting on BSS with focus on the packet switching part. Supporting integration of mobile terminals into the network.

As an ideal candidate you have worked with verification or maintenance of the BSC. Your sound knowledge of the BSS system enables you to work independently.

You understand the basic elements of the GPRS network and you are willing to expand your competence area with mobile datacommunication. You have experience to share your knowledge with new colleagues. Change is normal to you on your way to identify solutions.

**Contact:** Christina Schneidawind, Human Resources, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se or Maintenance & Customer Support, EED/X/SGC, Thomas Busch, +49 2407 575 178, eedthb@eed.ericsson.se.

## Senior Product Line Maintenance Tester

Proj.No 25/399.

● Your contribution to the packaging team is key position with minimum 3 years testing experience in a AXE mobile switching systems in a maintenance or support organisation.

You need a sound background in AXE test environment handling and IOG/APZ operation and maintenance, ASR competence, ability to drive improvement and change, effective teamwork and coaching of less experienced colleagues and an interest to participate in studies for new releases.

Opportunities for travel, networking, personal and technical development are outstanding. Watch yourself make a global impact with your efforts.

**Contact:** PLM Section, Elke Busch, +49 2407 575 357, elke.busch@eed.ericsson.se or Christina Schneidawind, Human Resources, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se.

## Experienced Troubleshooters, Support Engineers and Testers needed for GSM SS node HelpDesk

Proj.No 46/399.

We are key players in the GSM support structure. We are looking for experienced personnel (4+ years) who can participate in:

● Technical support for FSC/ASO/PLM/TCM/INDUS/DESIGN. FOA Support, Hot TR Troubleshooting. Emergency correction production. Correction testing. Technical consultancy. Global support co-ordination. Negative testing. Function testing. Taskgroup activities. Root Cause Analysis. Technical prestudies and feedback into UMTS development.

You should demonstrate a solid AXE background and a determination to tackle problems and meet new challenges. An open minded and flexible attitude and the ability to work well in a team environment are important personal qualities. You should also show good written and verbal communications skills. Some experience in the IN area could also give you the edge.

**Contact:** EED/X/SLHC, Russell Hegg, eedruh@eed.ericsson.se, +49 2407 575 668 or Christina Schneidawind, Human Resources, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se.

## Experienced AC-tester for global support of the NO.1 AXE Application

Proj.No 47/399

The product line maintenance section at EED, Herzogenrath, Germany takes central responsibility for the world wide CME20 switching system. It is considered as the primary competence centre for CME20 SS.

● REQUIREMENTS: testing/verification, PLEX and ASA experience, test system knowledge, IN and tool experience is an advantage, to be flexible and able to work under pressure, to be self-motivated, to work easily on your own and within a team and to achieve goals and customer requirements.

You have at least 3 years of testing experience in AXE mobile switching. Your main task is to test the correction in all the releases R7,R8,R8s, PRA, HWM, use test system to trace the problem in test channel and transfer your knowledge to less experience people in the group. Travelling at short notice as an integral part of the job,

**Contact:** EED/X/SLAC, Nasser Farhadi, +49 2407 575 409, eednaf@eed.ericsson.se or Christina Schneidawind, Human Resources, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se.

## ERICSSON RADIO SYSTEMS AB, KISTA

The IPO-California was founded in 1996 by the Ericsson Procurement as a Silicon Valley based sourcing office, with the following mission: The IPO focuses on North American OEM systems and software suppliers. The IPO contributes support and American cultural advantage to Ericsson's alliance process through:

1. Performing self-directed business intelligence, reporting on companies, especially targeting Silicon valley start-ups, which will contribute to Ericsson's technology roadmaps. 2. Conducting client requested business intelligence projects, supplying an early business assessment of potential alliance candidates as precursor to a final decision. 3. Executing client requested projects as a sourcing support function, performing services leading up to and including contract execution. 4. Conducting supplier relationship management, providing liaison support to the Product Units for local suppliers.

From the beginning, it was decided that the preponderance of IPO competence be local Silicon Valley or equivalent, in order for Ericsson to get a transfusion of sinking and experience from the Silicon Valley startup culture. Additionally it was recognised that developing/maintaining an effective internal Ericsson network would be critical to the success of the IPO. Therefore an early decision by the steering board was to staff one IPO slot with an Ericsson contractor from Sweden. This person would both give the IPO a strong bond to the homeoffice and built in network to key-customers, but also provide a path for infusing Ericsson in Sweden with the Silicon Valley experiences of that individual, upon his return home.

## Business Intelligence Manager

● Responsibilities: To initiate and coordinate Ericsson's IPO business intelligence activities focused on Software and OEM Systems Suppliers. To analyze and prepare periodic trend analysis reports regarding venture funding activities, competitor funding activities, and Silicon Valley business models. To participate as member of Ericsson technology teams (PAM's) to provide input regarding Silicon Valley trends, while staying abreast of Ericsson's strategic technology plans. To identify and report on new business opportunities of Ericsson regarding sourcing and partnering. To develop significant client network for business intelligence reports within Ericsson. To build strong external network in Silicon Valley, and help connect internal Ericsson clients. To

promote perceive good business opportunities within Ericsson. To contribute to the continuous improvement for the IPO's business intelligence initiatives.

Skills required: Bachelor min, MS preferred, CS, Eng and/or Business plus 10 years min experience in marketing and/or business development or related. Strong understanding of the Silicon Valley business model; broadbased Silicon Valley network preferred. Prefer previous Ericsson history with significant existing internal network. Effective communicator, written and oral. Strong business acumen and business intelligence experience. Documented ability to develop relationships, explore business potential. Comfortable with professionally representing Ericsson with 3rd party executives. Self-motivated, and self-disciplined, and strong organizational skills. Additional comments: Position requires significant travel (25 %) to build and manage client network with Ericsson product units in Sweden. Domestic travel to meet with 3rd party companies and attend trade conferences.

**Contact:** Greg Cruz, +1 650 4636747, greg.cruz@ericsson.com, Lennart Nilsson, +46 8 757 02 10, lennart.nilsson@era.ericsson.se.

**Application:** IPO Business Intelligence Manager, Ericsson Radio Systems AB, ERA/T/HS Elisabeth Sandström, SE-164 80 STOCKHOLM, elisabeth.sandstrom@era.ericsson.se.

## ERICSSON TELECOM AB, NACKA STRAND

Engineers, Santa Barbara. IP Networks Access, TTM Operations is looking for engineers on short-term service in Santa Barbara, California.

## ICT Test Engineer

● You will develop testable PCBs, and work with CMs to implement superior test processes. You will be responsible for all phases of PCB assembly test, design through product life. BSEE or equivalent with 2+ years ITC exp. Contractors welcomes.

## Process Engineer

● You will work with design engineers to develop manufacturable PCB assemblies. Work with CMs to implement superior assembly processes. Responsible for all phases of PCB assembly, design through product life. BSEE or equivalent with 2+ years PCB exp. Contractors welcome.

## Diagnostic Test Engineer

● Here is your opportunity to develop test tools and processes. Work with CM to implement superior test processes. Responsible for all phases functional test, design through product life. When forwarding your application by e-mail, please send a copy to Larry, EUDLAFO@am1.ericsson.se.

**Contact:** Director Larry Foshee, +1 805 9610646, EUDLAFO@am1.ericsson.se, Birgitta Vinje, HR, +46 8 422 0230. **Application:** Engineers, Santa Barbara, Ericsson Telecom AB, NA/ETX/D/H Siw-Britt Johansson, 131 89 STOCKHOLM, siw-britt.johansson@etx.ericsson.se

## NIPPON ERICSSON K.K., JAPAN

## System Support Engineer

We have now a vacant position for an experienced System Support Engineer to work with CMS30 (PDC standard). Your work location will be at our regional office in Fukuoka.

● The candidate shall have at least 3 years experience in the support area and must be fully competent in the areas of trouble shooting (both software & hardware), system upgrades and updates, trouble report handling (MSS & MHS) and technical customer support.

The candidate will also be expected to participate in emergency support procedures. Previous experience with CMS30 and OSS is a plus. Presently, the customer network consists of 6 MSCs and 1 HLR. Expansion plans are ongoing in order to increase this to 8 MSCs and 2 HLRs. The candidate shall be fluent in spoken as well as in written English. We presume that you are open-minded, outgoing and that you can easily adapt to a culturally diverse working environment. We are ready to offer a long-term contract to the right person. The starting date is early 2000 and the length of the contract is negotiable.

**Application:** Patrik Eriksson, NRJ/DQ/VC, +81 92 611 3155, Fax +81 92 611 3172, patrikeriksson@nrj.ericsson.se.

## ERICSSON RADIO SYSTEMS AB, STOCKHOLM

You will lead the local Product Management team, a part of the KAM GSM division, working with two relatively new GSM operators in one of the most competitive markets in the world. You are a person looking for new challenges and you have a genuine interest in technology, business, as well as people management.

## Head of GSM Product Management, Israel

● The responsibilities of the unit include to: Provide local competence of GSM core products, other strategic technologies as well as services. Establish and manage the Product Rollout Plan and proactively assist the Account team in marketing products through presentations and seminars. Provide expertise in the area of Switching, Radio and Transmission network design. Provide technical tender and negotia-

tion support as a part of Core 4. Proactively identify, create and drive new business opportunities. Investigate and plan the needs, benefits and feasibility of customizations, trials and FOA's for new products.

We expect you to have solid managerial experience, preferable in previous international assignments, with the capability of building and driving a successful and motivated team. You are a dedicated competence builder with a clear people focus and good networking skills, willingly sharing your extensive Ericsson network, your knowledge and your ideas. You have proven experience in GSM, preferable from Product Management and/or Network Design. You are familiar with industry trends in the New Telecoms World and have the ability to translate these into new business opportunities. You have excellent presentation skills, fluent English and relevant university degree or equivalent. This position reports to the KAM and it is a long term contract.

**Contact:** LM Ericsson Israel, Edvard Gavelfalk, +972 3 900 6013, Edvard.Gavelfalk@eoi.ericsson.se, Mats Asplund, +972 3 900 6040, Mats.Asplund@eoi.ericsson.se, Irene Snir, +972 3 900 6030, fax: +972 3 903 0952.

**Application:** Head of GSM Product Management, Israel, LM Ericsson Israel, 17 Amal Street, Afek Industrial Park, IL-Rosh Ha'Ayin 48092, Irene.Snir@eoi.ericsson.se.

## ERICSSON RADIO SYSTEMS AB, LINKÖPING

## System Test

Sub Product Unit OSS in Linköping is staffing up to meet the future. We are looking for a number of people that want to be a part of Ericsson frontliner GSM. The Operation and Support System (OSS) is a part of the Base Station System (BSS) within GSM. The OSS system is the Operation and Maintenance system for the mobile switching and radio networks, including both classic and GPRS systems.

OSS is changing to new architecture for the new OSS generation. The new Framework is based on Corba and Java is used. The system is build frequently and automatic tests are performed. Both UNIX and NT is used as operating systems in the OSS system.

● We are looking for a experienced tester. Knowledge about OSS, AXE, Corba or Java is qualifying. We are working in teams and you are a innovative and result driven team player. You have a university degree. Contracts may be available.

**Contact:** Bertil Olsson, +46 13 28 46 64, Bertil.Olsson@era.ericsson.se.

**Application:** Ref. 00-02, System Test, Ericsson Radio Systems AB, LM/ERA/LVA/FH Eva Lindkvist, Box 1248, 581 12 LINKÖPING, Sweden, Eva.Lindkvist@era.ericsson.se.

## ERICSSON TELEKOMUNIKASYON A.S.

## Support Engineers and Trouble Shooters

Ericsson Turkey is looking for Support Engineers and Trouble Shooters to supplement existing FS staff with short or long term contracts to support our growing market needs.

● The objective of the job is to provide technical support in one or more of the system nodes that are operational in the customer network such as HLR, MSC/VLR, MIN, BSC. The position requires close relationship and interaction with the customer, strong technical background that enables you to conduct fault analysis, trouble shooting and program correction handling in an efficient manner.

The candidate will play an active role in providing support and advice to the local engineers. The main duties also include solving of problems occurred on live exchanges and building up the local competence. The candidates should have minimum four years of AXE experience preferably in Customer Support area. All candidates must be fluent in English and should have excellent analytical, problem solving and communication skills.

**Contact:** mesude.besen@enk.ericsson.se.

**Application:** ferhan.karabacakoglu@enk.ericsson.se

## ERICSSON GMBH, HERZOGENRATH/AACHEN

## Software Design Engineers

● Proj.No 07E00. Are you looking for a demanding and challenging career in Software Design? Can you respond well to significant challenges and responsibilities? Then you should finish reading this ad. At EED/X/P we are responsible for the Software design, development and testof Mobile Switching Subsystems (MSS) within the GSM and UMTS standard. In this position you will have the opportunity to increase your knowledge of the UMTS functionality. You will work in an international organization as a member of a highly motivated team.

Requirements: Complete Telecom system knowledge. Programming experience.e.g. (C++, C) and a working knowledge of structural design methods is required for this position. Experience in SDL is a plus. A minimum of 2 to 4 years Software Design experience is recommended.

**Contact:** Gina Roge, +49 2407 575 254, eedgina@eed.ericsson.se, Christina Schneidawind, +49 2407 575 89447, Christina.Schneidawind@eed.ericsson.se.

## Ericsson Open set to be smash hit

Towards the end of March the fifth largest tennis tournament in the world begins. This year the player line up is the strongest it has ever been, with names like Pete Sampras and Martina Hingis. Ericsson is the new title sponsor of this classic tournament in Florida, USA - now known as Ericsson Open.

The Ericsson Open, held on March 23 to April 2, features the world's top-ranked pros - 96 men and 96 women in singles competition, and 48 men's teams and 48 women's teams in doubles action.

Experts say that the Ericsson Open will be a good indicator of who will do well the rest of the season. Ericsson Open 2000 includes top-ranked players such as two-time defending champion Venus Williams, 1999 US Open Champion Serena Williams and 1999 Wimbledon Champion Lindsay Davenport. They will be challenged by, among others, fan favorites Anna Kournikova and Martina Hingis.

The men's draw is just as strong with all the top players entered including world No. 1 and three-time champion Andre Agassi, six-time Wimbledon Champion Pete Sampras and two-time US Open Champion Patrick Rafter.

### Classic tournament

Originally known as the International Players Championships and sponsored by Lipton for 15 years, the tournament was established in 1985. As the new title sponsor of the event, Ericsson Mobile Phones introduces new attractions including a golf interactive area and "Ericsson World," an open area for the general public to enter and participate in a variety of interactive exhibits and make free phone calls. There will be an area dedicated to the future applications of new technologies such as Bluetooth and WAP. New products lines such as the T18d, A1228d and a new line of accessories will be showcased and available for purchase to visitors.

### Spectator record

"We have a strong history of association with the most popular sports in the world. Tennis in general, and this tournament in particular, reaches an active audience that closely matches the profile of our target consumers," said Hakan Wretsell, Executive Vice President and General Manager of Ericsson Mobile Phones, Region Ameri-



Photo: Andrew Cowie/Scanpix

Andre Agassi (above), Martina Hingis (below) and other star players will participate in Ericsson Open 2000. The tournament held at the Tennis Center at Crandon Park, Miami, is the fifth largest tournament in the world following the four Grand Slams. This year, prize money in this tournament will increase by more than \$1 million from \$4.725 million in 1999 to \$5.76 million in 2000.

cas, as Ericsson announced its sponsorship of the tournament last year.

Attendance in 1999 reached 236,968 - an all time high. The Ericsson Open is this year also broadcast in 20 languages to approximately 250 million households worldwide. In addition, live scoring can also be found on the Web.

As the fifth largest tennis tournament in the world the Ericsson Open becomes the crown jewel of Ericsson's growing portfolio of tennis properties worldwide. In Europe, Ericsson has been a sponsor of the Italian Open since 1997 and became the official telecommunications sponsor of the French Open in 1998. In the Americas, Ericsson is the founding and title sponsor of Copa Ericsson, a series of eight tournaments played in major cities in Latin America and the only combined ATP Tour Challenger and ITF Women's Circuit tournaments.

Nils Sundström  
nils.sundstrom@lme.ericsson.se

www.ericsson-open.com



Photo: Kimimasa Mayama

### UPCOMING

March 23-24: 3G will be demonstrated in Mexico City.

April 10-15: Americas 2000 exhibition in Rio de Janeiro, Brazil. Contact will be there.

### UPDATES

March 6: Publication of the Ericsson 1999 Annual Report, which can be ordered from: anita.sjodin@etx.ericsson.se

CTIA Wireless in New Orleans in the US and CeBIT in Hanover, Germany, the two giant trade exhibitions, have finished. CTIA is the most important mobile telephony exhibition in North America and CeBIT is the world's largest IT exhibition.

Ericsson received its second order for 3G mobile telephone system networks. The customer is Japan Telecom.

### NEW ASSIGNMENTS

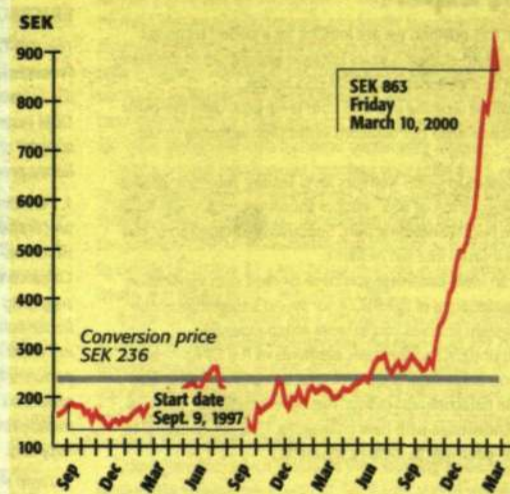
Three senior specialists have been appointed: Scott Leyonhielm for radio technology, Beatrice Philbert for digital signal management, and Jonas Plantin for development methodology at systems level.

Timothy Lucie-Smith has become head of Business Control in the Western Europe market area.

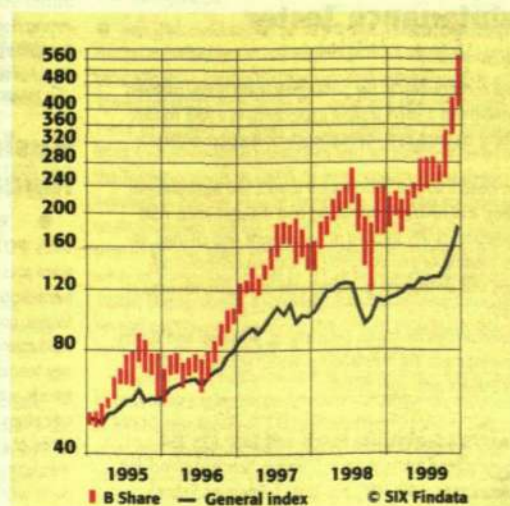
Urban Gillstrom, presently manager at Ericsson Telecommunications in Singapore, has been appointed Head of Market Unit Central America, comprising the following countries; Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama and Cuba.

Carl-Gustaf Leinar is appointed as responsible for Human Resources within Business Segment Network Operators and Service Providers from 1st of May. Carl-Gustaf Leinar is taking over the responsibility when Ann-Charlotte Dahlström is leaving Ericsson.

### 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>



# contact technology

MARCH 2000



Sara Mazur at TDMA Systems in Kista has spent a great deal of time traveling in the US, informing telecom operators about the company's Edge solution. Her efforts have now borne fruit.

Photo: Ann Ek

## Sara: Ambassador for Edge

Very recently, the European standardization body, Etsi, adopted a standard for Edge Compact - a decision wholly in line with the solution Ericsson was promoting. For Sara Mazur at Ericsson Radio Systems in Kista, it is a receipt confirming that last spring's intensive efforts to inform and convince US operators of the efficacy of the solution have paid off.

Edge, a modulation technique for packet-switched data, is an abbreviation of Enhanced Data rates for Global Evolution. The TDMA Systems business unit is focusing strongly on Edge, one of this year's most important tasks being to be first in the market with the system.

For Sara Mazur, Edge has been in focus for the past two years. The background is that Edge was first developed for GSM, based on classic GSM control channels requiring not less than 2.4 megahertz of bandwidth.

When TDMA entered the picture, American operators demanded that Edge coexist with TDMA and be accommodated within a 1 megahertz bandwidth. Ericsson was able to meet these demands by employing a control-channel structure (Compact) with three frequency channels, whereas other solutions, such as the one proposed by Nokia, required four.

### Commuting to US

"For several months, I flew to the US every third week. I met operators and representatives

of American standards organizations and sold them on Ericsson's Edge solution," Sara relates.

In April last year, the American industrial standards organization, Packet Data Focus Group (PDFG), selected Ericsson's Edge Compact solution, the solution standardized in Etsi this past February. No doubt about it, Sara's hard work and extensive technical expertise contributed to the decision. Her contribution was recognized last autumn when she received the TDMA Systems "Business Unit Award."

"Edge is now accepted as the evolutionary path for the TDMA industry en route to third-generation mobile systems and their services, such as real-time voice over IP and e-mail. Our major customers, such as AT&T, are planning to deploy Edge in their networks," she says.

Sara is an engineer with a PhD in technology. Her doctoral dissertation was in fusion plasma physics. In 1995, she left her position as lecturer at the Royal Institute of Technology (KTH) in Stockholm to work at the Ericsson Radio Systems research and development unit, where she was involved with computer simulation of local electromagnetic fields. Two and a

half years later, Sara transferred to the TDMA Systems business unit and since then her work has focused on Edge.

"It's fun to be working in industry. Areas I'm working with now will be reality in a few years. When you're doing research at university, you have to wait some ten to fifteen years before you see any practical results of your work."

At the same time, she adds that it is easy to find people interested in new ideas at TDMA Systems. Having the opportunity to work with technology and customer contacts is also highly stimulating, but she would not consider moving exclusively into marketing - she doesn't want to leave technology completely.

"I'm too curious for that," she laughs.

### Voice over IP in three years

Sara supervises a team of ten people working on concept and standard development for TDMA systems. They are currently working on phase two of Edge, for which real-time services and voice over IP will be reality in about three years.

Sara's greatest recreational interest is horse-riding, which she practices three times a week. "A friend of mine owns a horse that I exercise. This ensures that I really get out riding even if I've got masses of work to do. Riding is like a safety valve that gives me a sense of perspective on my work and a source of renewed strength," she says.

Gunilla Tamm

gunilla.tamm@lme.ericsson.se

### CEBIT

## Scent over the Internet

The German CeBIT trade show offers the most diverse array of technical innovations. The



Photo: Maria Stegler/Pressens Bild

question is whether this year's most bizarre idea was the solution for transmitting smells over the Internet.

The solution for aromatic websites was presented jointly by the German NCR company and Aerome. The idea is that a future web page could carry the scent of its creator's after-shave, or that a trip to Italy could be booked over the Internet to the accompaniment of a scent of lavender. Not to mention what a user could be offered when ordering a pizza.

## Taiwan surprises CeBIT again

The CeBIT show in Hanover attracted companies from the entire IT and computer world. Somewhat surprising, perhaps, is the fact that apart from Germany, the country with the largest representation was Taiwan.

A total of 7,800 companies participated in this year's CeBIT. Three thousand of them came from countries outside Germany. The non-German contingent was topped by Taiwan, with 508 companies, followed closely by the US, with 481 companies, and in third place the UK, with 317 participating companies.

### THE CEBIT GIANT KEEPS ON GROWING

Number of exhibitors at CeBIT:



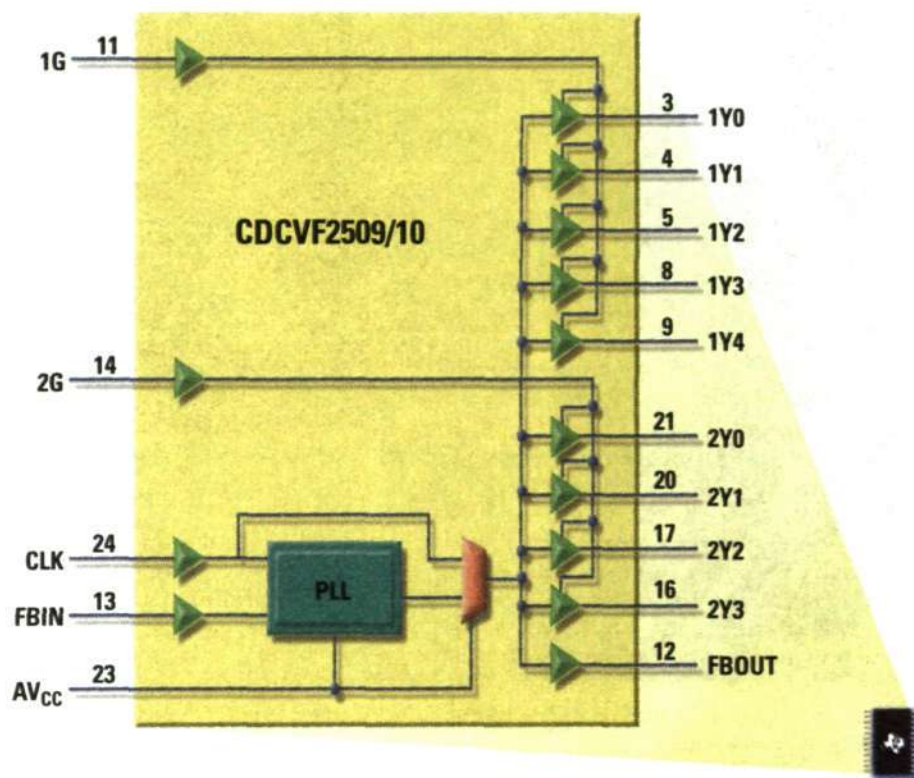
The number of visitors attracted by some of the largest trade fairs:

CeBIT '99 (Hanover)	698,000
SMAU '99 (Milan)	487,000
SIMO '99 (Madrid)	257,000
COMDEX fall '99 (Las Vegas)	220,000
Telecom '99 (Geneva)	129,000

News graphics: Paues Media

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# Mobile Internet takes shape

With more than half of all contracts signed to date, Ericsson is taking a leading role in the GPRS market. This radio technology for packet-switched data is the first important step towards the mobile Internet. During the CeBIT exhibition, Ericsson demonstrated a complete GPRS system.

Ericsson has already delivered GPRS (General Packet Radio Service) solutions to 45 major operators. At CeBIT, Ericsson showed how a n end-to-end GPRS system works in practice by demonstrating WAP applications over GPRS using a prototype phone based on the R320. Visitors to the Ericsson stand were able to try web browsing, chat, e-mail and a lottery service.

"We have a complete GPRS solution. We know how operators can make money with this technology and how users can access services easily," says Bengt Didner, who is manager for product marketing and sales support for Ericsson's GPRS solution.

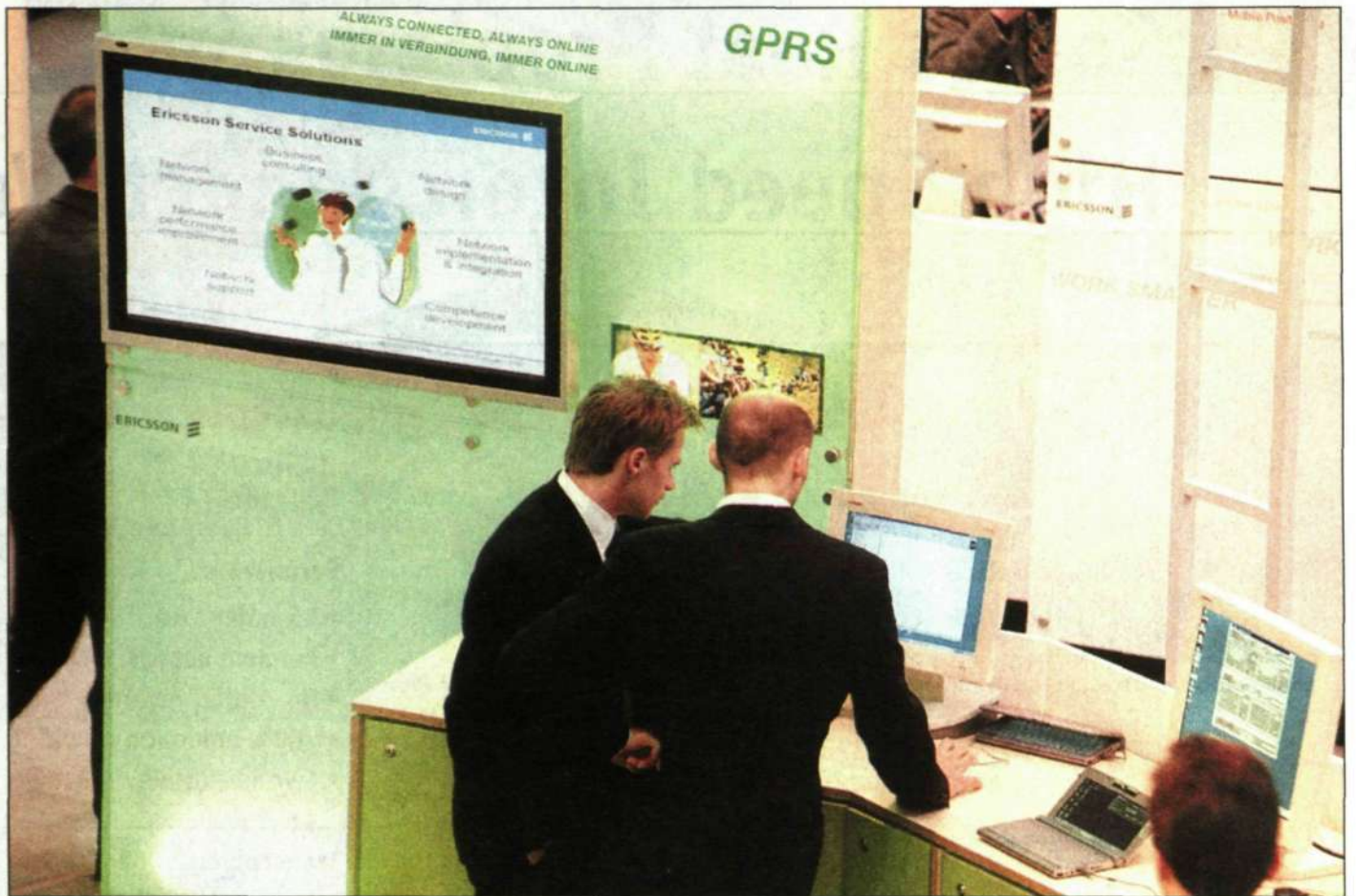
The system was demonstrated both at the Ericsson stands and in cooperation with Germany's third largest cellular operator E-Plus Mobilfunk at their stand. In specially designed modular premises outside the exhibition hall, Ericsson also showed how the infrastructure is designed and demonstrated operations and maintenance, as well as payment systems.

## Completely new applications

Ericsson's GPRS system also includes routers and other IP network functionality so that the entire backbone network can be based on IP technology.

"GPRS opens completely new possibilities for mobile applications and is an important step in the transition from GSM to third-generation systems," notes Bengt Didner, who adds that TDMA systems can also take advantage of GPRS using Edge technology, which provides a migration path to third-generation systems.

Apart from the GPRS nodes and some hardware in the base station controller, only an upgrade of base station software is required to allow operators to quickly and easily introduce GPRS in their networks.



Ericsson showed a complete GPRS system at CeBIT, where users could try various mobile data services using a prototype GPRS phone based on the R320.

Photo: Lars Åström

"For operators, the absolutely crucial issue for success in mobile Internet is what services they can offer on their networks. A portal is probably the best approach for offering a wide range of mobile data services to attract mobile subscribers. By increasing the share of data traffic in their networks, operators can increase revenues," notes Bengt Didner.

## Phones more user-friendly

"A large number of services will be more readily accessible with WAP phones. Users will thus become accustomed to accessing data services via their mobile phones. Most users are also

more familiar with their mobile phones than with their computers. This means that the prospects for operators to sell mobile data services in the future are bright," notes Bengt Didner.

Later this spring, Ericsson will be conducting the final tests with selected operators. The first commercial GPRS system will probably be launched in October. Data speeds will then be ten times higher than in today's cellular systems.

Bengt Didner believes that business users will be the first to adopt GPRS. By 2001, however, as many as five percent of all mobile sub-

scribers may be using GPRS, according to Ericsson's forecasts.

This forecast for mobile data use may well be far too conservative, just as forecasters a few years ago underestimated how quickly the use of mobile phones would increase.



Prototype of GPRS phone

Nils Sundström

nils.sundstrom@lme.ericsson.se

# IP-based radio access network increases transport capacity

At CeBIT, Ericsson presented a new architecture for the radio access network based on IP technology. Transport capacity is utilized 40 percent more efficiently with an IP-based base station system. This means significant benefits for operators.

IP is an important transport technology for operators, since traffic in cellular networks is increasing. IP also makes it easier to handle the mixed traffic resulting from the introduction of packet data services.

Using an IP-based network all the way out to the subscriber is attractive to many operators. Ericsson's IP-based base station system, IP-BSS, is the first step towards an entirely IP-based network. IP-BSS supports IP traffic from the base stations to the gateways located at the edge of the core network.

"We can offer a smooth migration to an all-IP network that allows operators to re-use as much as possible of the existing cellular system, including the base stations," says Göran Coster, product manager for base station systems at the GSM Systems business unit. "This is a fu-



Göran Coster

ture-proof solution for GSM and TDMA networks that shows how Ericsson can help operators make the transition to a third-generation mobile system."

Ericsson estimates that IP-BSS will allow operators to use transport capacity in the network 40 percent more efficiently for a given configuration and traffic mix.

The system requires a router in every base station. The built-in router in IP-BSS uses the same software and delivers the same functionality as the recently released RXI 820 real-time router. The difference is that the base station router is an integral part of the base station and optimized for its capacity. The RXI 820, on the other hand, is designed as a router for the radio network gateways and the radio network server.

"The circuit-switched technology used in today's cellular systems means that every call has its own guaranteed connection to the switch. When IP is used as the transport protocol, ca-

capacity is used more efficiently and flexibly and adapted to each user's requirements," explains Göran Coster.

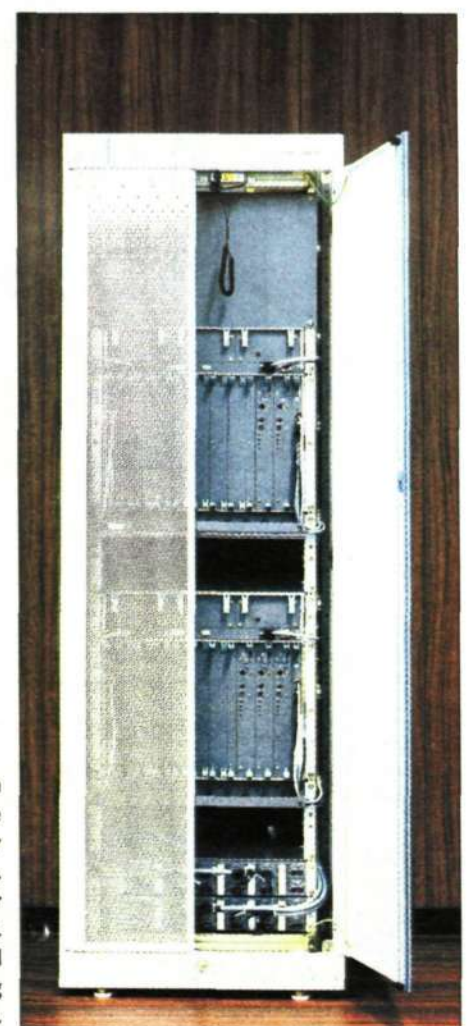
"IP-BSS gives higher priority to real-time services, such as voice. Services such as web surfing and e-mail, which are less time-critical, are prioritized differently," says Göran Coster.

Test systems for this technology will be taken into operation toward the end of the year and in 2001. The first commercial systems will appear during 2001.

Nils Sundström

Ericsson's IP-based base station system consists of several sub-systems: radio base stations, IP networks, a radio network server and an operations and management system. Shown in the photo is a radio network server that is the successor to today's AXE switches.

The radio network server handles all functions for the radio network, including channel allocation and hand over.



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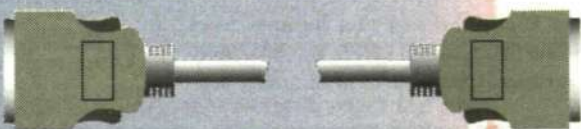
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##### Serializers

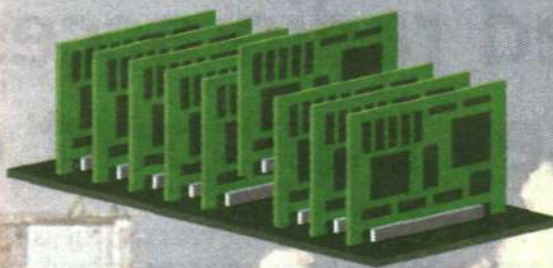
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# Market opening for the mobile office

Computer users can now access their intranets wirelessly from public places, such as airports, with the same capacity as in the office. Ericsson's new Wireless LAN concept includes a unique security system and offers speeds up to eleven megabits per second.

This is a slumbering market worth billions that will grow rapidly as the number of portable computers grows and the need to be constantly connected increases.

Ericsson presented its new W-LAN solution at CeBIT and demonstrated how users can be wirelessly connected to their local data networks from public places, for example, or while moving around a company site. Coverage is provided in strategic locations using base stations that provide access points for the wireless LAN. Users, in turn, have network cards in their portable computers for wireless access to the local data network.

"In this manner, users can easily move the computers between different rooms and maintain their LAN connections. Connection times are very fast, and transmission via the radio link is controlled by our security system, which provides both identification and encryption," says Magnus Gunnarsson, marketing manager for the Wireless LAN Systems product unit.

Intended users are primarily business professionals.

"We are targeting both companies and Inter-

## STRONG SUPPORT FOR HIPERLAN2

There is strong support in the industry for the HiperLAN2 standard that was recently approved by the European standards body ETSI. This creates a foundation for an international W-LAN standard that will support data rates of up to 54 megabits per second. The new technology will operate on the unlicensed 5 GHz band. Frequencies have already been allocated in Europe, the US and Japan.

In order to increase the technology's market prospects and to ensure that products from different manufactures will work together, an industrial alliance called the HiperLAN/2 Global Forum has been formed. This work is being led by Ericsson, but at CeBIT an impressive membership list was presented that includes such companies as Nokia, Lucent, Philips, Motorola and NTT DoCoMo.

Ericsson plans to introduce products for the new standard toward the end of 2001.



Ericsson's new W-LAN solution is primarily targeted to business users and offers intranet access from well-frequented public locations, such as airports and conference centers, as well as across an office complex.

net service providers, who will offer intranet access from public places, such as airports and conference centers. With the higher data speeds that will be available with HiperLAN2, the technology could be used in the future to download films and music to the car at gas stations," continues Magnus Gunnarsson.

## Higher data speeds

Wireless LAN capacity with the new technology can be compared with the fixed connection in the office. Ethernet speeds in offices today are 10 megabits per second for most users, but 100 megabit systems are used for servers, printers and special workstations.

W-LAN technology operates in the 2.4 GHz band, which is unlicensed throughout the world. The new radio technology is based on discrete sequencing, in which available bandwidth is divided into three channels. Frequencies are re-used within the coverage area, which is divided into cells, just like a mobile telephone system.

"Each cell has a capacity of 11 megabits per second, which is shared by all connected users in the cell," notes Mikael Jonsson, who is responsible for product management at Wireless LAN Systems. "Since packet-switched data

transmission occurs in bursts, each user perceives that he or she has access to the cell's full capacity. This is true as long as there are not too many users sharing the same access node, which is why we recommend dimensioning the system for five to ten users per cell."

Ericsson's current W-LAN offering supports 3 megabits per second but is based on a completely different radio technology that uses frequency hopping. This radio technology is very robust, which is an advantage in certain environments. A 3-megabit system will therefore be retained in Ericsson's product portfolio, along with the current high-security solution.

"The new system with direct sequencing will be our primary offering in W-LAN over the coming years. The industry has now agreed on this standard, creating prospects for a mass market among companies and Internet service providers," says Mikael Jonsson, who believes that the 11 megabit system provides room for growth.

"A few years from now, however, there will be a migration to the next-generation W-LAN, HiperLAN2, which uses the 5 GHz band. This

will allow even greater data speeds," says Mikael Jonsson.

## Unique security system

All major players in the telecom industry are now developing W-LAN solutions. This is particularly evident in the many company acquisitions that Nokia, Lucent and Cisco have made. What is unique about Ericsson's W-LAN concept, however, is the security system, which identifies each individual user of the system, combined with strong encryption of each individual connection.

Ericsson's new 11 megabit system is a refinement on this system, which makes things easier for companies and Internet service providers in several ways. Previous systems required a node for identification at each access point. Now the same node can handle several different access points without compromising the quality or security of transmission.

"The system also provides load balancing, so that the nodes perform optimally and that one node can take over automatically if another goes down," says Mikael Jonsson.



Mikael Jonsson

Nils Sundström

nils.sundstrom@lme.ericsson.se

## HOW THE SYSTEMS DIFFER

**Personal data network**  
Limited area

**Local data network**  
Local area, such as an airport or an office

**Data network with wide-area coverage**  
Large area



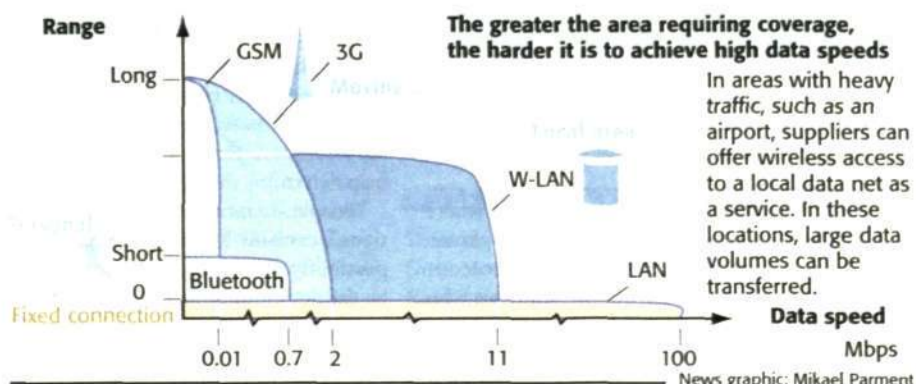
Bluetooth



W-LAN



GSM 3G



# Mobile data solutions for every need

Bluetooth, W-LAN and 3G. Ericsson offers a complete portfolio of mobile data solutions. Requirements for mobility and capacity dictate the choice of technology.

Bluetooth is a low-cost technology designed for wireless transmission over short distances. It is an ideal solution for transmitting data between a mobile phone and a computer, for example, or for having voice messages read on a wireless earphone. Its low cost gives Bluetooth excellent prospects for being included in all types of consumer electronics. Like today's W-LANs, Bluetooth uses the unlicensed 2.4 GHz band, allowing users to create a personal data network wherever and whenever it is needed. The limitations are range and capacity.

Demands for mobility and capacity are interdependent. The greater the coverage area, the more difficult it is to provide high data speeds for all users.

W-LAN is optimized for capacity, which means that its range is limited. Base stations for W-LANs can be installed on office campus-

es, for example, or at airports and other traffic-intensive locations in cities where Internet service providers choose to provide this service. With its security solution, Ericsson is now focusing on offering intranet access in its W-LAN products.

For data users who demand true mobility, a third-generation (3G) mobile network will be required. With systems such as WCDMA, users lying on the beach or traveling in cars will be able to download files from the Internet, send e-mail or video messages. The data speed will vary, depending on such factors as the cell size and number of users.

Developments indicate that users in the future will not have to think about what technology to use. Instead, a mix of technologies will be available, depending on the application.

Nils Sundström

# High tempo as Ericsson targets WCDMA market

The starting shot is about to be fired for a race unlike any other in the history of telecom. In the starting block waits a market of enormous growth potential, a market destined to grow from 0 to 100 in barely a year. We're talking about WCDMA, the broadband future of mobile telephony.

And Ericsson is among the frontrunners.

One system has been sold to date. On February 17, the Finnish 2 G Ltd. company announced its selection of Ericsson as supplier of a combined GSM and WCDMA system.

But the real race has not begun. During the year, some 80 WCDMA licenses will be distributed to operators bursting to start making money from their investments.

The first base stations will be delivered in the autumn, and as early as the beginning of next year, the first subscribers will be able to make their first calls over WCDMA networks.

"The tempo is incredibly fast. I've never seen anything like it. This beats everything."

The words are Mats Köhlmarks's. As manager of Ericsson's WCDMA business unit, he supervises a team of slightly over 4,000 employees based at design centers worldwide. There are many pieces to the WCDMA puzzle.

After ten years of research and 17 experimental systems, Ericsson ranks as world-leading in WCDMA systems.

Part of the explanation lies in the company's close cooperation with Japan's NTT DoCoMo, which will be the first in the world to launch a WCDMA network next year.

The Japanese are in a rush—such a rush in fact that they cannot wait for the rest of the world. The standard is the same, but DoCoMo's system

differs slightly from the system that Ericsson is offering to the rest of the world. Ericsson's cooperation with this demanding—and highly knowledgeable—operator has been an enriching experience.

NTT DoCoMo is the delivery address for the first base stations scheduled to leave the Ericsson plant in Gävle, Sweden, this autumn. Capacity build-up at the plant is in full swing and even there, the high tempo is apparent, according to Per Lind, responsible for production planning for the WCDMA base stations.

"The acceleration in production can be likened to an explosion. It will be an unusual challenge. However, with a high degree of automation and a considerable portion of production outsourced to subcontractors, we will be able to deliver the volumes required."

Marketing operations are also highly accelerated. Subsidiaries worldwide are issuing tenders to all operators that want a piece of the WCDMA pie.

Ericsson's WCDMA demo center is a cornerstone of the company's marketing operations. The possibilities of broadband mobile technology are demonstrated in buses to prospective cus-

tomers and political decision-makers. Their keen interest is unmistakable. The gentlemen in suits look wistful, as streamed strains of CD-quality mp3 music are played for them, or as they try out wireless video conferencing to locations on the other side of the world.

"The equipment has had an enormous impact on customer relations," says Mikael Halén, who is in charge of the demo operations.

"Customers' enthusiasm is almost beyond description. People go wild over the possibilities of the WCDMA technology. 'Want that!' and 'Want it now!' are by far the most common reactions," he continues.

To date, Ericsson has demonstrated broadband wireless surfing. Last autumn, demos included a video conference between two buses, one in Kista, Sweden, and the other in Tokyo, as well as roaming between WCDMA and GSM. Hand-over between base stations in a WCDMA network works well, and multiparty video conferencing was demonstrated at CeBIT for the first time.

Niclas Henningsson  
Freelance journalist

## Color display on first Ericsson WCDMA terminal

Relatively small, with WAP, Bluetooth and a color display: that is how Ericsson's first WCDMA terminal is conceived. But much work remains to be done before the development engineers at Mobile Communications in Lund, Tokyo and Ålborg (Denmark) can sit back and relax. Their target: delivery start in October 2001.

"The basic technology is in place. The task now is to construct a product—to decide what the new terminals will be able to do and what they will look like."

As supervisor of research and basic technology, Kjell Gustafsson plays a key role in the development of Ericsson's WCDMA terminals. He talks about technical challenges and a highly accelerated work tempo. The first terminals are scheduled for launching in the autumn of 2001. These will be single-mode terminals for WCDMA only, and they are designed primarily for the Japanese market.

A half-year later, in the spring of 2002, dual-mode will be introduced. Europe and the rest of the Asian market are to be conquered with terminals that function well in both the old GSM and the new WCDMA networks.

"The situation is very high-pressure and the entire project is steeped in pressure to get the terminals ready in time, but at the moment everything indicates we will succeed."

Development of Ericsson's WCDMA terminals is steered from Ericsson Mobile Communications in Lund. Project management is based there and most product development takes place there. Tokyo is a keystone, as is the product-development center in Ålborg in Denmark.

### Forced to guess

One reason for the extremely tight schedule is that no-one knows exactly what the WCDMA standard will look like. The standardization work of the 3GPP—Third Generation Partnership Project—is not yet complete. To be ready in time, the development engineers in Lund, Tokyo and Ålborg are forced to guess, leaving the door open for last-minute changes.

"The uncertainty over the standard is particularly difficult for those of us working on the terminals side," Kjell Gustafsson explains. "Most of the functionality of the terminals lies in the hardware, which is difficult to change. The base stations contain more software that can always be

upgraded if the final standard turns out differently than expected."

In terms of appearance, the WCDMA terminals are beginning to acquire clearer contours. The main aspects of the design are ready and several of the characteristics and functions of the terminals have been established.

WAP and Bluetooth will of course be included, but the big difference compared with today's terminals is even clearer than that. The first WCDMA terminal will have a "relatively large color display." Granted, the color display will require a bit more power than the back-and-white version, but that is outweighed by the advantages, according to Carl-Johan Ivarsson, who is responsible for Ericsson's product portfolio of WCDMA terminals.

### More than just text messages

"If you are going to surf with your telephone, you will want color. Moreover, our market surveys show that image handling is considered an im-

portant function. People want to send, receive and manipulate images in their terminal."

"Positioning and message handling are also important functions. Messages will not only consist of text but also of sound and image sequences."

Once the first terminal hits the market, Ericsson will start to broadening the range. The high data rates of WCDMA technology open many possibilities. Different types of terminals will be created to meet demand from different customer categories.

"We will offer everything from small terminals to versions equipped with large color displays and a multitude of functions," Carl-Johan Ivarsson says. "Some will have traditional keyboards plus touch-sensitive screens similar to the ones in today's Palm Pilots. With an increasing number of users, large product portfolios and terminals designed for various customer categories will be profitable."

Niclas Henningsson

## A comforting teddy bear

Things that make life simpler and more secure. This is what people want from WCDMA technology.

What do people want to use their mobile phones for in the future? The question is not so simple for someone who is unfamiliar with the possibilities of 3G technology.

But it demands an answer. Suppliers who want a piece of the pie when the WCDMA market takes off in 2002 must provide terminals that match customers' desires.

Ericsson Mobile Communications in Lund tries to identify the demands of the future WCDMA market. Its method is that of focus-group interviews—a three-stage approach, according to Johan Karlberg, product-research manager working with market surveys and consumer trends.

"First, we develop various scenarios where conceivable tasks are solved by mobile phone. Then, we identify the right group of people to interview. We selected 'early adopters,' people who are quick to learn new technology. The third phase of the work is the actual interviews."

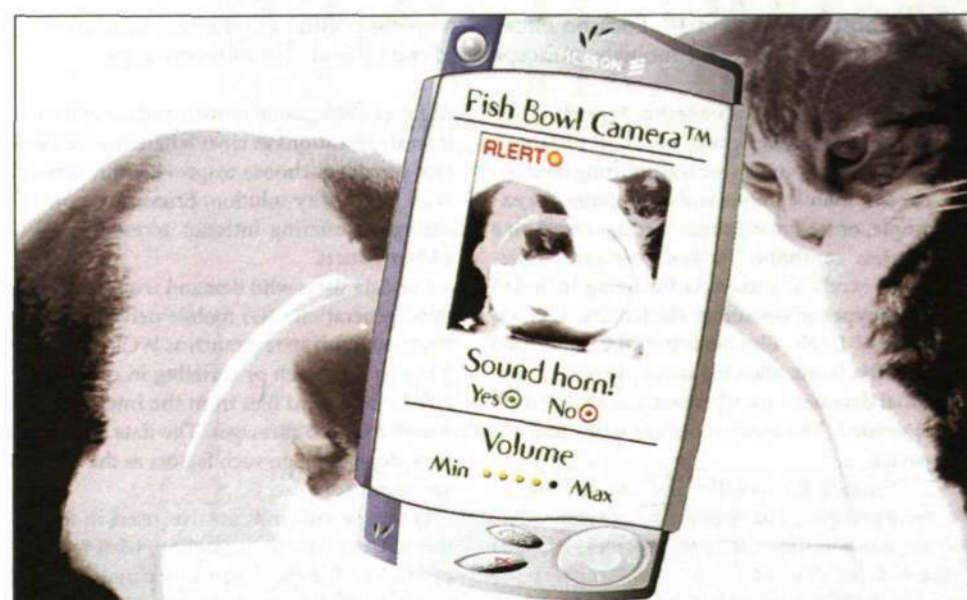
Regarding WCDMA terminals, interviews

have been conducted worldwide. People of all ages have been interviewed about their preferences, and the result is clear. People want telephones to make their lives simpler, as well as more secure.

"Security can mean being able to check a map in the display to find out where you are," Johan Karlberg says. "Things that make life simpler can include the possibility, when you're at the store, of displaying an up-to-date shopping list generated by the server in your refrigerator, that monitors when you're low on milk."

But life is not only a matter of practicalities. Surveys show that recreational functions also help determine the terminals' consumer appeal. "People are rational; they favor practical functions," explains Johan Karlberg. "However, the possibility of listening to music, for example, can be the determining factor when a consumer has to choose between two equivalent models."

Niclas Henningsson



The mobile terminals of the future can be used for just about anything—for example, protecting the goldfish from hungry cats.



Juggling several balls at once. The work tempo for the WCDMA system for Japanese NTT DoCoMo is high, and for Johan Lindström, project manager for the base-station control functions, it is essential to stick to established priorities, to ensure that the project will be ready in time.

Photo: Anna Rehnberg/Kamerareportage

## Key cog in growing machinery

All around the world, the pieces of Ericsson's big WCDMA puzzle are being perfected. Every piece is important for Ericsson's chances of success when the market heats up.

In Mölndal, Sweden, Johan Lindström is working on base stations for the Japanese NTT DoCoMo company.

The development of Ericsson's WCDMA system is a wide-ranging story. Design and product units are located worldwide, each of them a key cog in a large well-oiled machine.

Slightly more than 4,000 people are currently involved in the operations, which mainly comprise research and development. The work tempo is high, not to say extreme.

"The tempo has been extremely high ever since the start in the autumn of 1998. You've really got to stick to your priorities. We don't have time to do everything to the customer's specifications and we're always making choices to try to focus on the right things."

Johan Lindström is in charge of the control

functions in the base stations for the WCDMA system being built for the Japanese customer, NTT DoCoMo. From Ericsson Microwave in Mölndal, Sweden, Johan Lindström and project manager Erik Karlsson in Luleå, Sweden jointly supervise a team of 100 employees placed in Mölndal, Japan, Umeå (Sweden) and Luleå.

### WBTS: WCDMA FOR JAPAN

Work on the WCDMA system for Japanese NTT DoCoMo is conducted within WBTS, Wideband Base Transceiver Station. The project belongs to the WCDMA Systems business unit, and like most of Ericsson's WCDMA development work, it is directed from Kista.

"Development of the DoCoMo base stations is particularly widely spread out. However, with telephone conferences and regular meetings, we make sure everyone follows the same path."

DoCoMo's WCDMA system will be the first in the world when it is placed in service during the first half of next year. The schedule is demanding and the Japanese aggressive in their standardization work.

"NTT is an extremely demanding customer," Johan Lindström explains. "Their requirements specification was tough and they demand con-

stant reports if things don't turn out the way they expected. At the same time, they are receptive to our ideas for system solutions and implementation. It is hard work but we are gaining much valuable experience which we pass on to the rest of the company."

Johan Lindström enjoys his work. Working with the WCDMA technology is inspiring. Ensuring that all the pieces fall into place and finding ways of working that suit the demanding schedule is a great challenge, as well as being fun.

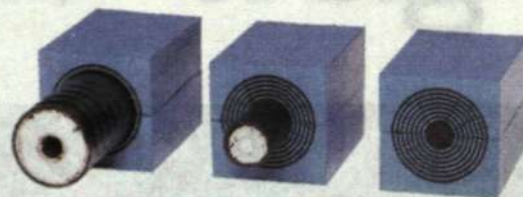
And while the organization is sometimes stretched to the limit, the tough schedule is sometimes an asset.

"The pressure has brought us together as a team—we've become a great gang. People are good at lifting their gaze from their own work and thinking about what's best for the project."

Niclas Henningsson

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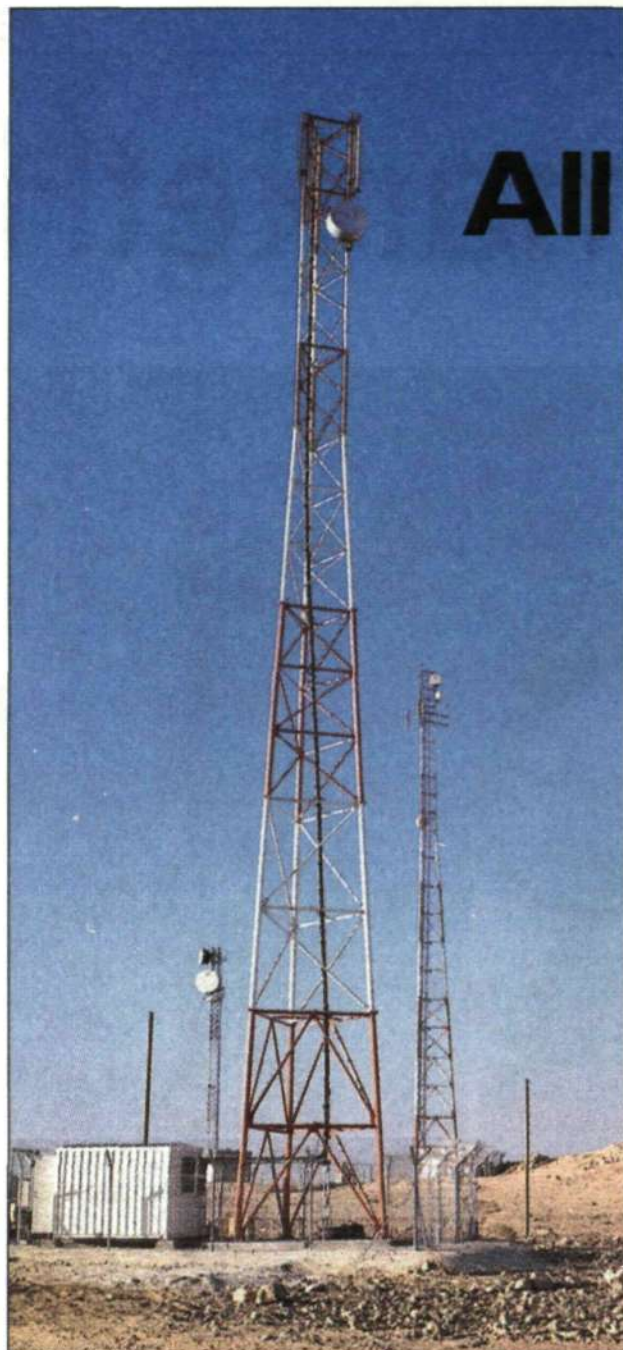


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# Higher capacity with better quality

By replacing just ten percent of the conventional base stations in a GSM 900 network with the GSM Capacity Booster, capacity can be increased by as much as 120 percent. The network can then handle more calls with retained or improved voice quality. These are the benefits of a new technology using adaptive antennas that allows more intelligent use of existing frequencies.

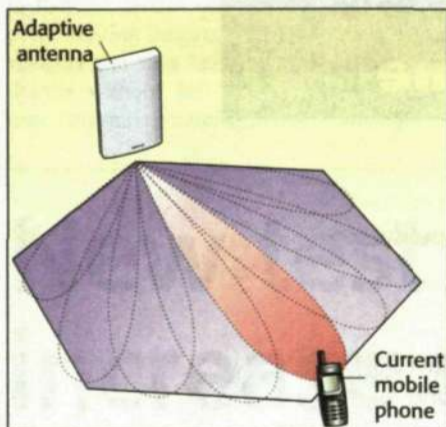
"In densely populated areas, such as city centers, deterioration of capacity and/or quality are increasingly common," notes Karin Craig, product manager at GSM Systems. "Operators often hit the ceiling some place, but by installing the GSM Capacity Booster in selected locations, much can be done to reduce the problems."

The GSM Capacity Booster consists of a completely new base station, the RBS 2205, and a new adaptive antenna. Adaptive in this context means able to adjust, an accurate description of the GSM Capacity Booster, which is able to adjust its output to where it is needed most.

## Reduced interference

Instead of transmitting an entire sector or cell, an adaptive antenna divides the cell into eight lobes. On the uplink, meaning from mobile phones to the base station, the antenna listens to all lobes all the time and selects the four best to guarantee reception. On the downlink from the base station to the phones, however, the antenna transmits only in the lobe where the phone is located.

"The antenna thus focuses power where it is needed most. This means a significantly lower level of interference during transmission. Even the interference during reception is reduced through selective listening," explains Karin Craig.



"The GSM Capacity Booster is a cost-effective method for increasing capacity in a cellular network," says Karin Craig, product manager at GSM Systems. Photo: Peter Nordahl

The reduced interference level permits tighter re-use of frequencies. Upgrading to the GSM Capacity Booster thus frees frequencies that can be used both to strengthen the upgraded cell and adjacent cells. They can also be used for a micro-layer with the same coverage area.

## Upgrade solution

The GSM Capacity Booster is designed as an upgrade solution. The RBS 2205 base station corresponds in size to Ericsson's best-selling RBS 2202. The cabinet is a little higher, but it occupies the same floor space.

The network hierarchy above the base sta-

## Example of how an adaptive antenna divides up the cell.

Illustration: Claes-Göran Anderson

tion is not affected by an upgrade to the GSM Capacity Booster. No changes or modifications are required. The base stations that are replaced can be re-used elsewhere in the network.

The adaptive antenna is 1.5 meters high and 85 centimeters wide. The antenna is passive and the lobes fixed. The intelligence for switching between lobes resides in the adaptive transceivers in the base station.

Like all base stations in the RBS 2000 series, the RBS 2205 is prepared for future expansion. The RBS 2205 is compatible with GPRS and will be able to handle plug-in modules for both Edge and WCDMA.

How does an operator know which base stations should be replaced with the GSM Capacity Booster? The answer is provided by the Capacity Booster Planning Tool, which interacts

with the operator's system. After measuring a number of network parameters, the tool proposes sites that are most suitable for upgrading. The tool also simulates the possible capacity increase for the installation of a given number of GSM Capacity Boosters in the network.

## Significant increase

There are examples in which the installation of a single GSM Capacity Booster allowed a strengthening of selected and adjacent cells by a total of 22 new transceivers, thus increasing available voice channels by 176.

"Building new sites is costly, in terms of both installation and subsequent operation. The GSM Capacity Booster offers a cost-effective alternative to cell splits," emphasizes Karin Craig, citing an example.

## Lower life-cycle cost

In an analyzed network of 400 cells, a 25-percent increase in obtained by upgrading 20 cells with the GSM Capacity Booster. To obtain a comparable capacity increase with cell splitting, it would be necessary to create 51 new cells. With the GSM Capacity Booster alternative, the life-cycle cost is 37 percent lower.

Ericsson began developing what is now called the GSM Capacity Booster as early as 1995 in collaboration with German cellular operator Mannesmann Mobilfunk. In 1998, Ericsson was the world's first supplier to put a system into commercial operation in conjunction with field testing in Mannesmann's Giessen network.

The final GSM Capacity Booster product was launched at the GSM exhibition in Cannes in early February and was also shown at CeBIT. Full-scale release is scheduled for the autumn, but a test package, which includes a network study, training and a small number of units, is available now. The objective with the test package is to quickly meet demand and give operators an opportunity to evaluate the system in their own networks.

## Frequencies are always scarce

The GSM 900 band consists of 125 frequencies, which are divided among operators in each market. These frequencies carry the radio signals that transport phone calls.

GSM networks are built up of cells. The most common network planning method is to locate a radio base station (site) in the middle of a group of three cells, each with its own antenna. This is called a sector site. Each cell or sector is a transmission area. Within each cell, one or more available frequencies are used.

Located in the base station is transmitting and receiving equipment called a transceiver, which communicates with mobile telephones over the air. Each transceiver uses one frequency and can handle eight calls simultaneously, since GSM operates with eight time slots.

Naturally, eight voice channels per frequency is not enough for a network. Frequencies are therefore re-used. This occurs according to a certain pattern, which is based on achieving sufficient separation between cells using the

same frequencies so that the signals are separated from each other.

Network coverage is determined by the number of base stations and their range, by the number of transceivers in the base stations and by the number of subscribers. When the number of subscribers is small, cells can be made large and the base stations can transmit with relatively high power. High traffic density demands greater cell density, which results in smaller cells and lower output power for each cell.

The limited number of frequencies establishes a ceiling for the number of transceivers in a cell. If there is no available frequency in the cell, network capacity cannot be expanded further by installing additional transceivers.

The traditional method for increasing ca-

capacity is therefore to split cells, which entails establishing new sites, installing new base stations, creating smaller cells and performing a new frequency planning. Another common method for increasing capacity is to plan cells in several layers. A certain number of frequencies can be reserved for a micro-layer of small cells, for example, that strengthen capacity at points with particularly heavy traffic.

However networks are planned, a shortage of frequencies often occurs. Quality problems can also arise due to high interference levels. The greater the cell density, the greater the risk of interference. Receivers, either transceivers or mobile telephones, in a GSM network not only pick up the desired signal, but many others as well.

These are some of the problems for which the GSM Capacity Booster offers a solution.

Kari Malmström

Kari Malmström  
Freelance journalist

Higher capacity with better quality



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# New operating system a success

Satisfied customers and tons of orders. TelORB, the operating system that is a key component in Tango, the concept that Ericsson has developed for server nodes in next-generation networks, has already succeeded beyond expectations.

TelORB arose from the remains of a major project that was intended to develop a completely new distributed platform. The operating system's performance was found to be better than anticipated, and a group of persons were therefore allowed to continue development on a small scale when the larger project was discontinued.

"I was able to hand pick a select few developers, and we were able to work with a minimum of bureaucracy," recalls Alexander Larruy, who manages TelORB development at Ericsson Utvecklings AB.

That was in 1996. Four years later, millions of subscribers are using systems based on the new platform.

Today's operators must address a number of problems. Network nodes must never go down, and performance demands are also increasing constantly. Operators therefore want to be able to build new systems without knowing from the start how large they will become or how much capacity will be needed. They want to be able to continue network expansion while incorporating the latest technology without having to replace existing systems, and they want to be able to buy nodes from different suppliers.

The new operating system meets the demands that will be placed on tomorrow's networks.

## Open interfaces increase productivity

TelORB is a distributed operating system that works with several different commercial technologies. Advances in data technology are rapid, and when new products become available, operators should be able to purchase new hardware without replacing entire systems. The demand for open interfaces is also satisfied in that the system supports several standard programming languages. Newly recruited developers can thus become immediately productive without first having to go through time-consuming training in a new language.

Linear scalability allows operators to start on a small scale and then grow at their own pace. Put simply, if there are two processors and capacity needs to be doubled, the operator just adds two more processors. If four are not enough, more can be added as required, rather than having to replace old processors with new ones.

"Availability is also important," notes Alexander Larruy. "Systems must always keep running. With TelORB, if one processor fails, its tasks are automatically distributed among the remaining processors."

In the same manner, other processors take over if maintenance is needed in one part of the system or if hardware is replaced. Delivering real-time performance under these conditions, however, can be difficult.

"Systems with extremely high availability tend to be slow, but we have achieved excellent results," says Alexander Larruy.

## Fortuitous mix of characteristics

What then makes TelORB unique? Lars Hennert, who is the operating system's chief architect, believes that other operating systems also deliver excellent results with respect to availability and performance but that it is generally a question of one or the other.

"But we have found an unusually fortuitous mix of various characteristics that do not force us to make compromises," says Lars Hennert.

Ericsson in Canada was the first company to recognize the operating system's merits. The company had been looking for a scalable and fault-tolerant operating system for their server nodes for some time and were impressed by what they saw in a demonstration. Shortly thereafter, a field trial was conducted with a large US operator.

The results led to a decision to develop a production version of an HLR (Home Location Register) for the US cellular market based on TelORB. In addition to the application itself,



Lars Hennert, the chief architect of TelORB, and Alexander Larruy, manager for the development of the system, are pleased by the success achieved by their creation.

Photo: Peter Nordahl

the Canadians contributed a platform layer called Jambala.

The success of the HLR also provided the incentive to develop other applications, such as an SCP (Service Control Point) a Mobility Gateway and a WAP Gateway with Jambala as the foundation.

Interest in the new platform exploded in the autumn of 1999. The GSM Systems business unit, for example, decided to develop its next-generation SCP based on TelORB. In addition, development of prototype applications are in progress at several other Ericsson companies around the world. Because several orders for Jambala-based systems have already been received, there will be many installation projects in the near future.

"The success in the US market is particularly gratifying, since we had fallen behind with respect to HLR," says Alexander Larruy.

In his view, the sales successes and quick results are in part due to the competence of his team and in part being able to work in a small and informal project.

"Everything has gone extremely quickly," he acknowledges. "One day we were sitting around the table kicking around ideas that seemed very far-fetched. Only weeks later the problems had been solved."

Maria Paues

kontakten@lme.ericsson.se

www.ericsson.se/review (3/99)

# New test methods increase efficiency

Test methods have become a strategic competitive advantage for Ericsson. Efficient testing and measurement methods reduce delivery times and increase the quality of Ericsson's products.

Radical new measurement methods reduce production costs and also make it possible for Ericsson to specify its products more exactly than its competitors.

In Gävle, for example, Ericsson has the world's largest production unit for radio base stations which has been working intensively for some time with revolutionary measurement methods and significant savings in testing.

In this manner, the unit has been able to attract many people with leading-edge expertise in this area. When a Test Competence Center was to be established within Ericsson, Gävle was a natural choice, given the expertise already available there. The Test Competence Center currently has a central function with respect to coordinating testing activities throughout Ericsson.

"In order to be able to promote an exchange of knowledge around the world, we work in networks. One example is the Test Competence group, which consists of more than 50 very experienced engineers from product and development units throughout Ericsson," says

Niclas Keskitalo, who is the manager for the Ericsson Test Competence Center.

## Three research areas

The Test Competence Center presently consists of six persons. In addition to Niclas Keskitalo, the group includes Daniel Eriksson, Anders Svensson and Olav Andersson, who are experts in radio measurement techniques, and Peder Malmjöf and Göran Höglund, who are both senior specialists in radio technology and digital technology, respectively. The research being conducted is divided into three areas: new measurement methods, instrument development and test platforms.

"In order to be able to reduce test times significantly while simultaneously improving quality, we need to develop new test methods," says Peder Malmjöf. "We are also studying different ways to increase measurement accuracy, fault identification and re-usability for our software."

Thinking outside the box and trying new ideas can reduce test times by more than 90 percent. Most of the work on test methodology



Peder Malmjöf, Göran Höglund and Niclas Keskitalo (rear).

Photo: Leif Jäderberg

is focused on products that are strategic for Ericsson's future.

A central part of the group's work is also devoted to advancing instrument development in collaboration with leading instrument suppliers. The goal is to develop test platforms that are based on modules and generic building blocks.

"We also develop test strategies, evaluate various instruments and establish guidelines for how testing software should be structured. This should not only make it easier and faster, but also more fun to develop tests," says Peder Malmjöf.

## Leading experts visit seminars

The Test Competence Center also conducts mini seminar series with the world's leading experts in areas of importance for Ericsson, its business partners and research institutions.

"Last year we succeeded in bringing in Bjarne Strostrup, who is the father of C++ pro-

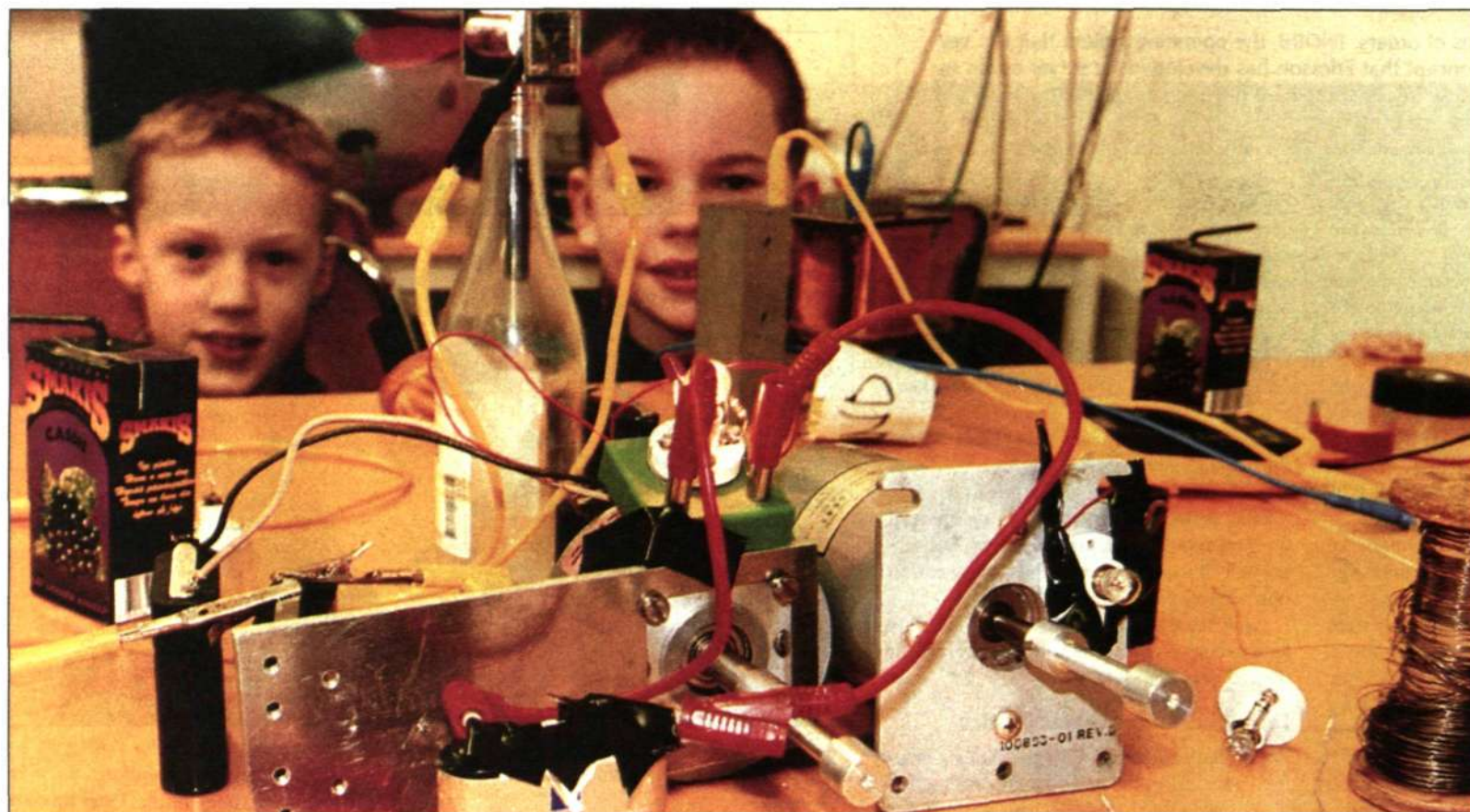
gramming, and Morris Engelson, who is considered the world's leading expert in spectral analysis," says Niclas Keskitalo.

Spectrum analysis is one of the most important measurement methods in radio technology and is used to measure the power and quality of radio signals.

The major challenge for the Ericsson Test Competence Center right now is to develop test solutions for WCDMA, the third-generation mobile system which will make it possible to transmit images and video between mobile terminals.

"New products mean new challenges and new opportunities. Ericsson's future products demand new test solutions with respect to both measurement methods and instruments. That's what keeps us busy," concludes Niclas, smiling at his colleagues Peder, Olav, Göran, Daniel and Anders.

Thomas Hedlund



Fourth-graders Rickard Nordlund and Filip Jauring took various components and connected them. They were experimenting to determine how many batteries were needed to light up the lamps and rotate a propeller. What is the purpose of the machine? The inventors themselves have no idea.

Photo: Jezzica Sunmo

## Young inventors with big ideas

Even young kids can go to college - at least at the Royal Institute of Technology in Stockholm. Children between the ages of seven and twelve have been flocking there to participate in a ten-week course on Saturdays, to experiment and learn about technology. Ericsson is one of the sponsors of the program.

"This is a chance for us to generate an interest in technical science at an early age," says research director Bernt Ericson.

Fifth and sixth grade classes are designing buildings, with the idea of letting their imaginations flow. Johan Sjöstrand is working on a model of the Stockholm City Hall. Robin Eklund has only the roof to complete on his eight-sided silo. Peter Szentivanyi is still at the design phase.

"It's a lot of fun but also difficult," he says. "I don't know what it's supposed to look like. I'm guessing a little and doing what I feel like."

The primary emphasis of the program is on experimentation.



"When children come and ask us whether a nail floats, we don't simply answer no," explains Joe Constantine, project coordinator. "Rather, we go out and test it and then discuss what we see."

Although children do get some assistance along the way, the focus of the program is on learning by doing.

"It's wonderful to see how much fun the kids are having," says Christer Johannesson, who was one of the initiators of the program and is a course leader. "We also offer a training program for teachers, in conjunction with the Association of Local Authorities in Stockholm, so that they can learn how to use our teaching methods. It's our ambition that schools adopt our method of instruction."

The program, which runs over the course of ten Saturdays, discusses a new topic every week. After today's class, the last of the program, topics covered will have included air, water, light, sound, energy and machines, balance and gravity, the universe, temperatures, electricity and magnetism and building construction.

Nine-year old Michaela Bönke thinks that building construction was the most fun, while ten-year old Elisabeth Punsar enjoyed electricity best. Both thought the course had been lots of fun, even though they had to get up early on Saturday mornings as well.

"It's not at all like going to school," they said. The program allows them to experiment rather than simply sitting and listening.

According to Joe Constantine, demand for the 100 openings in the class has been enormous.

"Perhaps, that's not so unusual," says Joe. "If you have a child interested in riding, ice-hockey or drama, all you have to do is sign them up for a class. But for young people interested in technical science, this is really all there is."

One of the goals of the course is to dispel some of the stereotypes associated with technical science, such as it being terribly difficult or that those involved in it are a little strange.

"I think that if children attend a course like this, there's a greater chance that they will apply to an institute of technology, when they have to make educational choices in the future."

Children are divided into three groups, occupying different rooms. On this day, the youngest children are receiving instruction on light. The middle group is working on electricity and magnetism and their room is full of cables and clips, magnets and resistors, covering the tables. Everything is ready for them to experiment their way to knowledge.

"Look, I've built Gyro Gearloose's assistant's car," says Kalle Roxner Kinney, a third-grader from Gärdes School in Stockholm. He didn't know any of the other participants when he started the course, now he has several new friends.

Kalle Roxner Kinney, part of the third group, takes a snack break. He has built Gyro Gearloose's assistant's car with batteries and a lamp, and seems quite satisfied with the results.

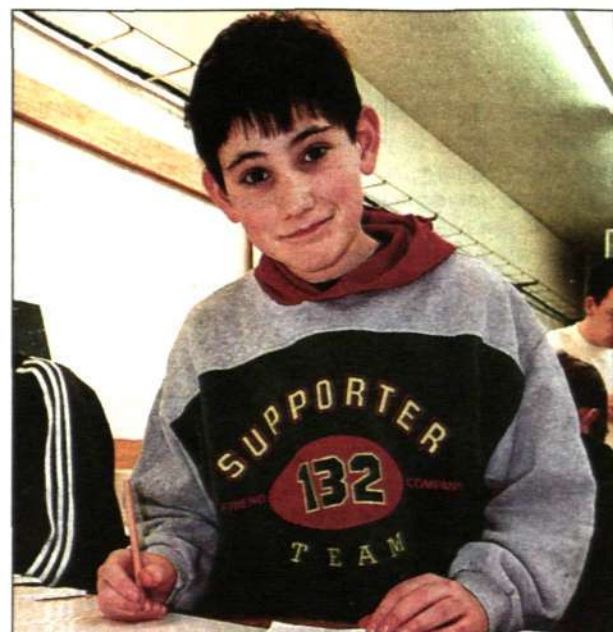
He also toys quite a bit with technical science at home as well. "Mostly, I try to make explosions," he says, but adds that they should be of the harmless variety. "Once I created really loud bangs on the kitchen counter using baking powder and water."

Among the building construction students, all that remains are the details. Cardboard buildings are painted in all sorts of colors, some are even graced with curtains. The roof of Robin Eklund's silo sits firmly in place, the pattern working perfectly although it looked strange on paper.

"That's only because the pencil lines are so thin, whereas the cardboard is thick," he explains.

Peter Szentivanyi has also finished. He made a stylish villa, with a big hole in the roof. He is not worried that rain will come in, rather, he looks at the advantages. Now it's possible to have a campfire in the house since the smoke will be able to exit through the roof.

Maria Paues  
kontakten@lme.ericsson.se



Peter Szentivanyi is designing a house and taking a few chances on the measurements. Building construction is the final subject he will be trying out. Previous Saturdays have included subjects such as light, sound, the universe and temperatures.