



Ericsson has a golden opportunity in Thailand. The Thai economy is showing positive signs of recovery and the mobile telephone market is expanding rapidly. Photo: Lars Åström

Golden opportunities await in Thailand

The entire financial world was shaken two years ago by the economic crisis in South East Asia. In Thailand, where the turmoil began, business is now beginning to pick up again. Ericsson expects to achieve the same high level of sales in 2000 as it had prior to the financial crash. In particular, the market for mobile phones is growing rapidly.

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Talking machines

In Contact's information-crammed IT/IP supplement, learn more about the way machines talk to machines using IP. Telematics is the proper term for this modern type of conversation. Read also about the latest news on Ericsson's real-time router for mobile networks.

Supplement

NEWS

E-commerce cooperation

Ericsson is cooperating with the Visa credit card company to find solutions to secure the payment system via the Internet using mobile phones. This is one of several wireless e-commerce projects currently being carried out.

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Major interest in properties

After Ericsson's decision to sell its entire property portfolio, the first phase will be the sale of one million square meters. There has been considerable interest, with most interest being shown in Swedish properties in Stockholm and Lund.

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Macao soon part of China

In less than two weeks, the Portuguese enclave of Macao will be handed over to China. Ericsson is currently Macao's sole telecom supplier.

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Bluetooth adds big names

Bluetooth's Special Interest Group (SIG) has created a new body of the IT world's elite. The original members which include Ericsson are now joined by 3Com, Lucent, Microsoft and Motorola to form the Promoter group.

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COMIC STRIP

Eric & Son analyses the analysts.

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UNBELIEVABLE TOOLS FOR REAL-TIME DEVELOPMENT

Do you really mean I can take my UML analysis model and make it an SDL system? Just like that?!

Yep!

Do you really mean the new Telelogic Tau suite has built in support for ASN.1 BER encoding and decoding?

Yep!

Do you really mean I can simulate and test what I have captured in UML?

Yep!

Do you really mean Telelogic Tau is the only complete, integrated tool suite for real-time software development?

Yep!

Do you really mean I have to wait until April to get it?

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Datacom ready for the test

Having spent a year getting established, Mike Thurk and his 1800 colleagues worldwide are now geared-up to show the fast evolving communications market what Ericsson can do. During the past year, the business unit Datacom Networks has recruited top data networking talent, incorporated acquired companies into its organization, staked out its strategy and developed a strong solution portfolio targeting wireless and wireline operators. Next year the focus will be on customer wins. The target is to double sales during 2000. Ericsson now has to prove itself in the field of datacom.

"We have a strong IP strategy, which supports developments in solutions for both the wireless and wireline operators. We have a powerful product portfolio in the field of ATM, high-performance IP routers, IP telephony and multiservice core networks. Next year, it is important that we position ourselves aggressively in the market and capitalize on our sales and marketing efforts with some major contract wins," Mike Thurk tells Contact.

It is almost nine months since Contact met Mike Thurk for the first time. At that point, he had been on the Ericsson boat for six months and it was difficult to get an appointment with him between all the job interviews and other work required to get an entirely new set of Ericsson operations up and running. And his job has involved not only establishing new operations, but also opening a new Ericsson office – the business unit's worldwide headquarters – in Boston.

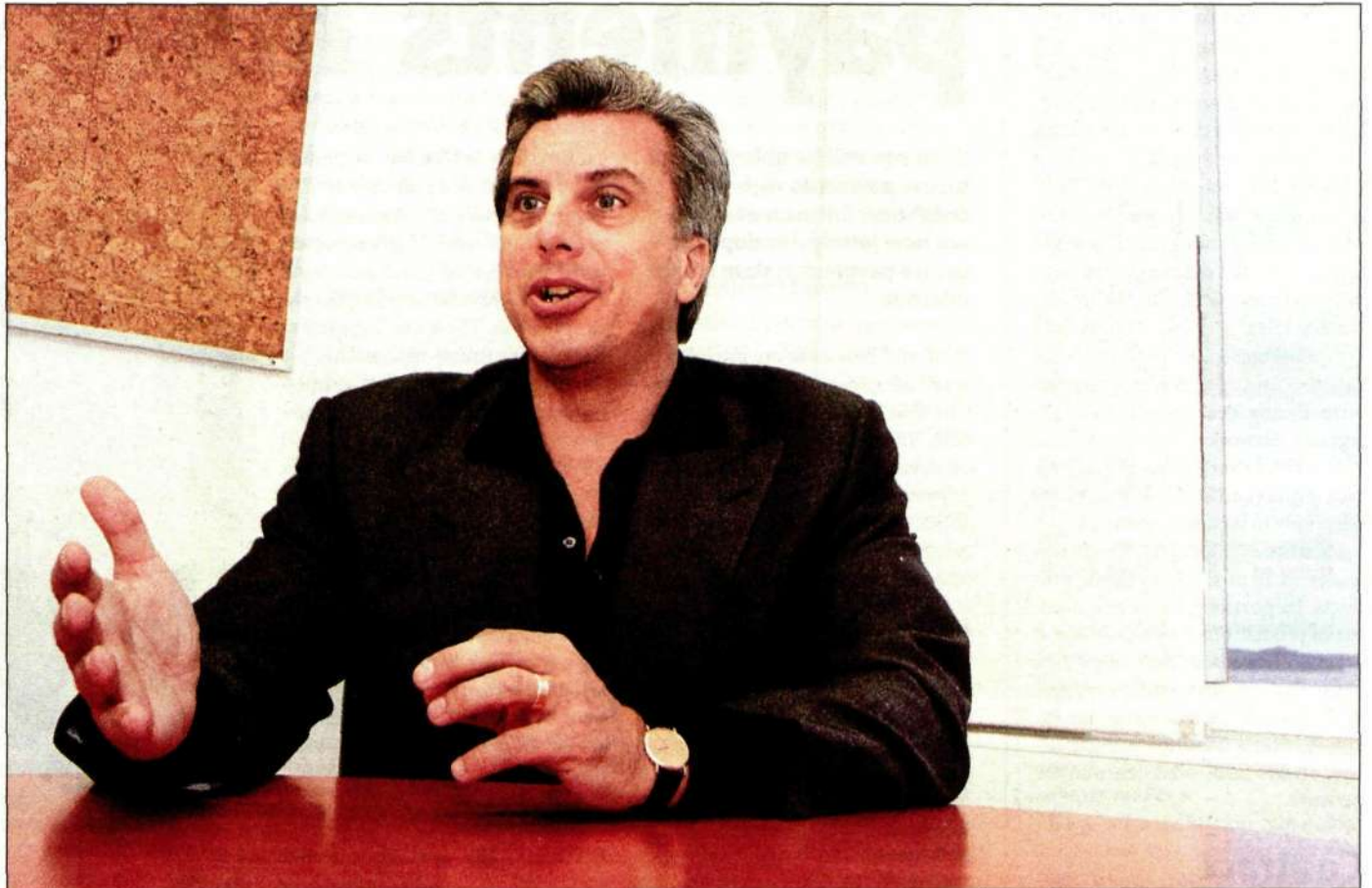
Employees staying on

Since then, the number of employees has grown to 65 persons in Boston with a total of over 1,800 in the business unit throughout the world. Many of these people came from companies acquired by Ericsson, such as ACC and Torrent, which have been incorporated into Datacom Network. The business unit has worked hard to build a strong integration program for these acquired companies and this has resulted in very high retention of employees.

"We have been able to retain our personnel and attract new employees. Torrent, now part of our Infrastructure product unit, has grown from 72 to 110 persons. The offer to purchase Ericsson stock, which was recently approved, is also a way of attracting qualified personnel. The program has been very well received by our employees and is expanding quickly," says Thurk.

During the past year, Datacom Networks has also developed contacts with global operators and built dedicated sales forces in the market areas North America and EMEA (Europe, Middle East and Africa). Large operators and service providers are the primary target groups, for multiservice networks. Year 2000 will also see added datacom sales impetus in the Asia Pacific and Latin American Market Areas.

The target is now to double sales next year.



Over the past year, Mike Thurk has built up a new business unit for datacom in a new Ericsson office in Boston. Now his organization is ready to face the competition.

Photo: Peter Nordahl

Important contracts have already been signed during the past year, the latest ones being the contracts signed with Diginet Americas, Interoute and Islandssimi. With Ericsson's help, Diginet is building out Latin America's first broadband platform for wireless and wireline multimedia in Sao Paulo, Brazil, and Bogota, Colombia. Islandssimi is purchasing a next-generation multiservice network, which includes several of Ericsson's datacom products. Several more contracts are expected to be announced next year.

"Operators are now beginning to understand that we really are able to offer a strong multiservice product and solutions set. This was particularly apparent during Telecom99 in Geneva. The presentation of real-time Internet was highly appreciated," Thurk relates.

Joint development

Datacom Networks is working in close cooperation with several other business units. One important area of cooperation has been the Jordan Project with Wireline Systems. The aim was to create synergies and coordinate the use of resources at Datacom Networks and Wireline Systems, so that, together, they can develop, market and sell Next Generation, multiservice networking solutions for wireline operators.

However, cooperation is not only taking place in the wireline field, but just as much in the field of wireless.

"There has been the impression that Datacom Networks is mainly about wireline communications. But the reality is that this core IP

network services both wireline and wireless access techniques. It's our job to build carrier class core networks which leverage our huge wireless business and help move our customers to GPRS and 3G networks of the future. So while data has traditionally been wireline, end to end, very soon it will be heavily wireless access which drives the IP business of the future."

Few major competitors

Ericsson has entered a new arena, in which there are not many major competitors. Cisco, Nokia, Lucent and Nortel, for example, can seriously be called competitors. And conditions are changing rapidly.

"Voice has now been introduced to the IP network and it is very different to what previously existed. It must function 99.999 times out of 100 and it can't have the much lower level of quality of service that exists in most of today's data networks. That is why I envisage no problems in performing well against the competition in what, in reality, is a new market of carrier class IP. We have everything – we must now be aggressive in sales and marketing, believe in our ability to compete and continue to build our portfolio of products," proclaims Thurk.

Michael Thurk and his colleagues will also continue developing expertise in the IP area, particularly in support of wireless and to promote further investments in customer services and sales.

"I am always asked about our acquisition plans, and one must be somewhat vague here,

but our strategy in this area continues to be the plan. The industry generally has either built or acquired most of the router and switch needs for the core, as has Ericsson. So I don't see much in the way of industry investment there in the short term."

"Of course, you should never say never, but we now have a good, strong product portfolio. On the other hand, it is possible to envisage future investments in such areas as network management, applications and services, for example, for e-commerce and other mobile Internet applications. Oz.com is a good example of a company like this – an application that helps our customers make money with our offerings."

"To date, the emphasis has been on the question of whether we can manage to move the bits fast, that is, whether we have high-speed routers and network components. But operators are looking for an end to end solution where the differentiator is fast becoming which applications and services can we offer on the network to help operators maximize emerging revenue streams," says Thurk.

"As the DN solutions continue to mature, the key to meeting customer needs will be close integration, both technically and from a sales perspective, of wireline and wireless offers with DN, so that Ericsson clients see the full solution which Ericsson offers. The world is moving to IP and Ericsson is ready. This is our challenge for 2000," Thurk observes.

Mia Widell Örnung

mia.widell@lme.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@lme.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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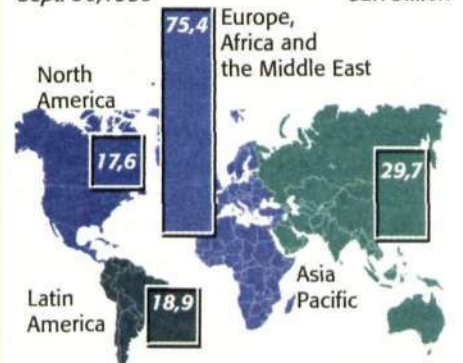
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DID YOU KNOW THAT...

sales were lowest in North America

External sales per geographic market
Sept. 30, 1999

SEK billion



IN BRIEF

New partnership with Extreme

► Voice, video and data in the same network all using IP as the bearer and with Quality of Service (QoS) on par with conventional telephony. This is the objective of a strategic partnership between Ericsson and Silicon Valley-based Extreme Networks Inc. which will offer integrated network solutions for all types of traffic. Targeted customers are business users and service providers, including ISPs.

A combination of products from Ericsson and Extreme can upgrade virtually any local network to an integrated network for voice, data and video. Voice over IP (VoIP) will thus be a serious contender to traditional telephony in business networks.

Extreme Networks is the market leader in high-speed network products. Its portfolio includes a number of products based on the Gigabit Ethernet standard that allow the network to prioritize different types of IP packets, so that voice, for example, which does not tolerate delays, always takes precedence in the network.

Contract with Regus

► A global contract was recently signed between Regus and the Enterprise Systems business unit for annual deliveries of services valued at SEK 12 million. With this contract, Ericsson becomes one of two designated suppliers of telecom solutions and services. Regus, which rents out office centers around the world, is a rapidly growing company with 220 fully furnished, equipped and staffed offices in 43 countries. In 22 of these countries, Regus relies on Ericsson's expertise.

This year alone, Ericsson has delivered products, primarily the MD110, and services valued at SEK 70 million. Currently, there are 80 Regus offices using MD110 systems.

The current contract was signed in Enterprise Systems' futuristic offices in Nacka Strand, Stockholm, in the presence of Regus chairman Mark Dixon together with multi-channel manager Ove Wedsjö.

"Our customers want a telephone system that is connected to their PCs, creating an integrated workstation, just as at Nacka Strand," emphasizes Mark Dixon. "If we can also link mobile phones into the system, we will have the perfect workplace."

Iceland Telecom implement iPulse

► Iceland Telecom (Siminn) is among the world's first operators to run a commercial field trial of Ericsson's communications portal iPulse – an intelligent, IP-based application, simplifying and making communications more convenient for users.

With iPulse which is jointly developed with Oz.com, Iceland Telecom will be able to offer its subscribers an application that instantly and easily connects users to each other by mobile phone, pager, Personal Digital Assistant (PDA), home phone or computer using a simple point-and-click contact menu.

Ericsson and Visa make payments more secure

Soon you will be able to make secure payments with your cellphone. Ericsson and Visa are now jointly developing a secure payment system for the Internet.

WAP and Bluetooth are intended to make life easier for cellphone users. The first phase of Ericsson's work with Visa will therefore be focused on developing secure and intelligent payment systems using smart cards, which will replace today's credit cards and combine payment, credit and cash functions in a single card.

Making life simpler

Life will be much simpler when the smart card is integrated with Ericsson's Wireless Wallet, which was shown at this year's CeBIT exhibition. The wallet can communicate with a phone and a number of other terminals using Bluetooth. Philip Nyströmer, who is responsible for Ericsson's banking and finance partnerships at the Wireless e-solutions business unit, explains how consumers will benefit from this technology in about a year's time.

"Using your WAP phone, you will surf to the SAS Web site, where you will be able to book and pay for air travel. The funds are drawn directly from your account via a smart card in your Wireless Wallet, which is carried in a pocket or a purse. On the web site, you can specify the account from which payment shall be made. The phone and the wallet will use Bluetooth for wireless communication."

The more companies that use Ericsson's technology, the more appli-

cations there will be for consumers. If the local transport authority joins up, commuters can automatically register their trips. If grocery stores come online, food purchases can be registered directly as you pass the cash register. These are just a few of the possible future applications.

The partnership with Visa International, which started in November, is intended to lead to a number of solutions for secure electronic payments.

"The Visa International banking service is used by banks all over the world. For Ericsson, it is important to develop payment services that work anywhere in the world and to have a partner who is highly conscious of security," says Thomas Ryberg, business development manager for Ericsson's Wireless e-solutions.

New partners to be added

Ericsson is now working to recruit additional partners to stimulate the market for Mobile Electronic Commerce. In addition to the banking and finance sector, prioritized areas include media, entertainment, travel and transport. One example is the collaboration with turf agent ATG which books bets on horse races. A solution is being developed to enable betting via a mobile phone.

Surfing the Internet using a mobile phone or handheld PC will become increasingly common over the next ten years. At least, if the latest market surveys are to be believed.

Ulrika Nybäck

ulrika.nybäck@lme.ericsson.se



Ericsson is working with Visa to develop a number of solutions for secure payments over the Internet. Ericsson's Wireless Wallet will make it easier to make payments over the Internet in the future. The Wireless Wallet was demonstrated by Hans Beckman at this year's CeBIT exhibition. Photo: Lars Åström

Properties to be transformed

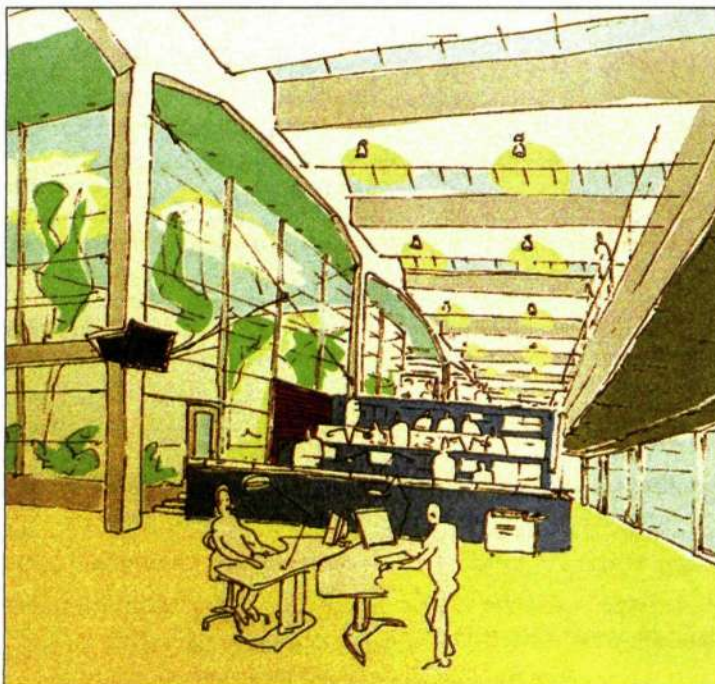
Ericsson's decision to sell off its real estate holdings has excited considerable interest in the property market. In an initial phase, the properties in Sweden, with a total floor area of about one million square meters, will be sold. The aim is to finalize the transactions in Sweden by the first quarter of year 2000.

It was in August that the Ericsson Board of Directors decided to sell all Ericsson properties to free up funds to intensify the focus on core operations.

Ericsson expects to make approximately SEK 10 billion from the sale of properties and land. The terms of sale also include a lease-back agreement aimed at ensuring that the property transactions do not cause any major changes for the people who work in the buildings.

"Ericsson already leases 40 percent of the premises it needs in Sweden," says Jesper Svensson, who is responsible for the sale of the Swedish properties.

The sale of properties in Sweden,



There are plans to transform Ericsson's head office at Telefonplan in Stockholm. The aim is to turn Telefonplan into a campus area where there would also be space for other companies.

Illustration: Thomas Eriksson, Arkitektkontor AB

which represent about 50 percent of Ericsson's total property portfolio,

affects some 30 facilities in Stockholm, Gothenburg, Lund and

10 provincial towns. Prospectuses describing the properties have recently been sent to interested parties.

One of the few properties which is not being sold is the so-called Minifab in Kista, in Stockholm, where Ericsson Components produces microchips. The production process involves so many requirements and permits that selling the plant would complicate operations unnecessarily.

The sale of properties outside Sweden is scheduled for completion by the end of year 2000.

"We are coordinating the sale process at present, but we plan to have a local agent for each country," says Svensson.

The head office at Telefonplan in Stockholm has attracted considerable interest. The prospectus for the area includes a future scenario envisaging the creation of a business campus, which would also have space for companies engaged in high-tech research.

Nils Sundström

nils.sundstrom@lme.ericsson.se

New Bluetooth group formed



The new wireless communications standard derived its name from the Danish Viking King Harald 'Bluetooth'. In the same way he unified Scandinavia, several large manufacturers have now joined forces to create the Bluetooth industrial group.

The five founding companies of the Bluetooth Special Interest Group (SIG): Ericsson, IBM, Intel, Nokia and Toshiba have decided to expand their membership. A new body, known as the Promoter group, will comprise these leading IT and telecommunication companies with the additions of 3Com, Lucent Technologies, Microsoft and Motorola.

The Bluetooth SIG is an industry group responsible for technological development and bringing Bluetooth-compatible products to market. Rising interest and appeal of the Bluetooth standard along with the emergence of fresh applications has aided the new members' entry. The expertise and experience gained from these additions should strengthen the already formidable line-up.

Pooling of talents

Through the inception of a developer forum, the nine-company Promoter group aims to focus the efforts of the Bluetooth SIG. Their shared expertise in such areas as ra-

dio and computing technologies, software development, and networking aims to increase its scope and market effectiveness.

Currently, the SIG has over 1,200 companies as members, from industries as diverse as semiconductor and consumer products firms, to networking and automotive industry companies.

Educational forum

To help educate those businesses involved, the Bluetooth Developers Conference will be staged in Los Angeles, California. On December 7-9, the conference will provide an educational forum and demonstrate applications of Bluetooth technology for a range of markets. The advent of Bluetooth technology will allow computing and communications devices to connect via radio signals, rendering wires and cables redundant. Software developers, manufacturers and technicians will amass in Los Angeles with a single purpose in mind: to build a world without wires.

Matthew Tapsell

matthew.tapsell@lme.ericsson.se

HELLO THERE



Urban Fagerstedt

...head of the newly formed Edge unit within TDMA Systems.

► What does Edge stand for and why is a special unit being formed to work on Edge?

"Edge is a modulation technology for packet data, and the abbreviation stands for Enhanced Data rates for Global Evolution. The new unit, which started operations on November 1, is tasked with developing Edge products for TDMA customers. The standardization work for 3G has developed in such a manner that Edge will be a variant of 3G, which is an exciting development, since Edge is the first step toward a global standard."

► How many employees does the new unit have?

"There are 110 of us altogether here in TDMA Systems, and then there are nearly 500 people working in the various product units, including both TDMA Systems and GSM Systems. All the product units in TDMA Systems will be involved in the Edge program. Several of the products included in Edge are common to both the TDMA and the GSM mobile telephone systems. TDMA Systems and GSM Systems cooperate extremely closely on the Edge standardization process."

"The project will make use of existing product units. Part of GSM Systems' development work on the base station system has been transferred to the new organization in order to strengthen development of the new Radio Network Server (RNS)."

► When will the development work be completed?

"We plan to conduct field trials at the beginning of 2001, and Edge should be ready for commercial operation by the third or fourth quarter of 2001. The first customer will be AT&T."

"Edge enables both GSM and TDMA systems to be upgraded relatively simply and at low cost so that they can handle the third-generation mobile telephone services."

Gunilla Tamm

gunilla.tamm@lme.ericsson.se

CDMA agreement with Sprint

Ericsson has signed a Master Purchase Agreement with Sprint PCS, for 1900MHz CDMA open architecture network equipment. The seven-year agreement enables Sprint PCS to use Ericsson's Compact Radio Base Station (RBS) and Base Station Controller (BSC) products in expanding its US-wide CDMA network.

Through the use of this open interface protocol, known as the Interoperability Specification (IOS) standard, Ericsson can connect its RBS and BSC equipment to Sprint PCS's existing all-digital network. Testing and integration of Ericsson's CDMA equipment is already in progress at Sprint PCS's IOS lab.

Last month, Ericsson announced the delivery of the first commercial wireless network to use the CDMA

Interoperability Specification (IOS).

On November 17 the operator US West launched the new cdmaOne network in Salt Lake City. In addition to the Salt Lake City network, US West plans to launch services in 22 new U.S. markets as well as enhance the existing ones. Ericsson will supply base stations and base station controllers for this purpose.

The market for CDMA technology is ballooning. cdmaOne is one

of the fastest growing wireless technologies in the world, currently serving 42 million subscribers. The products in Ericsson's portfolio have also been designed with thought to the future. They allow a migration path to cdma2000, enabling operators to evolve networks for third generation services.

Matthew Tapsell

Ericsson expands in West Africa

There is plenty of action in the African market. Two new contracts were signed within a two-week period during November – one in Gabon and the most recent in Sierra Leone, both in West Africa.

Ericsson is growing in the African market. The operating companies Celtel Gabon and Celtel Sierra Leone are both owned by the U.K. telecom company MSI Cellular Investments, which is viewed as a future strategic partner for Ericsson.

Framework agreement

The customer has also signed a framework agreement for a GPRS installation during next year.

"Gabon has plans for the rapid expansion of its network – we estimate that within three years there will be at least 100,000 subscribers in the country," says Martin Hägerdal, sales manager for Gabon. "The main feature of the contract is that we will become a strategic partner to MSI Cellular Investments, which should lead to more contracts in other African countries."

Gabon is one of the richest coun-



The contracts in Gabon and Sierra Leone appear to mark the beginning of a positive development trend in Africa.

tries in sub-Saharan Africa, and the government is now focusing on the expansion of telephone networks.

Positive development

Both contracts relate to the expansion of GSM-900 networks. The contract in Sierra Leone, which includes five base stations and one exchange, is estimated to be worth USD 2.5 million. The contract in Gabon is valued at USD 10 million, and the system will be able to be

used by some 20,000 subscribers once it is installed.

The contracts in Gabon and Sierra Leone appear to mark the beginning of a positive development trend in Africa. MSI Cellular Investments anticipates that the number of GSM subscribers will double during the coming year and that the number of GSM networks will more than double during the next three years.

Dan Ekman, who is responsible for the Africa market at Ericsson, views

the future with optimism: "Privatization of the telecom market is now seriously under way, and Ericsson naturally wants to be at the heart of developments and expand networks in as many countries as possible."

In many African countries, expansion of the mobile networks offers the most rapid route to providing Internet access.

Ulrika Nybäck

ulrika.nybäck@lme.ericsson.se

http://bmoa.ericsson.se

COLUMN



Lars A. Stålberg

Focus on rapid information

Now that all the pieces of the puzzle regarding information activities are in place in advance of the millennium shift, I can conclude that communications will be similar to those during a crisis. We have to be prepared to make quick decisions based on incomplete information, and we have to be able to communicate both our decisions and the facts, quickly and efficiently. Due to our size, Ericsson has the advantage of having experience and skills from previous global events. However, while there may be many similarities, there are also important differences.

THE Y2K PROBLEM HAS BEEN common knowledge for a long time – everyone knows when it is going to occur and we have prepared ourselves as best we can. We have assembled emergency preparedness plans, rehearsed them and continued to run through those details that need improvement. The general rehearsal on September 9, 1999, was just one example. During December, along with twenty other colleagues, I will be participating in special training to make decisions under stress.

We have been able to prepare the media and other parties by relating what we are doing and how we are doing it. We have also had time to organize the flow of information both internally and externally prior to New Year's Eve. The Ericsson Millennium Information Center (EMIC) is the ultimate testimony to our constructive preparations for this information work. EMIC is the source of information that forms the basis for our company-wide information. The relatively few questions we have received during our preparations is a good indicator that our advance information has fulfilled its function.

WE HAVE BEEN ABLE to prepare ourselves along with our suppliers and customers, both in terms of the chain of supply (which is also a chain of information) and in terms of communication with customers, customer relations and so forth.

It is, however, too early to relax. How we respond to our customers, solve their potential problems, and how we handle the media prior to, during and after the millennium shift, will directly affect Ericsson's image. Every crisis that is dealt with appropriately is a chance to improve Ericsson's image in everyone's eyes. In other words, there are great opportunities for those of us who are working during the millennium shift. That is why I also want to emphasize the importance of our having the endurance to go the whole distance. To those of you who are responsible for communications, I want to say especially:

- Be sure that the local communications plans are coordinated in detail with our joint and central plans.
- Make sure to become intimately familiar with our Early Warning System as soon as possible, now that it is fully operational.

Our communications preparations are good. I can say this based both on the activities which have already been completed as well as on those that are now in preparation.

We will be holding a special informational meeting for the media, where we will explain our information activities (on December 12 in Stockholm). We will have a special press center open at the Telefonplan location in Stockholm in addition to the normal channels that we always have. Internally, we have prepared by putting together web site information, available in several forms (see special information about that).

The fact is, I believe that we will be at the center of events in a positive way during the millennium shift. I do not want to go so far as to say that all of those who won't be working should be jealous of those of us who are. But Ericsson is an incredibly important part of many societies around the world. That means that our preparations and implementation also feel especially important. In any event, let us hope for the best and that nothing happens!

Lars A. Stålberg, Senior Vice President
Corporate Communications

Ready for Y2k

There are many people at Ericsson who will be working during the millennium shift. Most of them have completed some sort of simulation in crisis management, in order to be well prepared should the New Year bring unexpected surprises.

"It is very seldom that we are affected by the catastrophes that we have prepared ourselves for," says Professor Lars Weisæth. He is an expert on how people react during catastrophes.

There is a significant difference in how one deals with a crisis if one has trained for a similar scenario. Simulations and preparations are one way of ensuring that a critical situation never becomes a crisis.

Lars Weisæth recently spoke during a crisis management simulation for those who will be working at Ericsson's various millennium centers over the New Year's holiday.

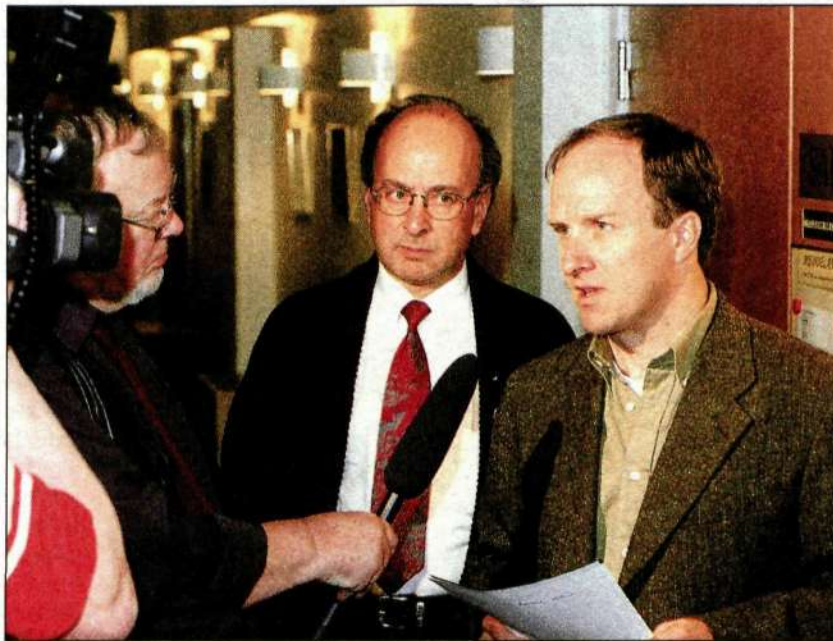
The situations simulated will, of course, be much easier to deal with if they occur in reality. According to Lars Weisæth, it is only the limits of our imagination that are preventing us from preparing for every conceivable possibility.

When members of the Ericsson Millennium Operation Center and the Ericsson Millennium Information Center recently conducted crisis management simulations, they were done under very realistic conditions.

With constantly ringing phones and not enough time and information, they received invaluable training in how to handle the media, senior management and Ericsson companies who were reporting problems.

Patrik Lindén

patrik.linden@ime.ericsson.se

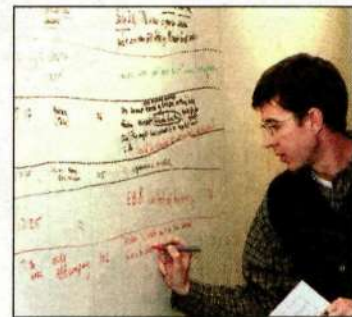


Don Hartung, of Ericsson in Dallas, got to experience what it was like to deal with stubborn reporters, who wanted to confirm rumors. Dealing with the media is an important aspect of the millennium shift simulations. Hans Köpniwsky, of Ericsson Components, listened attentively in the background.

Photo: Patrik Lindén



Time is not only relative, it is also often in short supply. That became clear during the crisis simulation prior to the millennium shift. Agneta Östlund, of Ericsson Business Consulting, had the task of stressing out her colleagues using simulated false alarms.



In order to keep track of what was happening in the control room, all calls and events were recorded during the millennium simulation. Here, Marc Colombe of Ericsson in Montreal is holding the pen.

New sources for the Millennium shift

The Millennium shift is now very close! 2000-01-01 – the date we have been focusing on for years – is fast approaching and of course everybody is interested in knowing how things will turn out for Ericsson.

Some of us will be on duty and will get information through our internal channels, but some will be on leave but still want to follow the events. These are the sources for information.

For people on duty there are two main sources of information specifically for the Millennium shift – the Early Warning System and a dedicated web site.

The Early Warning System

is an Internet based application with the purpose of recording all events as they happen and make the information available to all Ericsson personnel on duty. The system will contain fault reports, technical analyses, suggested solutions, consequence analyses, etc. related to problems we might experience with our products. Information about our business support systems, our buildings and the start up of our supply chain will be found in this system.



Annika Söderholm

There will also be news flashes about more general issues for instance regarding the status of the infrastructure we are dependent on, such as power supply, around the world.

A number of Ericsson organisations and individuals around the world have been appointed responsible for feeding information into the Early Warning System. There has been a number of exercises over the last few weeks to ensure the success of this concept.

Another source of information for those on duty is the web site <http://millennium.ericsson.se/> Here you will find summaries of events from around the globe as well as reports on systems and products

that have been successfully tested after the shift.

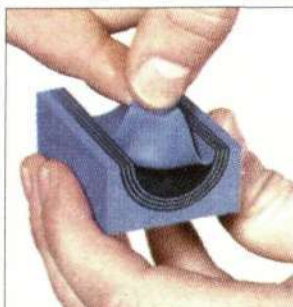
For Ericsson personnel not on duty, you are not allowed to log into the Ericsson environment.

Instead you should use the Internet sites <http://www.ericsson.com/pressroom/> where all press statements will be published, and <http://www.ericsson.com/infocenter/> where there will be a specific Millennium page for general information about the Millennium shift.

Both these sites contain open information and will be updated at regular intervals.

Have a nice Millennium – wherever you are!

Annika Söderholm
Millennium Program Office



Rox System cable entry seal

– with MultiDiameter technology

The Rox System cable entry seals protect telecom installations against water, dust, rodents and insects. Thanks to its MultiDiameter technology, the seal is adaptable in the field and handles a variety of different wires and antenna feeders. Installation is fast and preterminated cables can easily be routed through the seal.

Roxtec International AB, ph +46 455 366700, fax +46 455 820 12, info@roxtec.com, www.roxtec.com/telecom

ROXSYSTEM

The KFO lightweight frame for installations in plexi glass.



Hewlett-Packard splits into two companies

On November 1, Hewlett-Packard announced a split into two separate enterprises. The name Hewlett-Packard, or HP as the company is called, is being kept by the computer and printer business. Agilent Technologies is the name of the new company that will focus on the test and measurement business. With annual sales of USD 8 billion and 43,000 employees worldwide, Agilent will be the world's single largest supplier of test and measurement systems.

Currently a subsidiary of Hewlett-Packard, Agilent anticipates an initial public offering later this year to trade on the New York Stock Exchange.

"Management at HP saw that fundamental differences between our computer and test and measurement operations had come to a head. The purpose of the split is to enable speed, focus and accountability for two very different kinds of businesses," says Byron Anderson, senior vice president and general manager of the Electronics Products and Solutions Group at Agilent Technologies.



Byron Anderson

HP is well-known as one of the world's largest computer companies, with a wide range of brand products – from printers and handheld calculators to PCs, servers and network systems. Agilent is the source of the world's leading test systems used by engineers and scientists to design, manufacture, operate and repair electronic equipment. Both businesses involve key alliances with Ericsson.

Separate infrastructures

"The split is logical for us. We've had separate infrastructures in place at Ericsson for quite some time now to deal with the differences," says Bo Nilsson, responsible at Ericsson for the alliance with HP's computer business on a corporate level.

Agilent Technologies stem directly from the roots of Hewlett-Packard, in a radio test environment.

HP was founded in 1939 by Bill Hewlett and David Packard who had met as electrical engineering students at Stanford. The company's first product was an audio oscillator used to develop and test sound systems. Their first major order was from Walt Disney Studios for a series of oscillators used in the production of the film classic "Fantasia."

During and directly after the war, HP developed communication products for the U.S. defense and aerospace industry.

In the early sixties, applications for test and measurement technology were extended to include the medical and analytical chemistry sectors. At the same time, the company became the epicenter – of an area that would later be called Silicon Valley – of a burgeoning computer and PC revolution. The first HP computer, intro-



Following HP's split, Agilent becomes the world's largest supplier of test and measurement systems for electronic equipment, such as base stations.

duced in 1966, was developed to automate control of electronic test and measurement instruments. Business computing became a new branch of the company in the seventies. With the rapid flux of new techniques and applications in the eighties and nineties, HP expanded into peripheral businesses such as imaging.

Focus on applications

"Twenty years ago we made fundamental breakthroughs in measurement tools that enabled engineers to do a better job. The next question we faced was how to help our customers on a broader base, not just with measurements, but with problem sets. We had managed to capture useful information for



George Sparks

decision and analysis, but needed to know more about what this data means for customer applications," says George Sparks, general manager of the Wireless Division of the Electronics Products and Solutions Group at Agilent Technologies.

Application collaboration with Ericsson began in the early nineties and, in 1994 HP delivered the first fully-automated test systems for Ericsson.

Ericsson primarily purchases PC-controlled systems from Agilent to test electronic properties such as power levels, frequency and voice quality. The systems are based on GSM standards for the testing of phones and base stations.

Sue Anne Moody

www.hp.com
www.agilent.com

INDUSTRY NEWS

GSM forum critical of EU

Representatives of Europe's GSM forum penned an angry letter to the EU Telecommunications Commissioner at the end of November. The letter writers believe the EU's proposal for reduced fees in wireline networks would impede competition between telecom companies and reduce their profits.

"We're just about to invest large amounts in 3G telecom and data-com networks. If these restrictions are implemented, we won't be able to afford these investments. The Commission's proposal penalizes innovativeness, rather than rewarding it," says Rutger van Basten Batenburg of Libertel.

Lower prices for fixed connections

The European Commission could shortly decide to reduce the rental charges for fixed connections in Europe's telecom and datacom networks. The aim of such a regulation would be to make it cheaper to use the Internet, particularly for small and midsize companies. The Commission wants the charges to be on the same level as in other markets, such as the U.S. It believes that lower prices will stimulate the use of capacity-intensive data services and the introduction of a fast Internet.

Nokia to phase out NMT system

Nokia has decided to close down production of base stations for NMT, the analog mobile system. Instead, the company is to focus on the GSM system and the new GSM 450 technology developed jointly by Nokia and Ericsson. Nokia will continue to develop phones for both NMT 450 and NMT 900.

New WLL licenses on offer in Spain

Interest in the six new wireless licenses on offer in Spain is considerable. A total of 17 industrial groupings have submitted bids for the licenses, which are intended to boost competition in the local telephony markets.

The aim is that Wireless Local Loop, an easy-to-install technology, will place pressure on charges for local telephony and result in alternatives to Telefonica, the operator that currently holds a monopoly on the market. Offers have been received from, among others, Telefonica and Airtel, in which British Telecom and Vodafone Airtouch have interests.

Three of the licenses are for the 3.5 GHz band, while the three others are for the 26 GHz band. The license bids must be submitted by the end of the year.

AT&T satisfies customers

For the third time, AT&T has come top of a U.S. Internet survey on customer satisfaction. It headed the list of the five largest long distance telephone companies, comprising 90 percent of the US market. The study based on the evaluations of 6,200 Internet users, was conducted by market research company Solomon-Wolff Associates. Joey Wolff, a partner with the company, commented, "This supports other data which indicates that consumers want one-stop shopping for all their telecom needs."

HEWLETT-PACKARD

Today's HP

Annual revenues: Approximately USD 48 billion (1998)

Employees: 120,000, of which 67,500 in U.S.

Products and services: More than 36,000 products including computers, NT servers, RISC and UNIX systems, laser and ink-jet printers, handheld calculators, and technical support for computers and printers. Test and measurement equip-

ment, discrete components, patient monitoring systems, technical support for analytical equipment and network services

The new HP

Annual revenues: Approximately USD 40 billion (1998)

Employees: 77,000

Products: Computer hardware and software, computer services, laser and ink-jet imaging

solutions, networking products, information storage products, technical support for computers and printers, e-services

Locations: Major sites in 28 U.S. cities and in Europe, Asia-Pacific, Latin America and Canada. Products sold through 600 sales and support.

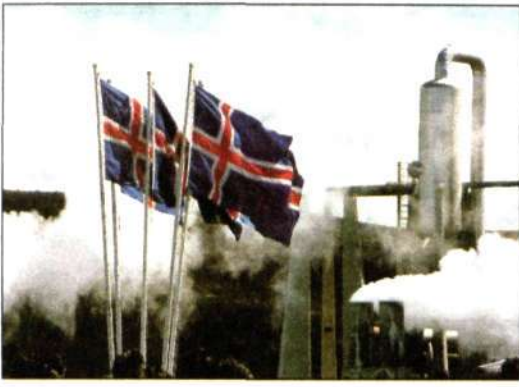
The new Agilent

Revenues: Approximately USD 8 billion (1998)

Employees: 43,000

Products and services: Test and measurement equipment and services for design and manufacture of communications and wireless infrastructure products. Analytical chemical analysis and patient monitoring systems. Semiconductors.

Locations: Employees in 40 countries, products and services available in more than 100 countries.



One thousand kilometers from the Norwegian coast, in the middle of the frigid North Atlantic, lies the island that has become known for its austere and magnificent landscape. Iceland is far from its closest neighboring country and its towns and villages are also far apart. However, the isolation and the distances have possibly made Icelanders best in the world at communication and IT.

“The desire to reach out is in an Icelander’s blood”

A black Icelandic landscape stretches out in front of the little Icelandic pony. It is awe-inspiring – a vast beauty found in few other places. To the southwest, the roofs of buildings on the outskirts of the capital, Reykjavik, can be seen. To the northeast are many kilometers of volcanic soil, volcanic rock and glaciers. On the other side of the barren lands are a few small hamlets, and then the Arctic Ocean.

“I think we Icelanders have always had a strong desire to reach out to the world across the seas. The seas have always cut us off from the rest of the world. That’s why we’re always looking for new ways to communicate,” says Gudjon Gudjonsson, one of the founders of Oz.com a software company, which Ericsson has invested in. He is convinced that Iceland’s geographic position and climate are one explanation for Icelanders’ enthusiasm for information technology.

Mobile people

Ever since the first Norwegians came to the island in the ninth century, they have been a seafaring people. They have traveled, discovered America, and to this day continue to travel widely. Many study abroad. The level of education is high and the literacy rate is among the highest in the world.

Unusual innovations are another characteristic of Icelanders. Geothermal energy is used to heat buildings, hot water is delivered free of charge to all households via large pipelines, and hot springs attract tourists.

Export income derives almost exclusively from fishing and the fisheries industry. However, during recent years Iceland has begun to invest in highly specialized electronics and software companies, in an effort to establish alternative export income to reduce the dependence on fishing.

Moreover, it seems that all technology offering new ways to communicate within the country and with the outside world is warmly received in Iceland.

Strong Internet increase

During the past few years, the number of cellphones, computers and Internet subscriptions has risen sharply in Iceland. Fifty-six percent of the population currently have a cellphone, making Iceland the third largest cellphone country. Two-thirds of Icelanders have access to a computer and almost one-half have a computer at home.

Naturally, it is not only the Icelanders’ desire for social contact that has made them such avid users of IT. It is partly a general Nordic trend, and the high level of IT use is also partly a result of the high standard of living.



Every year, 70,000 tourists converge on Iceland. One of the major attractions is the warm therapeutic baths, such as the Blue Lagoon close to the Keflavik international airport. Photo: Lars Åström

“In addition, the Icelandic economy has been strong for some time. Business activity is intense and manpower is scarce. This has resulted in increasing demand for efficiency, and also, therefore, for efficient communications,” says Ole Kaalund, Ericsson Denmark’s account manager for the largest operator on Iceland, Landsíminn.

Three operators

Although there are only 275,000 people living on the island, the high phone density and the great demand for IT services is sufficient to support three telecom operators. Landsíminn, the largest operator, has been an Ericsson customer since 1932. Landsíminn, has both a nationwide wireline telecom network and GSM and NMT wireless networks.

Ericsson is an important supplier for these networks. Landsíminn is also an Internet operator and is preparing for broadband. The

company is also commercially testing Ericsson’s and Oz.com’s communications portal iPulse.

The NMT network covers virtually the entire country, except for a small bare spot covering part of the huge Vatnajökul glacier. Good coverage means security for people traveling cross-country. Icelanders like being out in the wilderness, hunting and fishing.

The other two operators, Islandssimi and TAL, are newer operators that started when the Icelandic telecom market was opened to competition.

TAL is U.S.-owned and purchases all its equipment from Nortel. Islandssimi is investing in broadband business communications and has recently purchased a multiservice network from Ericsson. This network includes AXE and Tigris, AXD301, AXD311, AXD321, and MINI-LINK.

“It’s a good way for us to show we can offer

comprehensive solutions, from backbone networks to end-user access and applications,” says Jarand Hetting, Ericsson Denmark’s account manager for Islandssimi.

Broadband and multimedia

The next major investment will be broadband and multimedia. No-one can say exactly how fast development here will occur. However, given the phone density and Internet penetration, it is likely to be rapid.

“There is an enormous demand for information. I think there are few countries in the world where people are so given to talking on the telephone. This is the only country in the world where I have seen someone in the street talking into two telephones simultaneously,” says Ole Kaalund.

Mia Widell Örnung

mia.widell@lme.ericsson.se

Oz.com – strong growth

They could scarcely have believed that they would eventually become so successful when they started back in 1991. That is when Gudjon Gudjonsson, an 18-year-old computer genius, and philosophy student Skuli Mogensen launched their modest operation in 3D computer graphics. Eight years later, they are both millionaires running a medium-size software company in which Ericsson has invested millions.

When it all began, 3D graphics was still a fairly new area. Gudjon Gudjonsson realized that his knowledge in the area might be useful. However, the young computer genius needed someone who could represent the company to the outside world, create business opportunities and get the ball rolling.

"He needed someone who could put on a tie – which I could do," explains Skuli Mogensen, laughing.

The group that greets Contact's reporter in Oz.com's scruffy premises in the old cheese factory in Reykjavik is not in the least arrogant. On the contrary, they are humble about their company's rapid success.

"It's true that we started Oz, but we are enormously dependent on our employees. Without them, we would be nothing. This is the basis for innovation," says Gudjon Gudjonsson.

It sounds like a cliché. But considering that skilled workers, especially software designers, are so scarce in Iceland, Oz cannot afford not to take care of its employees.

Breakthrough

The real breakthrough came in 1994, when Oz came into contact with Microsoft.

"That was a turning point for us. It gave us opportunities we otherwise would not have had. Suddenly, we realized we too were good enough. Because if we were good enough for Microsoft, surely we would be good enough for anyone," says Skuli Mogensen.

It was not a game any more. Oz was in and 'hot.' At the same time, Gudjon, Skuli and the others began to tire of 3D. The Internet had begun to grow commercially and it attracted the Oz gang as well.

"We refocused and put more effort into Inter-



Gudjon Gudjonsson and Skuli Mogensen started Oz.com eight years ago. At that time, they had no idea that the company would become so large. Now they are both multimillionaires.

Photo: Mia Widell Örnung

net software. The writer Nils Stevensen's visions of cyberspace became our source of inspiration."

Oz.com gradually began cooperating with Ericsson. Joint creations included Ericsson World, 1997, a virtual three-dimensional space containing avatars. Slightly less than two years later, Ericsson and Oz announced plans for further cooperation. A virtual company named LINK was formed, with employees from Ericsson and Oz.

"By creating LINK, we retained a small, flexible organization. We wanted to keep the innovative atmosphere of the small company and not let the enormous Ericsson take over," says Hákan Harrysson head of the Link company and the Interactive Communication product line.

iPulse: communications portal

The cooperation resulted in iPulse, a communications portal from which various forms of communications can be easily selected. It was exhibited to the market in May, and shortly thereafter Ericsson made further investments in Oz.com.

"iPulse is currently being adapted for WAP,

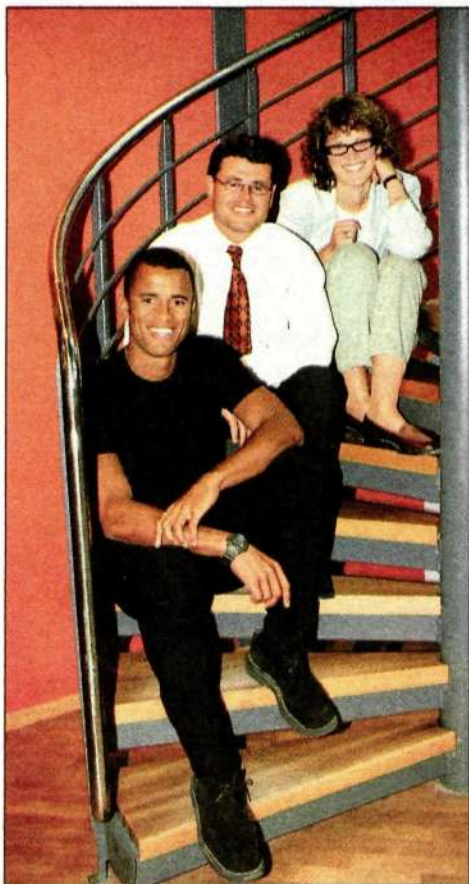
Epoc and all the other wireless standards. Oz's-Internet software expertise and user-friendliness, and Ericsson's know-how within telecommunications, wireless communications and marketing channels make an excellent combination," says Hákan Harrysson.

"We foresee iPulse on every terminal, with every user. We're talking about an incredibly large market," says Skuli Mogensen.

For the Internet and IP-based communication to really take off, the products must become more user-friendly, Gudjon Gudjonsson believes. He thinks the products, the IT companies and the entire IT industry must be given more human appeal.

"Soft values – like culture, identity and personality – are important. We hired a well-known Icelandic poet, for example. He sees things from a completely different angle than the engineers. The result is a creative combination that has been highly successful," says Gudjon Gudjonsson.

Mia Widell Örnung



Eyo Eyoma, product manager at iPulse, Harry Hákansson, head of the LINK company and Anna-Karin Rönnberg, marketing manager.

Photo: Mia Widell Örnung

iPulse commercially tested

Finnish operator PHP Lahti Telephone and Iceland Telecom, Síminn, will be the first operators in the world to offer the communications portal iPulse to its customers.

PHP will begin to offer the service in early November to about a thousand subscribers, in cooperation with its sister company, the HTK NetCommunication Internet company.

"It is strategically important for us to introduce the very latest technology, such as iPulse. iPulse will enable our users to create profiles indicating when, how and by whom they wish to be reached," says Heikki Mäkilä, development manager at PHP.

The PHP launch of iPulse will coincide with the launch of Ericsson's IP telephony system. This will allow the two applications to offer services in IP telephony and voice and text chatting, as well as the possibility of steering and forwarding calls to and from different phones.

"It is our job at Síminn Internet to track and follow the new developments world-wide and choose those that best suit the Icelandic Internet community to help our customers communicate in a convenient and efficient manner. For this reason, we have decided to test iPulse for our customers," says Gudmann Bragi Birgisson, head of Síminn Internet.

"iPulse opens new opportunities for us to brand and differentiate our many communi-

cations services including the basic Internet connection," he continued.

"We at Oz.com are very pleased that Síminn Internet will be among the first operators in the world to deploy iPulse. It certainly demonstrates their commitment to lead in the new communications era in a country that prides itself on having over 80 percent of its population online and mobile," says Skúli Valberg, Chief Operating Officer of Oz.com.

The interest among operators is strong. Several other test launches are planned for Europe, North America and Asia.

"iPulse has become the application for operators, combining 'instant messaging' with voice services in a secure environment," says Harry Hákansson, manager of Ericsson's interactive communications unit.

The idea behind iPulse is to simplify communication. iPulse enables users to determine how, when and by whom they want to be reached, and presents the same interface regardless of the type of terminal.

Mia Widell Örnung

mia.widell@lme.ericsson.se

COLUMN



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

Mobile benefits in Iceland

Order a taxi? No, thanks. I'll walk – my hotel is just a fifteen-minute walk from here. It will be nice to see a little of Reykjavik, I say as the friendly receptionist lifts the receiver to call a taxi.

It would have taken me fifteen minutes, if the wind had not been so strong. It was, of course, a perfectly normal wind force for Iceland, but by my standards it was too strong to be able to enjoy the walk. On top of that, it was raining, which it does half the time in Iceland. Not counting cloudy days. And it was cold – or mild, as an Icelander would probably have described it. The temperature normally varies between zero and twelve degrees, all year round.

I didn't walk far before giving up. I took out my little savior and a few minutes later, I was sitting in a warm, dry taxi.

IT IS IN SITUATIONS LIKE THIS that becomes obvious what a wonderful little accessory a mobile phone is. And it is also at times like this that it is easy to understand why so many people in the Nordic countries own one.

A recent Contact feature told the story of the development of IT and mobile telephony in the Nordic countries. The explanation often presented is that it is in small countries that innovative ideas are developed, where there is a high level of education, a positive corporate culture, a high standard of living, and a deregulated, competitive market. This is certainly the case.

But anyone who has visited Iceland would probably give a much more down-to-earth explanation. It has to be the weather.

Is there anyone who would not appreciate having a mobile phone when they have forgotten their key and are locked out in the freezing cold? And who wouldn't call a delayed friend and change the meeting place to a café instead of standing on a street corner in the pouring rain?

THE OTHER DAY I SAW an American talk show, in which the participants were horrified at people who stand in the middle of the street or in a foodstore and talk on mobile phones. Listening to discussions about postponed meetings or dinner arrangements is annoying, according to them.

Complaining about people using mobile phones in public places, might be alright if you live in a warmer climate, where it is possible to sit in the sun and wait for the person who is delayed. It is nice to relax for a while. And why call a stressed-out person and cause them even more stress.

Please don't get the impression that I don't like Iceland, its climate or the rest of the Nordic region for that matter. Nothing could be further from the truth. But I still need the proper clothes and a mobile phone.

Mia Widell Örnung

What use is a phone network, when everyone wants to surf?

The speed of change in telecommunications is breathtaking. It won't be long before telephone traffic is overtaken – in both volume and revenue terms – by Internet, data and multimedia services.

What's the use of a traditional circuit-switched network, designed for telephone services only, in this new environment?

Not a lot, you might think. Maybe you're already considering writing off your PSTN infrastructure completely, and replacing it with something new.

Don't throw your switches away.

Thankfully, you don't have to take that drastic course. Instead, you can integrate your existing

resources into a network that gives your customers a wealth of new possibilities.

It's all done using ENGINE: Ericsson's family of next-generation network solutions.

With ENGINE, you can reap benefits right away, by integrating circuit- and packet-switched services into a common core network. Your PSTN switches continue to provide local connectivity, and to control all the advanced telephony services you offer today – and will continue to offer in the future.

Today, Internet. Tomorrow, more stuff.

Meanwhile, the backbone network gives you all the scalable power you need to ramp up packet-

based services: Internet, IP-based multimedia, video on demand, whatever turns out to be the most popular offering. As time passes and the market grows, ENGINE lets you bring new services to an ever-wider customer base, with broadband connections all the way to their homes.

The ENGINE family includes core switches, telephony servers, multimedia gateways and access systems. All designed to integrate with your existing switches, whether you bought them from Ericsson or someone else.

ENGINE will power your network into an exciting, multi-service future.

As you'll discover, it can take you – and your customers – anywhere.



The right
engine can
take you
anywhere

The world shook as the tiger economies collapsed. The chain-effect of the Asian Crisis was triggered by the fall of...

Thailand

... but now the tide has turned.



In the same dutiful and methodical way that Thailand rebuilt its economy, these Buddhist monks restore a temple in Bangkok.

When the tiger economies of Southeast Asia collapsed two years ago, the entire financial world was shaken. The storm began in Thailand in July 1997. Now, however, there are many signs of economic recovery. Ericsson expects to achieve the same high level of sales in the year 2000 as in the year before the crisis.

New life in Thai economy after two years of crisis

When the Thai government was forced to unpeg the Baht and let the currency float on July 2, 1997, a wave of economic uncertainty was unleashed that has dominated Southeast Asia ever since. The value of the Baht against the US dollar was quickly cut in half, and since the country's booming economy was largely fueled by foreign loans, many borrowers saw their burdens doubled. Businesses and the banks were caught in a crisis, and consumers cut their spending drastically.

Economic recovery

Today there are many signs of economic recovery in Thailand, which is the second largest Southeast Asian economy after Singapore. Foreign reserves are currently at a comfortable level, and the balance of trade is positive. Inflation is low, and the Thai government expects economic growth for 1999 to reach 3.5 percent.

The country's major headache is the banking sector. Half of the banks' loan portfolios are debts that may never be repaid. These non-performing loans are now valued at USD 69 billion, meaning that borrowers who do pay them back will also pay higher interest.

"The banks are still very restrictive in their lending policy. This affects all businesses, especially small and medium-size companies," says Jan Kemvall, who has been president of Ericsson Thailand since 1996.

"Even if economic improvements are going slowly, the curves are pointing in the right direction. Thailand has been following the recommendations of the IMF (International Monetary Fund) and has been able to reverse the nega-



Jan Kemvall

tive trend without major political or social instability," continues Jan Kemvall. The telecom sector is one growth area where investments are now increasing. Ericsson expects to achieve sales in 2000 that will equal or exceed the high level of sales before the crisis. At that time, in 1997, Ericsson's sales in Thailand amounted to USD 1.3 billion.

"Mobile telephone sales will be three to four times higher than in 1998," notes Monthon Chumnong, Vice President, Mobile Phone Division, in Thailand. "This increase shows that economic conditions for consumers are improving. Ericsson's share of this rapidly growing market is now 16 percent, and by 2005, we expect to have 25 percent of the market."

Sales are picking up

Mobile Systems' sales are also picking up. Ericsson recently received a GSM order valued at USD 55 million from cellular operator Advanced Info Service Public Co. (AIS). Additional contracts are expected early next year.

"AIS is Thailand's leading cellular operator, with 1.1 million subscribers in its GSM and NMT networks, and also weathered the storm better than any other operator," says Ratana Kraivichien, Vice President, Major Account (AIS and Laos Telecom).

Ericsson is helping AIS with such tasks as migrating from NMT to GSM. AIS intends to introduce electronic commerce and WAP. Discussions are also taking place regarding GPRS test systems.

Slumbering datacom market

"Given the positive indicators in the Thai economy, I expect Enterprise Solutions' sales to accelerate in the year 2000," says Jan Kemvall. "This also applies to the sluggish datacom market."

State-owned operator CAT (Communications Authority of Thailand) selected Ericsson last year to install the country's first network for voice over IP, which will allow users to make low-cost international calls over the Internet. Thailand's datacom market has not yet woken up, however.

The market for fixed telephony is expected to gain new momentum with the privatization of state-owned operators TOT (Telephone Organization of Thailand) and CAT, with which Ericsson has been working closely for a long time. Privatization of these companies is expected to begin in 2001, at which time authorities believe market conditions for a sale will be more favorable.

Nils Sundström

Increased traffic on highways and on the mobile network. Ericsson has experienced a strong increase in mobile telephone sales in Thailand in 1999. The T18 and A1018 are currently the most popular models, and the T28 will soon be launched. Ericsson is also still selling the NF 238 NMT model.



Monthon Chumnong



Ratana Kraivichien



There has been an upward turn in the Thai economy. Many small companies have opened and private consumption has increased. Bangkok's street stalls sell most items – food, clothes, home electronics, and so on. Photo: Lars Åström

New business climate is source of hope

Empty office buildings and huge construction sites where work has long since stopped. Visitors to Bangkok are constantly reminded of the enormous growth that stopped abruptly two years ago.

It is estimated that there are a total of 600,000 more or less unfinished building in Thailand dating from the time before the crisis. Many of the office buildings that were completed are now being converted to apartments.

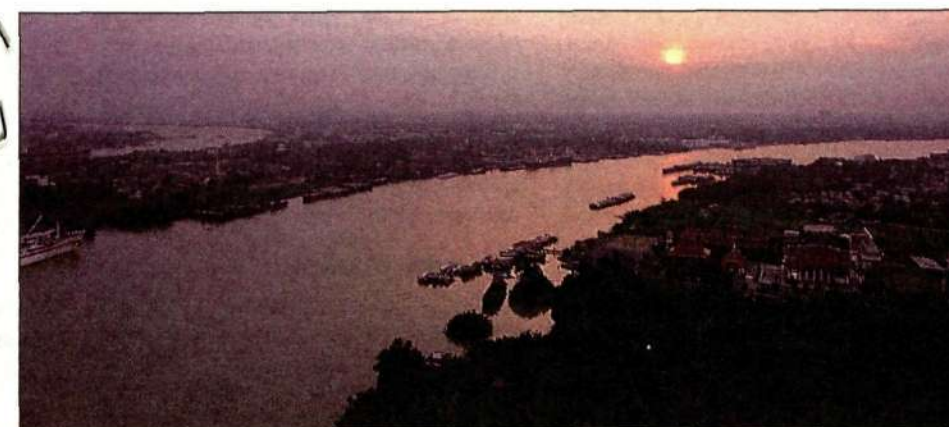
"We have suffered two tough years," says Amnuaysak Thoonsiri, Vice President, Corporate Marketing and Communications office, at Ericsson in Thailand. "But we have learned something from the crisis. Today there is a sounder business climate in Thailand. Companies are working more efficiently and can contribute to the country's growth in another way."



Amnuaysak Thoonsiri

"Many investors are still the same as those before the crisis, but a gradual change is evident in how they do business," continues Amnuaysak Thoonsiri. "In the telecom sector, competition is now increasing at the same time as a new generation of technology is being introduced that affects the entire industry. Our task is to identify which areas are growing and focus on them. This applies particularly to cellular systems, electronic commerce and datacom services."

The crisis has also forced Ericsson to weed out languishing projects. From a total of more than 1,000 employees, personnel has been reduced to the current level of 600 persons. This reduction has taken place primarily in units working with installation, testing, support and administration. "We still need to work more efficiently. We will outsource more work, while adding new exper-



Dawn over the Cha Praya River in Bangkok – and for Thailand's economy.

in such areas as IP," notes Jan Kemvall, president of Ericsson Thailand, who emphasized that the cut-backs have been painful for the company. "The fact that there are no trade unions here does not make staff reductions easier, compared

with European countries. On the contrary. Employers have a great social responsibility in Thailand," says Jan Kemvall.

Nils Sundström

Telemarketing identifies new business customers

Ericsson Thailand is using telemarketing to increase the sales of services. With a personalized marketing campaign, Ericsson contacted Thailand's 300 largest companies during the autumn. The first orders are already on the books.

"We see this method as a radar that allows us to scan the market, identify prospective customers and maintain contacts," says Anders Edberg at Ericsson Business Consulting in Thailand.

Ericsson's use of telemarketing to provide product information and sell consulting services is not exactly a conventional method. In Thailand, such work methods are very unusual.

Ericsson Business Consulting, which began operations in Thailand last year, got off to a slow start, due to the economic crisis. All indications point to excellent prospects next year, however. In an effort to reach out to companies and show how they can operate more efficiently, as well as increase their customer base and better leverage their telecom investments, Ericsson Business Consulting is conducting a campaign aimed at IT managers in the 300 largest companies.

The objective for these telephone contacts is to set up a meeting in person. In addition, more customer seminars are planned on such topics as call center solutions and unified messaging.



Anders Edberg

"Results thus far have exceeded our expectations" relates Anders Edberg. "The campaign started in October, and of the 350 contacts that we have received, sometimes including several at the same company, 91 percent were interested in some form of contact, while 21 percent wanted to set up a meeting directly. In purely business terms, I expect to win 20 to 30 contracts next year as a result of the campaign. That would mean a significant boost for us."

In order to identify IT managers in the 300 companies and to generate interest, Business Consulting enlisted a marketing company. "We didn't have the necessary skills for telemarketing within Ericsson. We therefore enlisted external experts for the job and gave them training about Ericsson and our solutions and product offering," says Anders Edberg, who is convinced that other Ericsson companies would be able to achieve the same excellent results by using similar marketing methods to recruit new customers.

"If you look at the cost per hour, it is more cost-effective than if we were to let our experts actively seek new customers on such a broad front," concludes Anders Edberg.

Nils Sundström

WAP gives Ericsson the edge

Build your own WAP application or give us your ideas about how WAP technology can be used. This was the challenge put by Ericsson in Thailand to all university students in the country in a gigantic contest extending to mid-December.



Hanna Fisk and Kritsada Ariyajanya

The aim of the contest is to increase awareness of WAP and to promote Ericsson as the driving force behind the new global standard for data communication via wireless networks.

"Right now, we are conducting a road show for the five largest universities to provide information about WAP and what can be done with the technology," says Kritsada Ariyajanya, who together with Hanna Fisk is organizing the WAP contest.

Ericsson is giving away T10 phones and 10,000 Baht (about SEK 2,000) to those who create the best WAP applications or submit the best WAP ideas. Winners will also receive a diploma from Ericsson – and a chance for a job, since the objective for the contest is to recruit the best WAP programmers.

Information about the WAP contest is available on one of Thailand's largest Web portals – Siam2you. Contest participants receive a CD-ROM containing the WAP Development Kit, which includes simulation software against which they can test WAP applications written in WML (Wireless Markup Language).

"Contributions are judged from different perspectives, including which are the most innovative or user-friendly or are most beneficial for Thai society. Examples of applications are restaurant guides and applications that allow mobile phone users to order tickets or view timetables," says Hanna Fisk.

A number of other projects are in progress in Thailand and other Asian countries to position Ericsson in the wireless datacom market. Several partnerships with content providers can be expected to produce WAP applications for the Asian market. There are also plans to start a WAP lab for third-party developers in Thailand modeled on a similar lab in Malaysia.

Nils Sundström

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GLOBAL LEARNING SPACE
education on demand

These are exciting times in Macao. On December 20, this Portuguese enclave will be reunited with China. This is the last vestige of Europe still remaining in the heart of the Far East. Ericsson has long been Macao's sole telecom supplier. Tough competition in the datacom field is now expected in the future.

Macao has long served as a bridge between East and West. Its architecture stands in stark contrast to that in the financial center of Hong Kong, only 65 kilometers to the east. Its pastel-colored villas, stucco houses, and churches are interspersed with traditional Chinese buildings and Buddhist temples. Pictured below is a floating casino. Gambling accounts for a large portion of Macao's earnings.



New era for

There is a distinct Mediterranean feeling surrounding the mouth of the Pearl River where it enters the South China Sea. This is where Macao, a tiny Portuguese enclave only 20 square kilometers in size, is located. Its almost 450,000 inhabitants live in densely populated conditions, despite having reclaimed land from the sea. The many pastel-colored, colonial-style houses are reminiscent of a grand past. Yet, there is also a clear Chinese influence, much more apparent than in the financial center of Hong Kong, 65 kilometers to the east.

"This transfer to China will not be as dramatic as the handover of Hong Kong two years ago. Macao has always maintained closer relations with China. For example, it's easy to walk from the center of town, on the mainland side, over the border into China," says Rupert Hung, Ericsson's sales representative in Macao.



Rupert Hung

Chinese authorities have granted guarantees similar to those granted to Hong Kong, allowing Macao to retain its economic system after the transfer. Major changes within the telecom industry are expected, however.

Currently, there is only one telecom operator in Macao - Companhia de Telecomunicações de Macao (CTM). Their license expires at the end of the year 2001, and new mobile telephony licenses are also expected next year (2000).

Ownership structure

It is still unclear whether the Chinese takeover will influence the ownership structure of CTM. Currently, Cable & Wireless holds a controlling interest, with 51-percent ownership. Of the remaining shares, Marconi (Portugal Telecom) owns 28 percent, the Chinese holding company CITIC owns 20 percent, while the government owns a symbolic one percent. Speculation suggests that Chinese ownership will increase significantly in the future.

Uncertainty surrounding the future own-



Mao badges and a Portuguese emblem.



Above: A sign for one of the many mobile phone stores in Macao. Ericsson's sales representative in Macao, Robert Hung, believes that this autumn's new phones, the T18sc and the A1018sc will become popular there. Using these phones, it is possible to use Chinese characters for such functions as SMS. Below: Smartening up prior to the transfer of the Portuguese enclave to China. Photo: Lars Åström



historic enclave in Far East

ership structure has also contributed to a situation where CTM has not taken the steps necessary to ensure that either their local telephone network or the TACS network is Y2K compliant. Nor have a whole host of companies upgraded their PBX switches.

"We've done what we can to get them to upgrade their networks. I'm optimistic about our business opportunities in Macao, regardless of who assumes control," says Rupert Hung.

Sole telecom supplier

"For a long time, we've been the sole telecom supplier to Macao for their TACS and GSM 900 wireless systems, as well as for switches in their wireline system. At the end of this year, CTM will be introducing a GSM 1800 network, for which we are also the system supplier," says Rupert Hung.

This year, Ericsson anticipates sales of USD 6 million in Macao, an increase of more than twenty percent compared with the previous year. Competition, in what was once exclusively Ericsson territory, will now also be on

the increase. Alcatel has been involved on the transmission side for a number of years, while Cisco dominates the datacom arena. At present, there are 20,000 Internet users in Macao, a number that is growing rapidly.

Other markets of importance

"We've got to show that Ericsson is a datacom supplier to be reckoned with. Supplying the Tigris Internet access server to the mobile operator SmarTone in Hong Kong, was an important reference order for us. That could be of great importance in other Asian markets, including Macao," says Rupert Hung.

"I'm also optimistic about the success of this autumn's new mobile phones - the T18sc and A1018sc - which are the first models from Ericsson that allow callers to use Chinese characters to send SMS messages, for example. That bodes well for the introduction of wireless e-commerce and WAP in Macao in the next year."

Nils Sundström
nil.sundstrom@lme.ericsson.se



MACAO

Macao has been a Portuguese trading center since 1553, a Portuguese colony since 1887, and is currently a Portuguese administrative entity. Control of Macao is scheduled to be handed over to China on December 20, 1999. Geographically, it is only 17 square kilometers in size, most of which takes the form of a five kilometer long piece of mainland coastline, together with two adjacent islands.

Macao has long lain in the shadow of Hong Kong, a financial center upon which Macao's welfare is entirely dependent. The Macao economy is based largely on tourism and casino operations. Of the almost eight million annual tourists, a majority come to Macao on one-day tours from Hong Kong.

Number of inhabitants: 450,000, of whom roughly 5 percent are Portuguese and other non-Chinese people.
Telephone subscribers: 100,000 GSM users, 5,000 TACS users, and 170,000 fixed telephone lines.

Temporary staff of use directly

Make temporary employees from staffing agencies undergo an intensive product and company-orientation program to ensure that they make a useful contribution right from the first day. This was the recommendation forwarded by Marja, Ronny and Maria, after they had completed a management-development project at Ericsson's plant in Nynäshamn, Sweden.

Staffing agencies play an obvious role in today's labor market. They are probably indispensable if a company that carries no inventories is to satisfy rapid changes in demand. The problem associated with temporary employees, however, is that they invariably need a certain period of training. This is particularly true for assignments requiring advanced technical skills, such as soldering and testing in an electronics company of the type represented by the Ericsson plant in Nynäshamn, which manufactures antenna-related products for the radio base-stations used in mobile systems.

"We noticed a considerable productivity drop every time we recruited temporary personnel," explains Maria Sedhav who, together with

Marja Stokki and Ronny Hedman, has spent the past year formulating a proposal, whereby the skills problem is resolved by means of an intensive training course for temporary employees.

"Our model, which we call KompEra, consists of both direct training in the actual product and softer knowledge about Ericsson the company, which includes the corporate culture. We compared traditional training programs with our new alternative and we were able to show that the new structure offers major savings in terms of both time and money."

Hired on long-term contracts

A total of approximately 25 percent of the workforce at the Nynäshamn



Marja Stokki, Maria Sedhav and Ronny Hedman, who solved the problem of enabling temporary employees to make a useful input from the very first day.

plant are temporary employees, although the percentage varies sharply depending on demand. At most, contract personnel from staffing agencies have accounted for slightly more than 300 of the plant's nearly 1,000 employees. Most of the temps are hired from Manpower, which even has its own office at the plant, while others come from such agencies as Standard Radio. The plant currently has approximately 100 employees on short-term contracts.

It all started two years ago, when increased customer pressure resulted in a need for more capacity. After combing the local catchment area for suitable candidates, a solution based on temporary personnel was selected. However, the plant had no really efficient model for accommodating the insurgence of new faces. In most cases, team managers had to take care of the new arrivals, arrange training in soldering techniques and then assign experienced operators to gradually teach them the necessary skills. This was a drawn-out process

that took several months, during which many permanent operators had to spend time supporting the temporary workers. Everyone knew this was the wrong method, but not how wrong it was.

The new project identified the weaknesses and proposed a better solution, which includes a demand from Ericsson that temporary employees possess certain skills before they start to work for the company. Ericsson itself could sell training in these skills to the staffing agencies. The basic requirements are that the temporary personnel have approved skills in soldering and knowledge of the network. They must also undergo a total of 20 days training in systems knowledge, fine-tuning, monitoring and calibration.

Training agreement

In formulating the proposal, the project group received the help from the plant's personnel-training staff. Newly hired personnel are to be offered training in accordance with an

agreement concluded between Ericsson and Manpower.

"The main rule is that only technicians will be employed in production activities," says Holde Hedman, information manager at the plant. "This is a highly skilled craft and new products are introduced continuously."

"The new training program is good for the staffing agencies and it is also good for our own personnel," plant manager Håkan Sundqvist explains. "We intend to stick to this policy in the future, since it results in time savings and is thus in line with all of our improvement work."

Håkan also emphasizes the importance of the training in "soft" skills, whose aim is to make temporary employees feel affinity with the plant, so that they become part of what he calls the Nynäshamn spirit.

"This bonds all of us here together, which is of vital importance if the temporary employees are to become part of a strong team."

Lars Cederquist

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FROM THE PAST

Christmas present tip for telephone fans

Now you have the chance to really revel in Ericsson's old telephones thanks to a new video that presents almost all models from 1878 up to the mid-1920s. It is a real joy to feast your eyes on these beautiful, well-designed models, which are fully functional to this day.

The video was produced by the Swedish Association for the Collectors of Historical Telephones (STFS) on the initiative of Kjell Arvidsson, who was formerly an Ericsson employee in Australia. Henrik Lundin, who was secretary of the STFS from 1994 to 1999, managed and implemented the project.

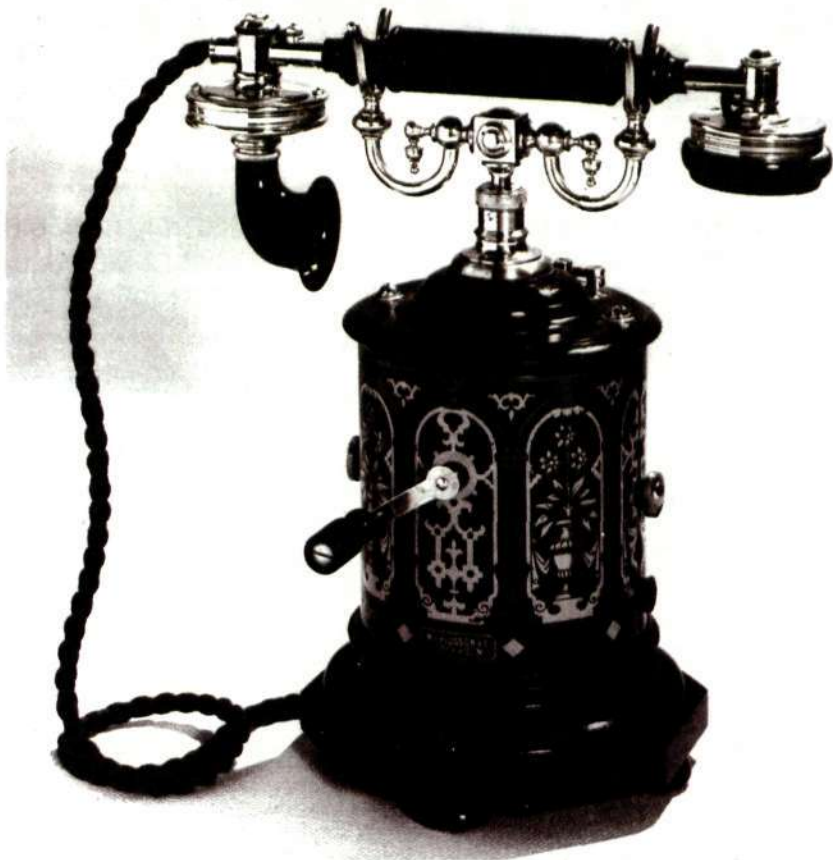
The 30-minute video, the cover of which is adorned by "Taxen," one of Ericsson's best-known phones, is available in both English and Swedish versions. More than 70 phones are presented and these were mainly taken from the unique collections of the Telecommunications Museum in Stockholm. Some private collections also contributed rare phones.

The presentations are technical, but they also provide interesting information about customers and the society of the time. The film begins with two magnetic telephones, LM Ericsson's first phones, from 1878, which were produced until 1882. These are followed by wall and table phones in chronological order, as well as different kinds of special models.

Clear source references are provided and these include LM Ericsson's annual catalog.

One of the telephones is the 1901 anniversary model, which was launched in celebration of Ericsson's 25th anniversary. This was one of the last models to be created while Lars Magnus Ericsson himself was still playing an active role in the company.

In the middle of the film, the viewers are taken to LM Ericsson's famous memorial room, which was completed in 1903 after two years of construction work. It was located in central Stockholm. After Ericsson moved its head office to Midsommarkransen in southern Stockholm, the



This typical phone from 1893 was commonly known as, "The Coffee Mill." It is one of 70 different phone models presented in the video of telephones manufactured by LM Ericsson 1878-1926.

room was donated to the City of Stockholm Museum in 1943. In 1976, it was moved to the new Telecommunications Museum in the Norra Djurgården district of Stockholm.

The film concludes with the presentation of the two-millionth phone from Ericsson, a "Tax," manufactured on February 8, 1926.

This fascinating video costs SEK 255, includ-

ing post and package. It can be ordered by e-mail from henrik.r.lundin@telia.com or by phone on +46-8-754 33 47. State whether you require the Swedish version (PAL) or the English version (NTSC or PAL).

Thord Andersson

thord.andersson@ebc.ericsson.se

NOTEWORTHY



Technology for connoisseurs. James Bond's Q appreciated the R380.

Q praises super phone

► Ericsson's R380 WAP phone has received the Best of What's New 1999 award from the American Popular Science Magazine. The mobile phone is also featured on the cover of the magazine's December issue and was presented at a recent press conference held by the Popular Science Magazine in New York.

The actor Desmond Llewellyn, Q in the James Bond movies, thought that the phone was super when he visited Ericsson's stand at the recent Comdex trade exhibition in Las Vegas. The R380 is the world's first phone using the Epoc operating system. When the user opens the flap, a display appears that is almost as large as the entire phone.



Bill Gates at Ericsson stand.

VIP visitor at Ericsson stand

► There was a large amount of interest in the Ericsson stand at the recent Comdex trade exhibition in the U.S. — particularly from Bill Gates, who dropped by to learn more about Ericsson's wireless headset with Bluetooth.

Spanish million for Telefónica

► The Spanish operator Telefónica is one of the largest distributors of MD110 PBXs. With its Ibercom service, which is more than 90 percent based on the MD110, Telefónica has around 50 percent of the market for large and medium-size PBXs in Spain. Telefónica has just delivered its millionth MD110 line within the Ibercom framework. This is being publicized in a major advertising campaign in the industry and daily press, in which the entire program of Ericsson enterprise solutions is being presented. Ericsson and Telefónica are jointly responsible for the campaign.



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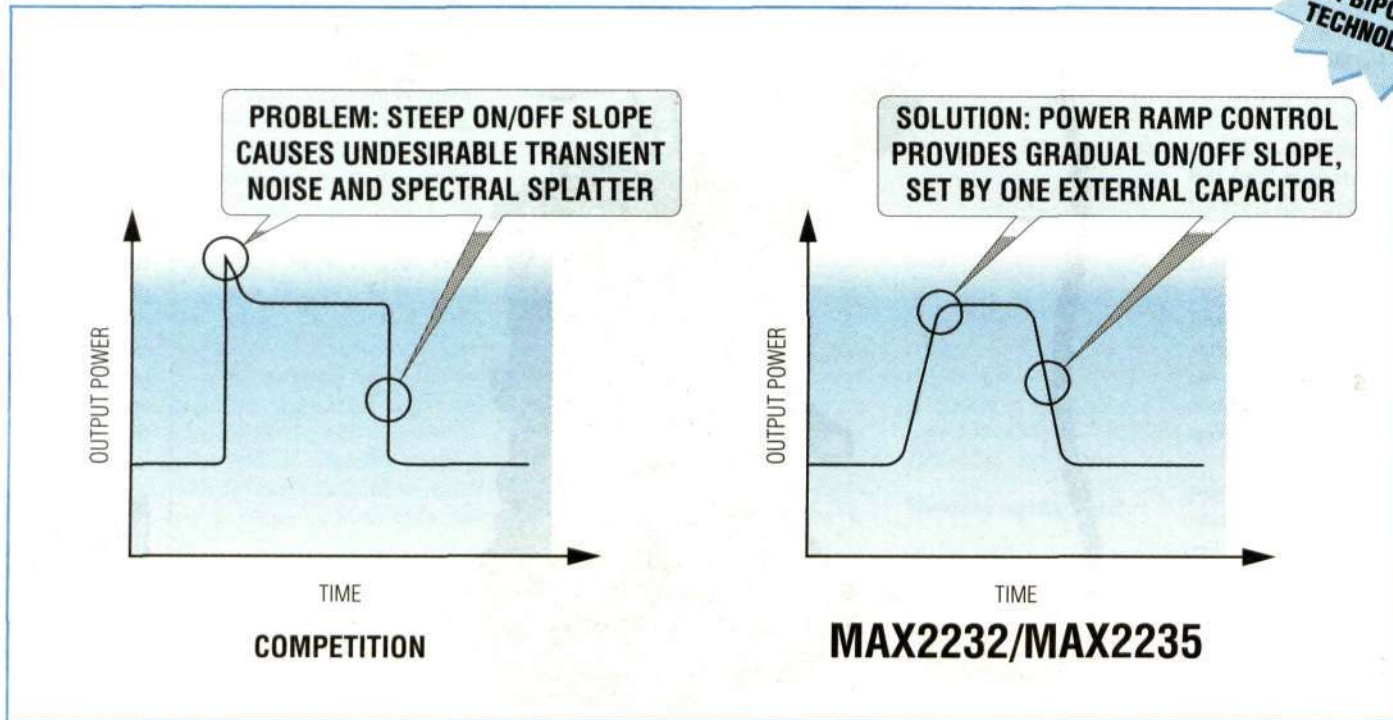
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MAX2235	+30	26	37 (Analog)	47	V _{CC} = 3.6V, 836MHz	20-pin TSSOP-EP
MAX2232	+24	24	24 (Analog)	44	V _{CC} = 3.6V, 915MHz	16-pin PQSOP
MAX2233	+24	24	16 (Digital)	44	V _{CC} = 3.6V, 915MHz	16-pin PQSOP



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AT ERICSSON

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Contact No. 20 1999

Updated November 29

ERICSSON ESPANA S.A.

Systems Management within BMOG we work with mobile applications for mobiletelephony systems (UMTS/GSM900, GSM1800, GSM1900, GSM1900/D-AMPS, etc.) in the CSS (Circuit Switching Systems) Product Unit. We are looking for professionals to work in a number of challenging areas. The areas are:

Standardisation support within projects

● Standardisation work required in order to establish Ericsson's image as driver for UMTS. Work on areas such as network architecture, numbering, security, etc. is required. The work encompasses: writing contributions, reviewing other companies' contributions and, in general, back-end support to delegates.

Multi-task profiles

● Due to the wide variety of tasks carried out at the Systems Department, candidates are required to have proven experience and capacity in different fields, since they may be required to perform different tasks, simultaneously depending on priority and experience.

Service Management

● GSM database products store ever increasing amounts of subscription-related information. Market requirements, network redundancy feature and improved platforms provide for nodes with millions of subscribers. Our work aims at improving service management, especially from the subscription management viewpoint, from the network elements to the Customer Administration Systems, CASs. Knowledge in CORBA will be also valued.

Security

● Specific knowledge of network security-related aspects, related standards as well as solutions will be highly appreciated. Knowledge about AAA, Authentication, Authorisation and accounting as well as PKI, Personal Key Infrastructure will be valued. Numbering, naming and addressing.

Platform Management

(Scalable IO, AXE OPEN, New System Platform)

● EEM is currently responsible for the General Databases in GSM: HLR, AUC, EIR, ILR, FNR/MNP. The work is mainly focused in platforms provided by UAB, but also other platforms are considered. This position implies contacts with UAB and other Ericsson organisations.

Network dimensioning and Characteristics

● Network/node characteristics and dimensioning, traffic modelling, investigations, etc.

Integrator

● In this position you devise network solutions by using Ericsson as well as external products. You also push for the solution to be implemented and working in the real world. ETP knowledge and/or experience with 3rd party products integration will be appreciated. You will be also required to work on prototyping activities in order to validate concepts and solutions. Ability to benchmark is also a plus.

All the working activities aim at leading and ensuring the evolution and competitiveness of the Ericsson GSM Systems (UMTS GSM900, GSM1800, GSM1900, GSM1900/D-AMPS, etc.). This means that most of the work is developed for 3G Systems (UMTS).

Some of the activities this work encompasses are listed below: System architecture studies and investigations. Early design project participation (scenario studies, pre-prestudies, prestudies). Network, system, and platform strategies. SPM support. System Management. Expert support to product development. Technical coordination. Tender and Market Support. Other system-related activities.

Applicants should have an engineering degree and at least 3-4 year proven working experience in telecommunications, preferably in the areas of interest. Experience in system-level technical development or testing is preferred.

Desired personal abilities are: interest to work both in groups and independently, initiative-taking and self-confidence, being communicative, availability for short-time travels abroad and co-ordinating and leading skills.

Contact: José Beny López, +34 91 339 24 83, emepiro@madrid.ericsson.se

ERICSSON TELECOMMUNICATIE B.V.

Manager Cost & Resource Planning

The former VAS organisation has been transformed to the new Product Unit Service Capability Servers and Applications (SCSA) per November 1st, 1999. Within this SCSA the IN Provisioning Unit is established, which consists of several design units all over the world. The IN Provisioning unit will be responsible for product development of Intelligent Network platforms and Service Applications targeting today's IN solutions in networks based on GSM, PDC and wireline standards.

Our products are installed at more than 130 customer sites and we forecast strong growth for the coming years mainly driven by subscriber growth. The management team of the IN Provisioning organisation will be hosted by ETM in the Netherlands. Product development will be executed in several Design Centres around the world. Our main challenges will be order fulfilment and consolidation of the product portfolio into a manageable set of platform and service application solutions.

● The Manager Cost & Resource Planning will be a member of the IN Provisioning Management Team and will report directly to the General Manager of the unit. The work will be performed in close co-operation with the local controllers in the design centres.

The Manager Cost & Resource Planning is responsible for: Preparing the IN Provisioning rolling forecast figures. Analysing the actual figures. Co-ordinating the financial data of the design units. Aligning the project costs and line costs for the different levels of the IN Provisioning organisational parts. Aligning financial data with PU SCSA. The planning process related to the resources working within and for IN Provisioning. Advise the Management Team on availability and required resource capacity. Co-ordinating the standard financial reports. Improvements for all financial and planning related resources processes. Running the international IN Provisioning controllers network. Participate in the PU controllers team.

Several years of experience in provisioning related controllers work. Capability to control improvement projects. Excellent background in financial and resource planning related work within Ericsson.

Contact: Alfo Melisse, competence manager, +46 161 24 94 63, mobile +46 6 557 912 21, alfo.melisse@etm.ericsson.se, Bas Oomen, manager Finance & Infrastructure, +46 161 24 97 75, bas.oomen@etm.ericsson.se. Application: Manager Cost & Resource Planning.

Product Development Project Manager

● The Product Development Project Manager is responsible for planning and control of several projects and for seeing to it that the goals set regard to time, quality, cost and characteristics are reached.

Activities are: Execution responsibility for Mobile & Fixed IN Platform solutions. Define yearly budget and resource frames based on product plans. Responsible for deployment of main project assignments. Maintain and execute IN project roadmap. Communication to customer (e.g. project reporting) and support contract issues. Provisioning ordering to related development outside PU SCSA. Coordination and handover to PU SCSA/Operations. Alignment with World Class Provisioning principles. Representative in related steering groups of associated Product Units. Progress tracking and reporting of all IN projects. Implementation of TTM, methods, processes and tools. Organising steering groups and tollgate assessments.

Several years of experience in project and provisioning management is required. You are able to control more than one project efficiently, even when these projects are executed in geographical distributed locations. A good knowledge of Ericsson (AXE) design projects and/or service design and IN technology is preferred.

Application: Product Development Project Manager.

Manager Operational Development

● Product development will be executed in several Design Centres around the world. Our main challenges will be order fulfilment and consolidation of the product portfolio into a manageable set of platform and service application solutions.

The Manager Operational Development will be a member of the IN Provisioning Management Team and will report directly to the General Manager of the unit. He/she is responsible for: The deployment of the TTM process in the IN Provisioning organisation. The establishment and follow up of performance measurement of the design centres in the area. Initiating and driving improvement projects in the area. Supporting the implementation of the IN Provisioning organisation.

Several years of experience in project management. Knowledge of process and performance management. Communicator, Result oriented. Pragmatic approach.

Contact: Alfo Melisse, competence manager, +46 161 249463, mob.+46 6 557 91221, alfo.melisse@etm.ericsson.se, Arno de Kok, General Manager IN Provisioning, +46 161 249520, arno.de.kok@etm.ericsson.se. Application: Manager Operational Development.

Manager Project Office IN Provisioning

● The Manager of the IN provisioning Project Office is responsible for the organisation, planning and control of several projects and for seeing to it that the goals set in regard to time, quality, cost and characteristics are reached.

Activities are: Execution responsibility for Mobile & Fixed IN Platform solutions. Establish common processes and workflow of IN Provisioning. Define yearly budget and resource frames based on product plans. Maintain and execute IN project roadmap. Communication to customer (e.g. project reporting) and support contract issues. Provisioning ordering to related development outside PU SCSA. Co-ordination and handover to PU SCSA/Operations. Alignment with World Class Provisioning principles. Representative in related steering groups of associated Product Units. Progress tracking and reporting of all IN projects. Implementation of TTM, methods, processes and tools. Organising steering groups and tollgate assessments. Managerial skills, communicator, negotiator, people manager.

Several years of experience in project and provisioning management is required. You are able to control more than one project efficiently, even when these projects are executed in geographical distributed locations.

Contact: Alfo Melisse, competence manager, +46 161 24 94 63, mobile +46 6 557 912 21, alfo.melisse@etm.ericsson.se, Arno de Kok, general manager IN provisioning, +46 161 24 95 20, mobile +46 6 513 854 59, arno.de.kok@etm.ericsson.se. Application: Manager Project Office IN Provisioning.

System Managers

● The System Manager is responsible for: Short and longer term IN platform and IN services technical solution strategy. Providing technical support for product management and influence strategic product management discussions. Team-leader of the virtual system management team. Initiating and performing system studies involving system managers from the team where necessary. Steering development projects with system knowledge. Participating in new system development studies. Tracking major technical developments within the Ericsson organisation and develop as well as communicate vision (in terms of ready-to-use technologies and concepts). Establishing a close contact to other technical committees/organisations involved in current and future technical development of the system. Driving system improvements in co-operation with Strategic Product Management. Chairing technical review bodies.

Several years of experience in IN related System Management work. A broad knowledge of IN Platform and IN Services is required as well as a broad technical interest. You should be capable of organising your own work by setting your own goals and reach results. Proactive.

Contact: Rob van Offen, competence manager, +46 161 24 24 86, rob.van.offen@etm.ericsson.se. Application: System Managers

Transfer & Change Manager

● The Transfer & Change Manager is responsible for management of several transfer projects. These transfer projects will be used to transfer competence and products between the several product development units. The main objective is to reduce the amount of product development units in the area. The Transfer & Change Manager will report to the Manager of the Project Office. The Transfer & Change Manager is responsible for management of several transfer projects. These transfer projects will be used to transfer competence and products between the several product development

units. The main objective is to reduce the amount of product development units in the area. The Transfer & Change Manager will report to the Manager of the Project Office.

Skills: Must have a good political awareness of the consequences and the behaviour of Ericsson design centres in order to establish an efficient and qualitative correct competence transfer and handover process between the design centres. Must be a negotiator. Must be a change manager. Able to establish unambiguous agreements. Exercise tight control on progress and quality of transfers. Risk management. Take efficient corrective measures. People Management skills. Very powerful personality.

Several years of experience in project and provisioning management is required. You are able to control more than one project efficiently, even when these projects are executed in geographical distributed locations. A good knowledge of Ericsson (AXE) design projects and/or service design and IN technology is preferred. This special assignment is valid from November 1st, 1999 and is expected to end in December 2000.

Contact: Alfo Melisse, competence manager, +46 161 24 94 63, mobile +46 6 557 912 21, alfo.melisse@etm.ericsson.se, Jos Herps, manager Project Office, +46 161 24 28 92, mobile +46 6 224 160 53, jos.herps@etm.ericsson.se. Application: Transfer & Change Manager.

Manager Product Mgmt & System Mgmt

● As Manager PM & SM you will be responsible for: Identification of the product portfolio. Budget and cost structure of the IN Provisioning organisation. Managing and setting up a product management and system management organisation over the different design centres. Handling of customisation requests. Getting a clear view on future products and product development. Responsible for the product management process and coaching of product managers. Provide input for pricing, value argumentation/benefits, marketing guidelines.

Several years of management experience. Knowledge of IN products is required.

Contact: Rob van Offen, competence manager, +46 161 242 486, rob.van.offen@etm.ericsson.se, Walter Mol, +46 161 242 285, mobile +46 6 53743881, walter.mol@etm.ericsson.se. Application: Manager Product Mgmt & System Mgmt, Ericsson Radio Systems AB, Anna Sandström SG/ERA/LU/HR, 164 80 Sthlm, anna.sandstrom@era.ericsson.se.

ERICSSON AG, SWITZERLAND

Make yourself heard. The UMTS challenge race has started in Switzerland where 4 licenses will be issued during 2000 for commercial launch 2002. Ericsson AG will launch a centralised UMTS team that will support sales efforts towards New Operators and the existing mobile account, Swisscom. Open positions within the UMTS team are:

UMTS Solutions Manager

● Prepare, write and present UMTS total solution in close co-operation with Core 3 team. Adapt presentations to customer-specific needs.

Price manager

● Calculate prices for various consulting models with support from other Ericsson resources. Define the bid price with support from other Ericsson resources/game theory. Define prices of network elements. Perform offer pricing.

Product Managers core, radio access or network management

● Areas of activities: Co-operate with client to identify technical support needs. Specify technical requirements and specifications. Present technical solution to client with Account Manager. Manage applications / service development. Collecting technical resources from other parts of Ericsson. Bring their expertise and know-how as core inputs.

We believe you have a degree from University or Technical College. Minimum 5 years of Solutions & Product Management within Ericsson in the field of Cellular network development. Awareness of impending Cellular technologies and its impact upon today's existing infrastructure and future business. The ability to take an overall view, analyse situations, identify problems and develop solutions. Ability to work under pressure, independent and well organised. Fluency in English, both written and spoken. German working knowledge desirable.

Application: Ericsson AG, Mrs Elisabetha Ledermüller, Ruchstuckstrasse 21, CH-Brüttsellen, Switzerland

ERICSSON IRELAND

Business Controller

To meet the challenges of new business opportunities within our Network Operator Solutions Centre (NOSC) we are currently reorganising our Finance Support Unit and a vacancy has arisen for a Business Controller.

NOSC is one of Ericsson's best performing development units. Located in Athlone it employs 350 engineers and has corporate responsibility for units in Europe and Australia. Currently we are responsible for selling and marketing software management applications to a value of MIEP 40 and the provision of software products with a market value of

approximately MIEP 150. To meet the challenges of this new business we are reorganising our Finance Support Unit and it will comprise of; Business Controller, Financial accountant, Administrative assistant. The following position is to be filled:

Business Controller

● We need someone with proven business acumen to continue to support the organisation to develop profitable solutions in the market. As a member of the NOSC management team you will be responsible for financial systems, which includes: Profit and Loss accounts, budgets, forecasts and resource management. You will also initiate and monitor major financial change projects within the division. These include the implementation of SAP/R3 and a web based system for distribution of financial information. Your skill in influencing staff as well as senior managers is essential. Interfacing with corporate financial functions in Sweden you will need a thorough understanding of the consolidation of a world wide distributed operation. Some limited international travel will be required.

You will be a self-starter with drive, energy and commitment. You will be enthusiastic with a proven track record of success in international operations. A University degree in Business Administration and ACCA approval are required.

Contact latest 991217: Michael McGann Competence and Human Resources Manager, Ericsson Systems Expertise Ltd., Ericsson Software Centre, Athlone, Co. Westmeath, Ireland, Michael.McGann@ericsson.com.

ERICSSON GMBH, DÜSSELDORF, GERMANY

For our Global Account Deutsche Telekom AG we need a

Customer Solution Manager

● You will lead business development activities in UMTS, 2G and 3G Applications as well as mobile terminals among the global account. In order to reach this goal you will secure resources and establish a global competence network. Furthermore it will be your responsibility to create a virtual, global network for UMTS to give tender support to local KAMs and to help the account to reach its commercial targets.

As an ideal candidate you should have a University degree in Economic Engineering, Communication Engineering or Informatics as well as experience in solution or account management. Furthermore, you have knowledge in the area of IP / Datacom.

You are used to work customer and result oriented, you are flexible, open minded and a team-player. You organize your work well, speak English and German fluently, know how to benefit from the usual PC programmes (Microsoft Office, Web) and like to use the internet. You should have the talent to do presentations and like business travel.

Contact: Wolfram Seyring, Wolfram.Seyring@edd.ericsson.se, +49 211 5341502 or Hans-Jürgen Vratz, HansJuergen.Vratz@edd.ericsson.se, +49 211 5341441.

For our Customer Unit Mannesmann we are looking for Customer Solution Managers

GSM / UMTS Systems

GSM / UMTS Voice Services

GSM / UMTS Data Services

● The Solution Manager is a function within our Account Management Team and closely supports the Account Management responsibilities in their marketing and sales activities towards MMO / MEU.

Your diversified responsibilities will comprise not only the development of customer-oriented, innovative solutions for future requirements of our customer and the technical and economic concept for our offers, but it includes as well the coordination of pilot projects or field trials. It will be your responsibility to steer the cooperation with the Business Units in Sweden and Germany.

Communication Engineering and / or Informatics as well as several years of practical experience within the area of product management / marketing. Furthermore, you have experiences in the telecommunications area (GSM / UMTS Systems, IP / As an ideal candidate you should have a University degree in Economic Engineering, Datacom) gathered at a network operator, internet service provider or telecommunication equipment manufacturer.

Your ability to work independently and to adapt to rapidly changing areas of responsibility are prerequisites for the position. You organize your work well and speak English fluently and you know how to benefit from the usual PC programmes. You should have the talent to communicate openly with your respective counterparts and with that, pursue your targets effectively.

Manager Pricing Strategies

● Your responsibilities will comprise the development and implementation of innovative pricing strategies for Hardware, Software and Services in the field of GSM / UMTS systems for one of our major customers in Germany. In cooperation with our international organisation and your colleagues from the Account Management, you will develop new pricing models and negotiate them with the customer.

As an ideal candidate you should have a University degree in Economics or Economic Engineering as well as 3 - 5 years of practical experience within the area of telecommunications systems or in the pricing management of some related industrial sector.

As an ideal candidate you should have a University degree in Economics or Economic Engineering as well as 3 - 5 years of practical experience within the area of telecommunications systems or in the pricing management of some related industrial sector.

Your ability to work independently and to adapt to rapidly changing areas of responsibility are prerequisites for the position. You organize your work well and speak English fluently and you know how to benefit from the usual PC programmes. You should have the talent to communicate openly with your respective counterparts and with that, pursue your targets effectively.

Contact: HansJuergen.Vratz@edd.ericsson.se, +49 211 5341441

Product Manager

● In this role you will provide the vital link between the customers product organization on the one hand and our mother companies product organization in Sweden on the other. This role offers a challenging opportunity for somebody with a good technical background, who may wish to enhance their business skills through having direct contact with the customer.

Your responsibilities will be broad and varied. The product management task is not only limited to the support of existing customers for existing products, it also includes the introduction of new products as well as the competitive field of acquiring new customers primarily by means of supporting tender activities.

For this position the applicant can initially expect to manage products associated with GSM radio access networks. The main task will be to find suitable solutions for introducing new challenging features like for example GPRS and EDGE into our customers GSM radio access network. Another important task will be to outline the migration from GSM to UMTS in our customers radio network.

You are an ideal candidate for this position if you have an engineering degree in telecommunication, 3-5 years of experience in the mobile communications field and a solid knowledge of radio access networks. Fluency in English is a requirement and a command of German is desirable. The current product management group consists of a young team. Travelling will be required from time to time, on average one can expect to be away about one a month.

Contact: Radio Network Solution Responsible, Patrik Hedenskoeld, +49 211 534 1342 Patrik.Hedenskoeld@edd.ericsson.se or Hans-Jürgen Vratz, +49 211 534 1441, HansJuergen.Vratz@edd.ericsson.se. **Application:** Ericsson GmbH, HR, Hans-Jürgen Vratz, Fritz-Vomfelde-Str. 26, 40547 Düsseldorf, Germany

LM ERICSSON ISRAEL LTD (EOI)

We are providing support and supply to the GSM operator in Israel and to the GSM operator in the Palestinian territories. Our customers' networks are growing rapidly, with a wish to implement new features, they put high value on good support. You will be joining an enthusiastic team in a dynamic working environment.

Our office is located just outside Tel Aviv, walking distance from our main customer premises. To live here, in this Mediterranean climate, with many great beaches, great variety of restaurants and lots of historical places to visit is an interesting experience.

SS Support Engineer, CME 20

● The main responsibilities for this position will be to manage, co-ordinate and participate in network investigations and trouble-shooting activities on highest technical level and to address customers expectations/needs. Provide technical competence for resolving complex problems in the 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 would also need to participate, periodically, in the 24-h emergency support.

The competence requirements are: Minimum 4 years working experience on AXE 10 application systems, of which at least 2 years experience should be on CME20/CMS40 systems preferably verification and/or support/supply. Experience on IN is desirable.

Candidates need to have excellent trouble shooting skills, experience on other mobile application systems/product lines will also be considered advantageous for this position. The candidate must have good English skills, both spoken and written. Driving license is an advantage. The initial contract period will be for 1 year.

Contact: Tobias Jonsson, FSC Manager, Tobias.Jonsson@eoi.ericsson.se, +972 3 900 6023 or John Walsh, team leader for the SS-group, John.Walsh@eoi.ericsson.se, +972 3 900 6057 Ext. 309

BSS Support Engineer, CME 20

● 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 highest technical level and to address customers expectations/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 also need to

participate in the 24-h emergency support periodically.

The competence requirements are: Minimum 4 years working experience on AXE 10 application systems, of which at least 2 years experience should be on CME20/CMS40 systems preferably verification and/or support/supply. Candidates with excellent trouble shooting skills and experience on other mobile application systems/product lines will also be considered for this position.

The candidate must have good English skills, both spoken and written. Driving license is an advantage. The initial contract period will be for 1 year.

Contact: Tobias Jonsson, FSC Manager, Tobias.Jonsson@eoi.ericsson.se, +972 3 900 6023 or Kevin Brennan, team leader for the BSS-group, Kevin.Brennan@eoi.ericsson.se, +972 3 900 6237. **Application:** LM Ericsson Israel Ltd. ATT: Irene Snir, Human Resources, Irene.Snir@eoi.ericsson.se, +972 3 900 6030, Fax: + 972 3 903 0952

ERICSSON LTD, UK

Product and Project Management Opportunities in the UK

The Account Unit, Mobile Multimedia Communications, working exclusively with the mobile Operator One 2 One has a number of positions in Project and Product Management based in Guildford, Surrey.

One 2 One is one of the 4 key mobile operators based in the UK, and with 3.5 million subscribers is a key account for ETL. As an operator that is supportive of introducing new technology to the market place and with 250,000 new subscribers being added every month - this is an exciting account. There are opportunities to join the team in one of the following roles:

Project Manager

● To Co-ordinate and be responsible for the delivery of software upgrades for AXE equipment in the GSM field. The successful applicant will be responsible for all aspects of the project(s). Project lifecycle includes all activities from approval of the business case to final customer acceptance and includes key activities such as agreeing project scope, test definition, monitoring test activities, issue resolution, change control, implementation of initial sites, management of internal suppliers, interface with the customer, Control of interdependencies.

It is essential that you have at least 3 years experience in software project management, preferably in the GSM field. You must have a full understanding of project management methodology (preferably PROPS), and will probably have experience of multi-project working.

You should be flexible, have strong self-motivation and work well both in a team and as a team leader. In addition you will demonstrate flexibility towards demanding customers.

Project Engineer

● To Co-ordinate and be responsible for the delivery of software upgrades for AXE equipment in the GSM field. The successful applicant will be responsible to the project manager for either an entire project, or parts or a larger project. Project lifecycle includes all activities from approval of the business case to final customer acceptance and includes key activities such as agreeing project scope, test definition, monitoring test activities, issue resolution, change control, implementation of initial sites, management of internal suppliers, interface with the customer, Control of interdependencies.

It is essential that you have at least 3 years experience in a telecommunications environment, preferably in the GSM field. You will preferably have some experience of project work. You should be flexible; self-motivated and work well in a team. In addition you should have some experience of working with customers to define requirements.

Contact: Mark Hillier, Programme Management - GSM, +44 1483 305107, mark.hillier@etl.ericsson.se

Switching Product Manager

● The Product Manager is responsible for developing and influencing the strategic development of specific products in order to maximise the Mobile Multimedia Communications sector's profitability. As the Product Manager for GSM Switching Systems you will understand the requirements of the customer (Mobile Operator) and will be responsible for developing effective technical solutions.

You should be able to demonstrate a detailed understanding of telecommunications systems and in particular the Ericsson GSM switching platforms. You will take responsibility for all technical product issues and ensure that they are in keeping with the strategic development of the network and deliver commercial benefits for Ericsson.

You should be an individual who is able to develop strong working relationships with key customer contacts both internal and external to identify their requirements, influence their thinking, develop strategies and manage their expectations.

You will also work closely with the marketing organisation and assist in the promotion of Ericsson products during periods of marketing activities.

We require a person who is; outgoing, self-motivated and has strong interpersonal skills. You should be qualified to degree level or have equivalent relevant experience and highly developed competence in Switching AXE 10 and CME 20.

Contact: Linton Cook, +44 1483 305376, Linton.cook@etl.ericsson.se.

ERICSSON LTD, UK

One2One / Mobile Multimedia Communications

The One2One FSC plays a crucial role in providing past sales support to One2One, including trouble shooting and fault investigation, implementing hardware and software upgrades on the customer's network, working and testing software corrections etc.

We are based in Guilford, UK, and currently require an experienced Support Delivery Manager.

Experienced Support Delivery Manager

● Being responsible for the supply of support to our customers, the Support Delivery Manager (SDM) is operationally focused. The SDM works with his/her colleagues to develop and implement support objectives and improvement processes for the unit.

The SDM focuses on developing long term relationships with the customer(s), delivering the support and maintenance, anticipating their requirements in relation to support and services as well as building an ongoing dialogue around their future needs. The SDM manages the customer interface with respect to assigned support areas. This involves providing feedback into the organization on performance, new and future support/services and measuring that all contractual commitments are delivered through the line organization. He/she is also required to monitor in-service support, all related customer-facing technical services and increase the support and services portfolio by proactive discussion and exposure to developments in this area.

The SDM is to be involved in the offering process of new/increased support and services to the customer(s), as well as delivery projects to the customer(s). Customer interface: Significant external customer contacts, various areas within ETL and Ericsson internationally.

Contact: Peter Gustafsson, FSC Manager, +44 1483 305474. **Application:** Mary-Anne Morgan-DeGray, HR Advisor, mary-anne.morgan-degray@etl.ericsson.se

ERICSSON DE PANAMA S.A.

2 Hot positions open at the Ericsson's office in Panama.

The Ericsson organization in Panama is quite small with frequent and direct communication with the top management and other functions. It's a fairly quiet country with beautiful nature and a lot of international influence. The close proximity to both the Caribbean and the Pacific Ocean as well as other recreations are available.

Field Support Manager

● We need a very experienced Support Manager with more than 5 years experience of Ericsson support. The organization is supporting both Wireline and TDMA products, you have preferable worked with both systems.

You will head an organization of both local staff as well as expatriates. The support organization consists today of 5 persons but need to grow with a few more. Experience from 1:st or 2:nd line support is a major advantage, as well as a well-established contact network.

Education: Higher education in Telecommunication, Electrical Engineering or Computer Science or long experience from similar Job-position. Language: English is a must but if you also speak Spanish is that a plus.

This is a long-term contract for at least 12 month

Unix Specialists/ Troubleshooter

● The network is growing and a lot of new nodes are being added. We are looking for a person with a broad knowledge of Sun-Solaris, Databases and Data-communications. You will work in the Ericsson Local Support organization that currently supports both Wireline and TDMA systems.

Experience from some of the following Areas is wanted: Switching (Wireline and/or Cellular), Intelligent Networks, Telecom Management.

We would like that you have competence from some of the following products. XMATE, TMOS, CMOS, JAMBALA, ADJUNCT PROCESSOR, PREPAID, SUN, JAVA, ORACLE, SYBASE and Signaling System 7 (SS7).

The person we are looking for should be able to work independently or in a group to develop the competence of the Ericsson Local Support office.

Education: Higher education in Telecommunication, Electrical Engineering or Computer Science or long experience from similar Job-position. Language: English is a must but if you also speak Spanish is that a plus.

This is a long-term contract for at least 12 month

Contact: Janeric Ermeland, janeric.ermeland@ericsson.com, +507 265 5140 extension 52 or ECN 82852 or Helene Ujmeta, helene.ujmeta@ericsson.com, + 507 265 5140 extension 14 or ECN 82814

ERICSSON RADIO SYSTEMS AB, SUNDBYBERG

Wireless LAN (WLAN) from Ericsson is a new way of extending your fixed network so that it encompasses all of your employees needs in these rapidly-changing times. It allows working in new ways and in different environments, all without breaking a connection or worrying about cables, plugs or network settings.

And of course, it employs state-of-the-art encryption and key protocols. WLAN from Ericsson is mobility, security and performance.

WLAN Systems is a Product Unit developing and promoting the Ericsson WLAN offer across segments. The WLAN market is a new and rapidly growing market addressing the need to make high-speed datacom mobile and flexible. We are developing the future WLAN solutions according to the HiperLAN2 standard. In addition we presently offer sourced WLAN solutions in combination with our own security and mobility features. The WLAN technology already today offer flexible use of your Mobile PC in the office, selected public areas as well as in the home.

● We need to complement our Marketing & Sales Support for WLAN products and solutions. In all positions you need to build and maintain a contact network within the relevant Ericsson Business- and Market Units. Together with this network you should feed back customer requests and promote products and solutions. You will also have responsibility for trials and pilots with corporate and operator customers.

Product Marketing Manager HiperLAN2 (H2)

● Dedicated promotion of our future WLAN offer. The H2 standard is expected to be completed 1999 and an alliance to promote the standard was launched in September '99, HiperLAN2 Global Forum (H2GF). Based on the general WLAN profile of Ericsson you will build a complete product marketing program for H2 globally.

We expect this person to have a strong international marketing background, preferably from the datacom area or equivalent technical marketing. The position requires independent drive and responsibility within the framework of our Product Marketing Team. Cultural awareness, communication proficiency, creativity are all valued criteria. You should be used to run many actions in parallel and have a good portion of perseverance and dedication in completing the task.

Product Marketing Manager Corporate Market

● Together with a relevant contact network you will proactively market the present and future WLAN offer to enterprise customers. You will be responsible for contacts with, and competence transfer to, people responsible in all geographic regions across the globe. You will suggest and create high level sales objects directed toward geographic and industry segments as you find it necessary.

This candidate will work independently within the framework of the WLAN Product Marketing Team. Professionalism and drive in completing the task will be required and experience of sales toward medium and large enterprises or operators is required. Written and verbal communication skills are essential and cultural awareness another valued benefit.

Product Marketing Manager WLAN Solutions

● Based on your technical background you want to take a step closer to the customer and turn market needs into product packages and solutions. You will together with our internal and external contact network be the sensor and interpreter of customer needs. You will work toward the corporate, the operator as well as the home market. You need to understand how we can leverage from high level sales objects in these segments and how our technology and packaging can be reused across market segments.

As a bridge between the customer and the product management within the Product unit you need to screen and document customer needs in a systematic way. You will secure that relevant input is fed back into our discussions and to the right requirement specifications, to enable a competitive WLAN offer now and in the future.

We expect you to have a technical background, preferably from the datacom area. Product management or Product Marketing experience is a benefit. A creative mind based on technical understanding and a customer perspective is your most important feature. Within the framework of our Product Marketing Team you are expected to work independent with a professional drive that leads to clear results.

Contact: M. Gunnarsson +46 8 404 47 93, magnus.gunnarsson@era.ericsson.se. **Application:** Ericsson Radio Systems AB, SG/ERA/KD/HS Mari Skoglöf, 164 80 STOCKHOLM, mari.skoglof@era.ericsson.se

NIPPON ERICSSON K.K., JAPAN. NRJ

TEST PLANT MANAGER

● We have a vacant position for an experienced Test Plant Manager to work with CMS30 (PDC standard) and UMTS at our regional office in Shin-Yokohama.

The number of test plants for CMS30 fixed and UMTS are increasing. We are building up for system verification of CMS30 and third generation mobile systems. A fixed line test plant is also planned. There are many users; customers, projects, system verification, testing, troubleshooting and training. The test plants need to be in a perfect technical shape and made available to the users according to their requirements. At the same time a cost-effective use of invested capital and manpower is vital. So, the candidate should have good technical knowledge and experiences. And also being an experienced customer and result oriented manager with good administrative capacity. As well as easily adapt to a culturally diverse working environment.

We are ready to offer you a long-term contract and starting date as well as length of the contract is negotiable.

Contact: Christer Elmquist, Director Cust. Support (NRJ/SC), +81 45 477 5700, christer.elmquist@nrj.ericsson.se

ERICSSON RADIO SYSTEMS AB, KISTA

GSM Operation & Maintenance

Product Unit BSS is responsible for the global development and profitability of the GSM Base Station System and GSM Operation and Maintenance. We at Strategic Product Management GSM O&M. have the full live-cycle responsibility of GSM OSS, Ericsson's network element management system for the GSM network sold to over 100 customers in 50 countries. Our next generation system will combine the management of the GSM as well as the UTRAN WCDMA network elements. Due to the nature of our mission we work highly cross-organisationally to align strategies with other Product Units and to improve our understanding of future opportunities.

We are now looking for an additional person to join our team of 10 product managers. In this challenging position you will deal with: Product strategies. Requirements on products. Customer business cases. Product plans and programs. Early marketing towards our local companies.

To be able to take on this responsibility, you should have several years of background of O&M and network management preferably from earlier assignments in design and as a market representative (LPM). Your sound knowledge of modern software architectures, protocols and IT trends gives you the base to drive technology deployment for our new O&M framework.

Your understanding of our customer needs in the area of network management lets you take the right strategy decisions and helps you to communicate to the markets. If you are a highly motivated, driving person with excellent interpersonal and communication skills, this is your career opportunity to have an impact on the future!

Contact: Stefan Spaar, +46 8 757 1875, Benita Nilsson, +46 8 757 1914. **Application:** Kerstin. Almlad, Ericsson Radio Systems AB, LV/HS, 164 80 STOCKHOLM, kerstin.almlad@era.ericsson.se.

ERICSSON RADIO SYSTEMS AB, KISTA

Operation & Maintenance Professionals

Take the opportunity to get experience from working as a contractor for Ericsson customer in MOROCCO! Established in June, 1999 Ericsson Services is the new name for service excellence within Ericsson, a business unit in the Network Operators and Service Providers Segment. Product unit Managed Services at Ericsson Services provide "Advice, Solutions and Services" to network operators around the world. We provide expertise in both the commercial and technical aspects of network operations and work in partnership with Market Units, Regional Offices and Local Companies. Managed Services 'Resource Office' is now looking for Ericsson employees who are interested to join our project organisation on contract job, starting on February, 1st. We are looking for several categories:

Network Surveillance Technician

Ref.Morocco 001

● The candidates should have a long experience from working with Ericsson Mobile network, implementing, commissioning and maintaining switches. The work is performed in a Network Maintenance Centre. The candidates will be responsible for the surveillance of the network from the NMC.

Main tasks will be monitoring, analysing and correcting incoming alarms or any service/quality degradation detected, either by on-line activities, work orders (WO), or by following the escalation procedure. He/she will also perform periodic system routines and monitor traffic and service quality status in the Network.

Experience from working with network surveillance is requested and experience from working with an operator is desirable. Good knowledge in English is required. The candidates will also be responsible for transfer of knowledge to the customer and shall therefore have good social and pedagogical skills as well as cultural awareness.

We are looking for eight candidates for this position. These assignments will commence around the 1st of February and the contract length is 10 months, 8 months, 7 months and 5 months.

System Engineers, MSC/HLR/VLR

Ref.Morocco 002

● The candidates will be system responsible and work at the NMC. He/she will also be responsible for the modification of existing system routine creation of new and temporary routines, and follow up as well for all software contents of the systems. In addition to the above, this position needs a previous experience as a trouble-shooter on the network level. Familiar with implementing CNA's and doing Application system changes. Being able to perform Data Transcripts for changes to the network.

Experience from the OSS is required. The candidates should have good knowledge in English and good analytical ability. As he/she will be responsible for transfer of knowledge to the customer, you should have good social and pedagogical skills as well as cultural awareness.

We are looking for two candidates for this position. These assignments will commence around the 1st of February and the contract length is 10 months and 9 months.

System Engineers, SMS/VMS/AUC/EIR

Ref.Morocco 003.

● The candidate will work at the NMC and be responsible for all telecommunication systems agreed with the customer within SMS/VMS/AUC/EIR including both Ericsson and 3rd party equipment. He/she will also be responsible for the modification of existing system routine creation of new and temporary routines. Follow up as well for all software contents of the systems and also be responsible for all preventive maintenance of the systems.

The candidate should have good knowledge in English and good analytical ability. As he/she also will work with transfer of knowledge to the customer, you should have good social and pedagogical skills as well as cultural awareness. We are looking for one candidate for this position. This assignment commences around the 1st of February and will go on for a period of 8 months.

System Engineers, Radio (BSS/BSC)

Ref.Morocco 004.

● The candidates will work at the NMC and be responsible for all telecommunication systems agreed on with the customer within BS and Radio. He/she is going to offer expert knowledge concerning parameters and configuration of BS and Radio. You will also provide expertise concerning BS problems.

The candidates should have good knowledge in BSS and experience from an operator is to prefer. Good knowledge in English is a requirement. As you also will work with transfer of knowledge to the customer, you should have good social and pedagogical skills as well as cultural awareness.

We are looking for two candidates for this position. These assignments will commence during the 1st of February and the 1st of April and the contract length is 10 months and 7 months.

System Engineer, Transmission/DXX/Minin Link/ SDH

Ref.Morocco 005.

● The candidates will work at the NMC and be responsible for all transmission systems in the network. He/she will handle and follow-up reports concerning transmission and transmission equipment. Experience from the DXX/Minin link/SDH is required. Knowledge in energy/power is desirable. Good knowledge in English is a requirement.

As the candidates also will work with transfer of knowledge to the customer, you should have good social and pedagogical skills as well as cultural awareness.

We are looking for two candidates for this position. This assignment will commence around 1st of February and will go on for a period of 10 months and 5 months.

System Administrator OSS/MMIS

Ref.Morocco 006

● The candidate will work at the NMC and be responsible for the OSS and MMIS applications. This includes support advanced trouble-shooting in OSS/MMIS applications. He/she will also work with reports systems, application problems and OSS/MMIS routines. Advanced knowledge of UNIX and SQL-programming and knowledge of database handling is required.

The candidate should have experience from OSS. If requested, we will offer you training on MMIS. Good knowledge in English is required. As he/she also will work with transfer of knowledge to the customer, you should have good social and pedagogical skills as well as cultural awareness.

We are looking for one candidate for this position. This assignment commences around the 1st of February and will go on for a period of 9 months.

CATEGORIES FOR FIELD MAINTENANCE

Network Field Maintenance Manager

Ref.Morocco 007

● The candidate will be responsible for leading and organising the work within Network Field Maintenance and ensure that the best practices are used for the work.

The candidate must have a technical education within Telecommunication, Information Technology, Electronics and or experience from O&M work at operator. He/she should have 2-3 years work experience as manager for at least five persons.

We are looking for one candidate for this position. This assignment commences around the 1st of February and will go on for a period of 4 months.

BFT Technician

Ref.Morocco 008

● The candidates will be responsible for guided corrective maintenance by replacement of HW at BS, and continuous preventive maintenance at BS. We are looking for sex candidates. This assignment commences around the 1st of February and Mars for a period of 6 months and 5 months.

Please, apply in writing with full Curriculum Vitae (CV) containing details of your education, experience and two references including contact information.

Contact: R. Jangenby, rolfjangenby@era.ericsson.se. **Application:** Morocco No Ericsson Radio Systems AB, Resource Off., Rolf Jangenby, 164 80 STOCKHOLM rolfjangenby@era.ericsson.se.

ERICSSON TELECOMUNICAZIONI S.P.A. (TEI)

Join the Italian Astrolink Team

Satellite Systems, a new and challenging business for Ericsson. Satellite systems will play an important role in providing communication services to subscribers in remote areas within the next coming years. Satellite operators will offer the market competitive dual-mode phones, roaming possibilities and now also broadband multi media services for voice, data and video.

In April 1999 we signed our first broadband satellite system contract with the Italian Ground Segment integrator, Telespazio. The system will offer multimedia services for voice, data and video to the global enterprise market.

The project is at the moment in the pre-study phase looking into the challenge to finalise the system architecture. Ericsson develops the satellite functionality based on our experience in GSM/GPRS/UMTS/ATM/IN and Billing. Close interaction with a number of external companies is needed.

Astrolink Program Director

● As the Program Director you will be responsible for planning, follow-up and finishing all activities to fulfil the contract and budget in accordance with the customers and our own expectations. It is a complex multi-project environment with several internal and external subcontractors.

You should possess qualifications that make it easy for you to motivate, inspire and guide the project and to create synergism in the team. You have a broad international Ericsson network and have managed complex TTM and TTC projects. You are recognised as leader but would not hesitate to take active part wherever needed. It's a plus to have worked with design and system testing.

We need a person who is; outgoing, independent, self-motivated and has strong interpersonal and communication skills. You should have a university degree, preferably M.Sc. (or similar) and good English written and oral skills.

Contact: Lars Bergström, +46 8 404 6705, lars.bergstrom@era.ericsson.se.

Application: Astrolink Program Director, Ericsson Radio Systems AB, SG/ERA/KD/HS Mari Skoglöf, 164 80 STOCKHOLM, mari.skoglof@era.ericsson.se.

ERICSSON RADIO SYSTEMS AB, SUNDBYBERG

Serbia, Key Account Manager

● As an Account Manager you will work with the sales and customer order flow and be responsible for fulfilling the customer's high expectations.

You will be a part of the marketing and sales team towards the customer account. Create and maintain Market Plans, responsible for meeting or exceeding sales booking objectives, billing quotas and consolidated profitability targets, maintain and negotiate contracts. You will also be responsible for budgets and forecasts and establish long-term partnerships between our customer and Ericsson.

We are looking for a person with proven people management skills, considerable experience with GSM marketing and sales, high level of interpersonal and communication skills. A person with self drive and highly motivated to take on the challenges of an expanding market. Furthermore, we seek a person with excellent presentation skills, as well as, fluent English and relevant university degree or equivalent. The position is a long-term contract conditions and you will work in Belgrade.

Contact: Jan Hultgren, +381 11 311 3899, fax +381 11 311 2249, Jan.Hultgren@ryu.ericsson.se, Helena Sollenberg, Human Resources, +46 8 585 31479, helena.sollenberg@era.ericsson.se.

Application: KAM-KEY ACCOUNT MANAGER, SERBIA, Ericsson Radio Systems AB, SG/ERA/LP/HA Pirjo Hautala, 164 80 STOCKHOLM, pirjo.hautala@era.ericsson.se.

ERICSSON RADIO SYSTEMS AB, KISTA

Director Product Marketing, Brasil

The Brazilian market continues its strong growth were Ericsson's 15 customers are very active increasing their market share from today's 40%.

● You will be accountable for Product Marketing, driving the sales of the whole Ericsson Product Portfolio for Wireless Systems through the 7 KAM teams and 1 NAM team, interfacing with the supporting BU/PU functions around the globe. Leading a group of some 60 people, you will be continuously building competence to ensure a leading position for EDB in The New Telecoms World. You will also be the local sponsor for the Mobile Internet Institute, our new initiative for development and integration of packet data applications.

We expect you to have solid managerial experience and have documented success in previous international assignments. 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. Furthermore, you are a doer with a practical approach, able to make things happen. In order to increase sales and make our products profitable, you must have a true Business Focus and a broad knowledge of infocom.

You have at least an M.Sc. or equivalent, and you either speak Portuguese, or have a natural ability for learning languages.

Contact: Lars Birging, +46 8 58531625, lars.birging@era.ericsson.se, Bo Ribbing, +46 8 757 0575, bo.ribbing@era.ericsson.se, L. Jerhlander, +55 11 6224 0007, lars.jerhlander@edb.ericsson.se.

Application: Director Product Marketing Brasil, Ericsson Radio Systems AB, ERA/AH/LC, 164 80 Kista, catrin.dysing@era.ericsson.se

ERICSSON MOBILE COMMUNICATIONS AB, KISTA

Financial Controller, Basingstoke, UK

Ericsson Satellite Phones and Terminals is the newly created sub-business unit set up to consolidate Ericsson's satellite terminals business. The sub-business unit is hosted within the EML organization, and is tasked with development of and marketing satellite terminals via Ericsson market regions and local markets so as to maximise profitability to Ericsson.

● The business comprises an R&D team of some 150-200 staff charged with developing terminals subject to normal Product Council and tollgate rules. With the consolidation of the business a commercial function is now being added to

the business to lead and drive the business to the customers. As part of this creation of a dedicated business a Business Controller is required to join the senior management team with responsibility for financial aspects of the business.

The sub-business unit is required to consolidate results for the entire business, including activities within EML to ensure we maximise profitability to LME and comply to all rules and regulations of markets. You will have the opportunity to work very broadly with all company questions within the financial area. Routines and processes within the company must be coordinated on sub-BU/PU level which means many contacts outside the local company. The financial department for EML activities is outsourced to EML and you will be expected to manage these staff to ensure that you receive the support required. For consolidation efforts you will need to recommend appropriate staffing.

Main tasks: Develop and improve financial processes and system. Sub-business unit budgeting. Co-ordinate the various SC and LME projects (BTOM, TTC etc) applicable to business. Placing all services supplied by EML/ETL on service level agreements. Support and educate our organization in financial issues. Accounting, closings and FIRE-reporting (for EML these will be done by EML). Internal reporting, analysis and comments. Forecasting. Driving cost control culture to ensure we spend money where it is most needed. Support to develop business cases for product developments. Support to Managing Director for external discussions on project funding.

You have a university degree in Accounting and Business Administration and 5-10 years of relevant experience. Experience working with LME Financial Area and also within PU/BU for consolidations is required so that you have strong knowledge of LME financial procedures. Good skills in Eng-

UMTS/IMT-2000 & CMS 30 Support/Network Design Opportunities in Japan

In order to meet the challenges presented by the future deployment of a 3rd Generation UMTS/IMT-2000 Network in Japan the Customer Support Division within Nippon Ericsson is looking for a number of experienced engineers, network designers and troubleshooters. These personnel will participate in the support and implementation of the UMTS and CMS30 networks. There may also be a requirement for some engineers to available at times on an emergency support/on call roster.

All positions require a strong customer focus and the successful candidate should be able to work well within a team environment and be able to work with people from a large range of cultural backgrounds. English fluency is essential with proficiency in the Japanese language being highly desirable.

Senior System Support Engineers (Core Network/Radio Network and Applications)

The successful candidates will be responsible for providing implementation support during the installation of the UMTS network either in the CMS 30 and/or UMTS system areas. The applicant is required to have at least 5 years experience in a system support or verification role in CMS 30 or GSM with a background in UMTS design or development being highly desirable. We are looking for AXE/HLR, RBS/BSS engineers as well as engineers with experience in the support/development of Unix and Cello based products. These personnel may also be required to act as team leaders and be involved in some aspects of the deployment planning.

O&M Engineers

In order to provide the highest level of support a UMTS system support help desk is being

established and will operate 24 hours a day/365 days a year. Therefore a number of positions exist for engineers with system support experience who are able to deal with support problems/questions from the customer across a wide range of UMTS platforms. Previous experience in working in an O&M environment in either CMS30, GSM or with an operator is highly desirable. These positions may involve shift work.

System Support Engineers (Core Network/Radio Network and Applications)

Numerous positions are available within the support organization in this area. These engineers will be involved in a wide range of support tasks in either the UMTS or CMS30 areas and should have at least 2-3 years experience in the support of CMS 30 or GSM networks. The vacancies for these positions exist in the Core and Radio Network Areas as well as in the support for value added products using a wide range of Unix/Cello based products. Again, previous exposure to UMTS in a design or development role is highly desirable.

W-CDMA Network Design Engineers

We need Core, Transmission and Radio Network Design Engineers. We will work together with the customer in working groups, designing the Core, Transmission and Radio Networks. You must have thorough skills in Network Design and experiences in working with customers. The high tempo will require a lot of flexibility and ability to adapt.

Your tasks include building the networks, designing procedures and processes. You must have a good contact network for getting information, and also have a sense of

documenting your work. It is also vital that you have some IP and ATM knowledge, since these will play a key role in the Network. You should have been working with Network Design for at least 5 years, any Wideband and CDMA experience is a bonus.

Training as required will be provided and some overseas and domestic travel may be necessary.

For further information or to apply contact (please clearly state what position you are interested in):

Greg Atkinson
(IMT-2000 Support Manager)
Customer Support Division
Nippon Ericsson
E-Mail: greg.atkinson@nrj.ericsson.se
Phone: + 81 45 477 5712
Fax: + 81 45 477 5730
<http://www.nrj.ericsson.se>



Make yourself heard.

ERICSSON 

lish are essential. We are looking for a flexible, creative and result orientated person who has the ability to focus on the essential. You enjoy taking initiative and drive improvement projects.

Contact: Daryl Chambers, +44 1256 338007, Daryl.Chambers@eml.ericsson.se. **Application:** UK, Ericsson Mobile Communications AB, KI/ECS/HKS Anna Pelkonen, SE-164 80 Stockholm, Sweden, anna.pelkonen@ecs.ericsson.se.

ERICSSON EUROLAB (EED) AACHEN, GERMANY

Core Product Unit CAPC, PA wireless TCS

The EED/UT department is part of the Core Product Unit CAPC and is responsible for design and maintenance of the wireless TCS 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, +49 2407 575 163, simon.seebass@eed.ericsson.se.

Test Coordinator / GPRS Network Verification

Proj.No 02/399

The GPRS Network Verification (NV) project has the objective to ensure that the GPRS service is integrated and works on a CME20 network level prior to delivering the GPRS system to Customer Trials and to the FOA projects. The NV project is dependent on a big variety of in-deliveries from node projects, test tools, etc, with complex dependencies.

● As a test co-ordinator you are responsible to ensure that the project is based on an optimal test strategy, which is co-ordinated with the node verification projects, and adopted to changing project needs. The main tasks are: Be responsible for the overall test strategy of the GPRS NV project. Co-ordinate test activities across the different test phases and teams inside GPRS NV as well as with BSS R8 SV, CSS R8 INDUS and GSN I&V. Be involved in detail planning of testing. Change management of test strategy.

As a suitable candidate you have a very good technical background and experience in system verification activities on network level (preferably GSM), as well as experience in technical leadership in the subject field. Ideally you are familiar with packet data networks or IP based datacom systems, but this is not a prerequisite. Previous experience in GPRS or other packet data systems e.g. PPDC is a clear advantage. The position is available directly. On-the-job introduction is secured.

Contact: GPRS SW supply and support, K. Schneider, +49 2407 575 156, Klaus.Schneider@eed.ericsson.se, HR, S. Seebass, +49 2407 575 163, Simon.Seebass@eed.ericsson.se

CORE PU APPLICATION CORE (CAPC)

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 HR, Simon Seebass, +49 2407 575 163, Simon.Seebass@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/DE-SIGN. FOA Support, Hot TR Troubleshooting. Emergency cor-

rection production. Correction testing. Technical consultancy. Global support co-ordination. Negative testing. Function testing. Taskgroup activities, Root Cause Analysis, Technical pre-studies 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 communication skills. Some experience in the IN area could also give you the edge.

Contact: EED/X/SLHC, R. Hegg, eedruh@eed.ericsson.se, +49 2407 575 668 or HR, Simon Seebass, +49 2407 575 163, Simon.Seebass@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 HR, Simon Seebass, +49 2407 575 163, Simon.Seebass@eed.ericsson.se

The Test and Support Department (EED/X/S) within our CSS system house is responsible for system test, industrialization and support of the CME20 SS Product Line at EED. It includes CME20 SS product line configuration management, system test and industrialization of the CME20 Switching System releases, as well as product line maintenance and customer support for the CME20 SS product line.

We have also the responsibility to verify the UMTS Network solutions and the GPRS product line, which currently is in a very exiting stage of development. We can therefore offer positions at the very edge of technology in all current movements in the Tele Communications field. EED/X/ST is looking for two candidates to fill the positions of:

GSM SS/UMTS System and Network Testers

Proj.No 55/399

● The GSM Tester is mainly responsible for Test Design and Test execution needed to industrialize new functionality in the SS node. The UMTS Network Tester is mainly responsible for verification activities in a UMTS network which involves node testing on the AXE10, ATM, IP and UNIX platforms, as well as trouble shoot, configure and tune a whole UMTS network. Main activities are the definition of the prerequisites to perform the system verification, the performance of the Test Execution mainly in target environment, issue and follow up requirements for test configuration and simulation tools and to build up core competence for GSM and UMTS Industrialization.

A suitable GSM candidate should have experience in CME20 design or testing. Knowledge of either of Intelligent Network Services, the Charging and the Signalling sub-system is a significant plus. A suitable UMTS Network tester will need a solid background in datacom with more than a basic understanding of telecommunication. A person with knowledge in ATM and IP networking along with knowledge of AXE software will be favoured. You will also need good interpersonal and organizational skills to work as an effective member of a project team.

Contact: EED/X/STEC, Jan Klinte, +49 2407 575 7852, Jan.Klinte@eed.ericsson.se or HR, Simon Seebass, +49 2407 575 163, Simon.Seebass@eed.ericsson.se

CORE PRODUCT UNIT APPLICATION CORE (CAPC)

The CAPC system groups are responsible for the system development of the Transit and Network Access products that are common for many of Ericsson's AXE based systems, both for wireline and wireless systems. This responsibility includes activities such as running product committees, handling overall technical coordination in the CAPC projects, perform system studies and source system design. Present challenges are system work for ATM and IP core network solutions for the Universal Mobile Telecommunication System (UMTS) and the Next Generation Switch (NGS).

System Designer, Datacom & IP

Proj.No 64/399

● As a CAPC System Designer you will perform system studies or design before or in early phases of our CAPC main projects. An important aspect is to find synergies and identify core application solutions between wireline and wireless

systems. The type of tasks requires that you can work independently or in teams, take initiative and drive for progress.

To strengthen our capabilities for this type of system work, we are looking for an experienced System Designer focusing on Datacom and IP. You should have more than 3 years of Ericsson experience in AXE10 design and experience of packet switched techniques or platforms is required. Due to the type of work performed, some travelling may be necessary.

System Designer, Intelligent Networks

Proj.No 65/399

● As a CAPC System Designer you will perform system studies or design before or in early phases of our CAPC main projects. An important aspect is to find synergies and identify core application solutions between wireline and wireless systems. The type of tasks requires that you can work independently or in teams, take initiative and drive for progress.

To strengthen our capabilities for this type of system work, we are looking for an experienced System Designer focusing on IN development. You should have more than 3 years of Ericsson experience in AXE10 design and previous experience within Service Control and/or Service Switching Functions are regarded as an advantage. Due to the kind of work performed, some travelling may be necessary.

System Designer, APG40 Characteristics

Proj.No 63/399

Do You want to be a part of UMTS (Universal Mobile Telecommunication System), NGS (Next Generation Switch) and System 108 while you are working in a motivated area with a high level of productivity, as well as great personal gratification?

● We are looking for a person who can initiate and run capacity/characteristic issues within the APG40 area. This includes both investigations and discussions around the characteristics of the APG40 and it's applications. It entails modeling and dimensioning of integrated applications and their environment. You will be required to define mechanisms for making fast and accurate estimations of characteristic behavior on the APG40.

The CAPC systems management is responsible for the system development of the Transit and Network Access products that are common for many of Ericsson's AXE based systems, both for wireline and wireless systems. This responsibility includes activities such as running product committees, handling overall technical coordination in the CAPC projects, perform system studies and source system design. Present challenges are system work for ATM backbone solutions for the UMTS and the NGS.

A successful candidate should have at least 2-4 years experience from software design or system design within an AM system. You will need good general technical and communication skills. Knowledge of the NT operating system, the APG40 and previous experience or knowledge of traffic models is a distinct advantage. Since the work requires co-ordinations within the project, travel can sometimes be necessary.

System Designer, APG40

Proj.No 62/399

The APG40 is a windows NT based high availability platform targeted for IO and element management applications. We are looking for a person who can take an active part in developing and introducing APG40 platform into the next generation of open telecommunication systems. This includes both investigations and discussions around the software architecture, applications and interfaces of the APG40 in all parts of the development life cycle.

The CAPC systems management is responsible for the system development of the Transit and Network Access products that are common for many of Ericsson's AXE based systems, both for wireline and wireless systems. This responsibility includes activities such as running product committees, handling overall technical coordination in the CAPC projects, perform system studies and source system design. Present challenges are system work for ATM backbone solutions for the UMTS and the NGS.

● A successful candidate should have at least 2-4 years experience of software or system design using software methodologies and technologies such as OO or CORBA. Experience with modern software languages such as C++ is essential. A good knowledge of NT is a strong advantage. Since the work requires co-ordination within projects, travel can sometimes be necessary.

Source System Designer

Proj.No 41/399

Do You want to be a part of UMTS (Universal Mobile Telecommunication System), NGS (Next Generation Switch) and System 108 while you are working in a motivated area with a high level of productivity, as well as great personal gratification?

● We are looking for a person who can take an active part in developing the next generation open telecommunication systems. This includes both investigations and discussions around the system architecture early on in our projects and product structure development together with co-ordination towards ongoing projects within CAPC. You will also be involved in investigations and development of new tools and methods that could be used in the Source System Handling area.

Since it is essential to discuss and investigate the system architecture in the early phases of a project, one Source System Designer is always appointed as team leader for one of

our ongoing projects. You would have to take the responsibility for all tasks related to the Source System Handling and co-ordinate those tasks towards the project.

The CAPC systems management is responsible for the system development of the Transit and Network Access products that are common for many of Ericsson's AXE based systems, both for wireline and wireless systems. This responsibility includes activities such as running product committees, handling overall technical coordination in the CAPC projects, perform system studies and source system design. Present challenges are system work for ATM backbone solutions for the UMTS and the NGS.

A successful candidate should have 1-2 years experience from software design or system design in an AM based system. Since the work requires co-ordinations within the projects, travel can sometimes be necessary.

Contact: HR, Simon Seebass, +49 2407 575 163, Simon.Seebass@eed.ericsson.se or CAPC Systems Management, Robert Ivarsson, +49 2407 575 704, Robert.Ivarsson@eed.ericsson.se or CAPC Systems Management, Gert Wallin, +49 2407 575 8058, Gert.Wallin@eed.ericsson.se.

Senior STE Methods and Tools Engineer

Proj.No 04/339

The STE Methods & Tools group is responsible for all STE activities within CSS in the area of Function Test, Design Maintenance, PLM, System Test, support organizations (ASO/SAFSC) and longer term Methods & Tools issues affecting testing. This central group will not only cover EED needs, but also all the other LDC's that belong to CSS. The focus is on STE (Simulated Test Environment) tools and protocol and traffic simulated tools that can be used in both STE and target environment (ex. MGTS, TSS 2000, TTCN, etc).

● As a suitable candidate, you are an Ericsson employee and should have experience in AXE 10 testing. You should be able to work well on a highly motivated team and under strict time pressure. You also have to be service minded, be willing to travel and be prepared to quickly take new assignments. You have to be critical and always want to have the urge to improve the simulated testing environment.

You have to be open minded and willing to change in order to drive the simulated environment into the third generation mobile application systems.

Your responsibilities will include coordinating STE testing activities, gathering requirements from the customer, being involved in writing and coordinating new requirements, investigating impacts from new functionality in GSM/UMTS applications, defining methods for how to test new features, acceptance testing of new tools and trouble shooting in the simulated environment.

More info: <http://www.eed.ericsson.se/services/eed-x-s/o/soz/Welcom.html>

Contact: HR, Simon Seebass, +49 2407 575 163, eed-sims@eed.ericsson.se or EED/X/SOZC, Raymond Meertens, +49 2407 575 470, eedramo@eed.ericsson.se

Transit development in CAPC is responsible for design and maintenance for different software parts within the new Transit Application Module and function/system integration test for CAPC. We are looking for an

AXE10 Software Designer

Proj.No 60/399

We are participating in the execution phase and performing feasibility studies.

● To strengthen our capabilities in this area we are looking for an experienced SW designer in the AXE 10 area. You should be familiar with PLEX design methods and be able to perform technical studies as well as preparing technical documentation. A first experience in SDL would be an advantage. We are looking for a designer with 2-3 years of experience preferable in the AXE 10 area.

Contact: EED/UT, Joe Wilke, +49 2407 575 399, Joe.Wilke@eed.ericsson.se or EED/H/R, Simon Seebass, +49 2407 575 163, eedsims@eed.ericsson.se

Strategic Product Manager ATM and ISUP, Lawful Intercept

● Your task will be product planning for one or more CAPC product area(s), defining the direction of the development of CAPC products based on assessment of competitiveness and economical performance for the life-cycle of the products. You inspect requirement specifications and approve function specifications and FeDs. You order and monitor the development and maintenance work of CAPC products, review financial agreements proposed by other business units and you will do Business Opportunity Tracing.

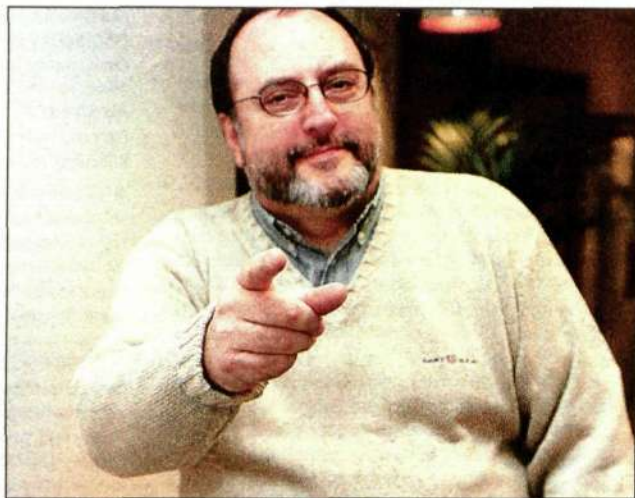
You need a BS in EE/CE/CS or equivalent, more than 3 years in system design or project management and a strong interest in strategic product management. Besides a broad knowledge in switching systems you need competence in either ATM, CSS7, Data Communications or Lawful Intercept.

Contact: Product Management Department, Ulf Henell, eedugh@eed.ericsson.se, +49 2407 575 256 or Martin Hatas, Martin.Hatas@eed.ericsson.se, +49 2407 575 9849 or Human Resources, Simon Seebass, eedsims@eed.ericsson.se, +49 2407 575 163.

The efforts to secure Ericsson's internal systems prior to the millennium shift are more or less complete. Over 5,500 systems have been reported to be Y2K compliant, and more than 2,000 others that were not secure have been removed. There are also a number of things you can do to avoid having something go wrong.

Almost ready for the new millennium

We're working on the very last pieces now. Overall, things feel very positive. Our systems will handle the millennium shift," says Christer Ekengren, head of Y2K preparations for Ericsson's internal systems.



Are you prepared for the New Year? Christer Ekengren is head of Y2K preparations for Ericsson's internal systems.

"Some systems will be shut down completely over the midnight hour, or midnight hours. Mainframe systems located in Älvsjö in Stockholm - PRIM and GASK - where we store information about our products and processes, will be shut for four hours around midnight, Swedish time. On the other hand, Outlook Exchange as well as EriNet (the intranet) will continue to operate. That is especially important for those who will be working during New Year's Eve."

"Our advice to all companies has been to avoid shutting down servers, but to shut

down all clients that are not needed to conduct work during the millennium shift. In

that way, the traffic and load will be reduced to a minimum. Every individual company is responsible for their own local system and server during the transition into the year 2000."

Saturday, January 1, and Sunday, January 2, will be devoted to verifying that systems and links are functioning properly.

"Financial staff, for example, who would probably like to come into work on January 1 and get started on the year-end closing, will probably have to wait until Sunday when verification of financial systems will be completed," says Christer Ekengren.

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

UPCOMING

January 5: There will be a special issue of Contact about the millennium shift and all the activities that occurred at Ericsson over the New Year's weekend.

January 28: Ericsson will be announcing its preliminary earnings for the 1999 fiscal year.

February 24: The CeBIT trade show opens in Hanover, Germany. This is the world's biggest telecom trade show. Last year there were 700,000 visitors.

UPDATES

On December 2 Ericsson in Lynchburg, in the U.S., acknowledged the international character of its staff. This was done through a number of festivities, representing the various countries around the world which the employees come from.

Ericsson's WAP phone, the R380, has attracted a great deal of attention in the U.S. The phone was included in Popular Science magazine's list of the Greatest Achievements during 1999 in Science and Technology.

Sathish Chandran, of Ericsson in Malaysia, has been named Fellow of the Academy of Sciences in Washington for his efforts in mobile communications.

NEW ASSIGNMENTS

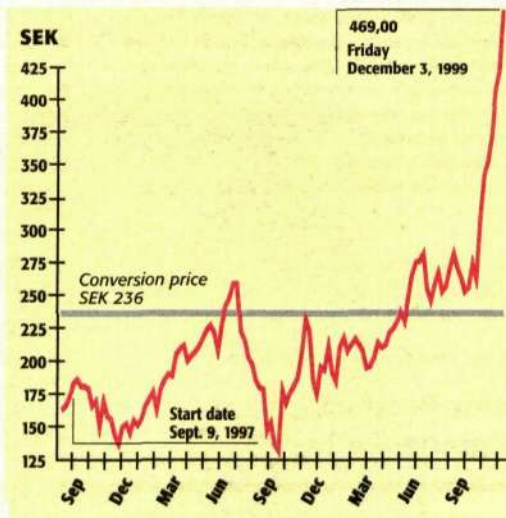
Gun-Britt Lundberg has been named the head of the new Financial Business Support unit within the Finance corporate function.

Tsviatko Ganev, who has worked at Ericsson for 18 years, is leaving Ericsson for a new job in the Electronics group. Most recently he worked at the WDM (Wavelength Division Multiplexing) product unit.

Ton Aan de Stegge, currently President of Ericsson Netherlands, will leave Ericsson.

Leo de Hoon, presently Chief Financial Officer, is acting President of Ericsson Netherlands.

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 web site: <http://inside.ericsson.se/convertibles>

Minimize risks for New Year



► Make sure that your computer is Y2K compliant - that only Y2K compliant applications are installed and that your virus protection has been updated. If you are an ESOE user, you can check your anti-virus controls and Y2K controls centrally through the network. You just have to make sure, that before and after the

New Year, you log on properly and do not become impatient and overlook

the anti-virus program updates. If you do not have ESOE, it is your responsibility to make sure that your computer is Y2K compliant. If you don't know, make sure that you get help from your IT consultant or the help desk. Also, make sure that programs you have developed yourself and things like Excelark are Y2K compliant.

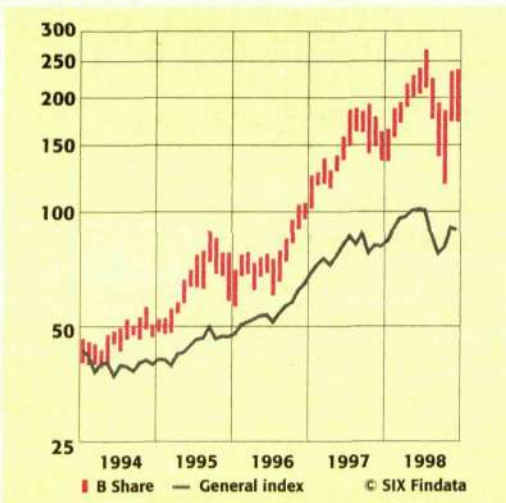
► Go to a party, not to work. Perhaps you've forgotten something or are just curious and decide to make a quick visit to work during the New Year weekend. Forget it! The workplace is closed. Only those who have been ordered to report to work will be allowed in over New Year. Nor should

you sneak a test of your computer environment, surf the intranet or check e-mail during the millennium shift. If you can't restrain your curiosity and can't wait until after the weekend, and if you have your own Internet connection at home, you can check out what is happening in the Ericsson world on the Internet at: www.ericsson.se/infocenter



► Shut down your computer properly, prior to going home for the New Year's weekend. Before you do, clean out your computer of junk programs, old documents and functions that you don't use. Most servers and systems will remain in operation, but by turning off all clients and user computers, you will reduce the amount and load of traffic, as well as the risk for virus attacks that could damage our IT environment. The biggest threat during the millennium shift is the spread of viruses.

► When you return to work after the millennium shift, make sure that you get all the new anti-virus programs by logging onto the network properly. This is particularly true for those who have laptop computers or a workplace in their home. Don't poke around in your computer environment, opening every program and application simply to test them out. That could result in an overload of the network. Only open what you need for your job.



contact technology

DECEMBER 1999



The Bluetooth tour is aimed both at the media and at Ericsson's clients and distributors.



Ericsson's cordless headset is the first real Bluetooth product. It will be available on the market in six months.

From Brazil to Chile, from Mexico to Finland, down to Hungary and South Africa, and via Egypt and Lebanon back up to the Czech Republic - Bluetooth radio technology is making a world tour. Ericsson's Bluetooth Solution Tour from Lund, Sweden has been met with great interest everywhere it goes.

Bluetooth on world tour

Recently, Ericsson unveiled its first Bluetooth product. The headset, which can maintain a remote connection with a mobile phone using Bluetooth, is expected to be on the market by the middle of next year. Numerous products and applications are in the works and the prognosis for Bluetooth points towards even more rapid growth than has been experienced in mobile telephony.

The Ericsson Bluetooth Solution Tour is also currently underway.

"So far, reactions have been fabulous," says Per-Erik Svensson, head of marketing at Ericsson for Bluetooth technology. "At some stops, we've had over 60 journalists present from various forms of media including radio and televi-

sion, as well as a large number of operators and clients. We were especially well received in Mexico City where we had to hold eight presentations over three days, in order to meet the demand. Currently (the middle of November) we're in South Africa where we'll be making five presentations in front of approximately 500 people."

Live demonstrations

The purpose of the tour is to both present general information about Bluetooth technology as well as demonstrate that Ericsson is a leader in the field. That is why each stop consists of both a media presentation and a demonstration for customers and distributors. At each location, Ericsson's local companies participate,

ensuring that the presentations are adapted to the local market.

"In order to really demonstrate how Bluetooth can benefit ordinary users, we conduct live demonstrations in a simulated home environment," says Per-Erik Svensson.

Bluetooth development work is advancing at a rapid pace.

Many applications

Ericsson has demonstrated several possible applications using prototype models. One involves connecting a Bluetooth adapter to a mobile phone, enabling wireless communication between the phone and a laptop computer equipped with a Bluetooth PC-card. Another solution is Bluetooth Info-Wear, a tiny computer in the form of a watch, providing the user access to e-mail and an address book. Yet another application is a portable hard drive that fits in one's pocket and which saves all files and documents.

Application availability will drive development. To stimulate development of new applications, Ericsson has put together a development package, ready to be programmed for special applications, making it easier for even small manufacturers to include Bluetooth in their products.

Lars Cederquist

lars.cederquist@lme.ericsson.se

INNOVATIONS



Innovations of the century

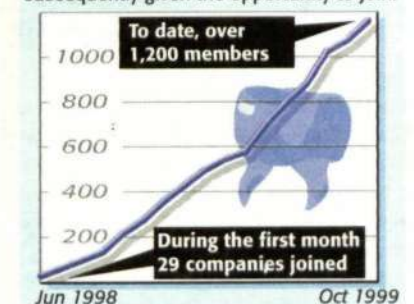
They appear at the end of each year - newspapers' lists of the song of the year, the year's successes, gadget of the year, and so on. This year, there will probably be more lists than ever and this time they will cover the entire century. Contact doesn't want to be the exception and below is our own list of the century's ten most important innovations, in no particular order. Items which almost made the list included radar, the laser, the pill, the polio vaccine and the electric guitar.

- **The airplane:** Unbeatable speed - and what a view
- **Radio broadcasting:** Providing news quickly to the public changed the world in the 1920s
- **Television:** Entertainment and information in an unbelievably attractive format
- **Nuclear power:** A source of energy that does not follow the short-sighted spirit of the times
- **Integrated circuits:** Born in 1958. Becoming ever smarter and smaller
- **Space rockets:** The sky is not the limit
- **The mobile phone:** Basic accessory that is assuming increasing importance
- **The Internet:** The new backbone of society, now assuming the convolutions of the brain
- **Gene technology:** Precision in plant cultivation and animal breeding has become daily fodder - in a double sense
- **The electric toothbrush:** Wonderful expression of the modern human's eagerness to save time and energy



INCREASING BLUETOOTH MEMBERSHIP

In May, 1998, a Bluetooth special interest group was formed by Ericsson, Toshiba, IBM, Nokia and Intel. Other companies were subsequently given the opportunity to join.



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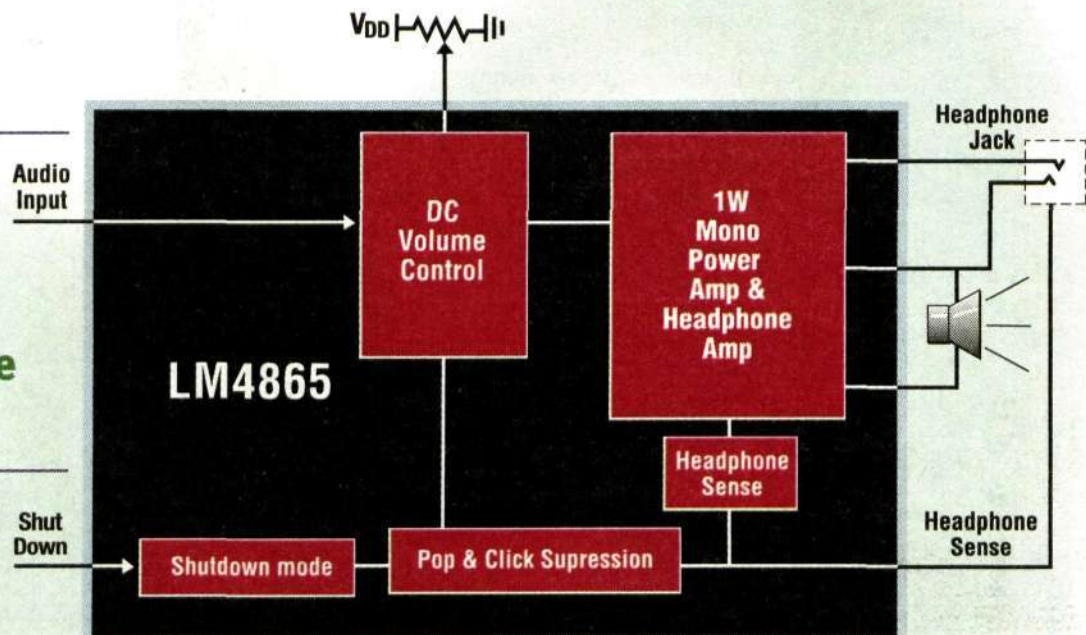
for Cellular Phones

**National's LM4865
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Delivers 1W Output
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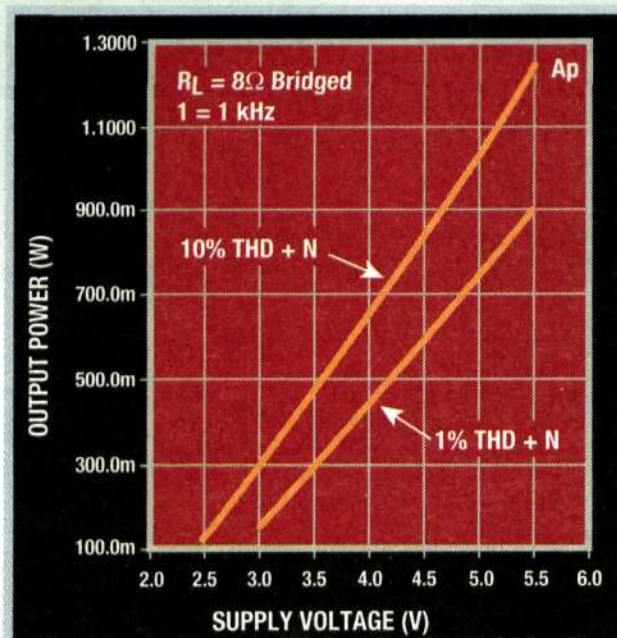
- P_o at 1% THD+N into 8Ω , 5V: 750mW typ.
- P_o at 10% THD+N into 8Ω , 5V: 1W typ.
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Quality label boosts demand for Ericsson phones

Connect as many products as possible to Ericsson telephones. That's the objective. The latest addition is Sordin, a hearing-protection headset.

"Ericsson Approved" is the quality label that can be displayed on all products that have been tested and approved by the company. The label confirms that the accessory is of good quality and can be used with Ericsson phones. The importance of quality labeling is expected to increase when Bluetooth products enter the market. The more products that can be connected to Ericsson phones, the more phones the company will sell.

"Since we aim to boost demand for Ericsson phones, it is essential that as many products as possible can be connected to them. The prod-

HEARING PROTECTION



- A headset for noisy environments
- The user can move up to six meters from the phone
- Manufactured by Sordin Communications AB of Sweden
- Transmits on the 454 MHz waveband
- Functions with Ericsson phones based on a 4-volt platform

ucts involved range from cameras to portable computers and Palm pilots. We anticipate explosive growth in this area when Bluetooth applications become more commonplace," says Martin Wenhov, who is responsible for the company's Ericsson Approved activities.

Hands-free ear protection

The latest product to be approved by Ericsson is Sordin, a hearing-protection headset whose integral wireless communication features enable wearers to make telephone calls in noisy environments, such as roadwork and construction sites.

Sordin offers both cordless and traditional (corded) units with FM radio as an option. It functions in approximately the same way as a portable hands-free set, with a loudspeaker built into the earpiece and a microphone positioned in front of the user's mouth.

"Although Sordin is a niche product, it provides us with access to an important customer segment. By launching the hearing-protection headset together with the R250 Pro, Ericsson's impact and water-resistant phone, the entire concept will be strengthened," Martin Wenhov continues.

Adaptation to hearing aids

Ericsson has recently commenced a cooperative venture involving hearing aids for people with impaired hearing. The venture includes the development of a concept for connecting hearing aids to a mobile phone. Its aim is to amplify the volume of the hearing aid and adapt the transmission frequency to the level



With a Sordin hearing-protection headset, users no longer have to miss incoming phone calls at noisy locations. Sordin is one of several Ericsson Approved products. The man in the above photo is wearing conventional hearing protection.

that best suits the user. Martin Wenhov is proud of Ericsson's efforts in this area.

"This is a narrow, but tremendously important segment," he says.

As part of the quality-labeling program, Ericsson is currently cooperating with several companies. Most of the products involved, including modems, have been approved by Ericsson. Another ten or so companies have shown an interest in receiving the label of

approval. The Ericsson Approved program was introduced 18 months ago. The unit in Lund, Sweden, currently has only one employee, although additional recruitment is expected.

Ulrika Nybäck

ulrika.nybäck@lme.ericsson.se

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Demands on e-commerce increase

High security, smooth transactions and open solutions. This is Ericsson's recipe for success in mobile e-commerce solutions for new and existing customers.

"The market for mobile e-commerce is wide open at the moment and Ericsson must be prepared to develop tailor-made product packages that satisfy all needs," says Christian Testman, who is responsible for mobile e-commerce solutions at Ericsson Radio Systems in Kista, outside Stockholm.

The previous issue of Contact contained a description of Corporate Technology's initiative to coordinate Ericsson's resources in the field of e-commerce via mobile phones. The project, led by Östen Frånberg, has set the ambitious objective of making Ericsson number one in this market within a year.

Ericsson's undeniably strong positions in mobile solutions and IP are to be interwoven into a new medium that offers new business opportunities. Executive Management's vision is currently being disseminated in earnest throughout the organization. Leif G Ericsson of Ericsson Business Consulting is responsible for activities at the consultancy level. Christian Testman, who recently relocated to Sweden after having spent several years in Norway working on mobile applications for wireless commerce, is in charge of the technology side.

"While I was responsible for wireless applications at Ericsson in Norway, I was commissioned to develop a mobile e-commerce solution for the operator segment. This service is



Christian Testman

now used by Swedish mobile phone operator Telia Mobitel for sales of movie tickets," says Christian Testman, who explains that the Norwegian project generated valuable experience.

His new task is clear-cut: to provide new business opportunities for mobile phone operators, contents suppliers and major global companies by offering application solutions that support the entire mobile e-commerce process. This requires covering all aspects from WAP interfaces for end users to encryption and transaction solutions that enable secure payments.

"Our aim is to provide turnkey solutions. In other words, we intend to identify product packages in which several segments of Ericsson can participate," Christian Testman adds.

Demonstration of strength

To exemplify the power of standardized and secure mobile e-commerce, a demo solution, WapTrader, has been developed and was exhibited at Telecom 99 in Geneva earlier this year. WapTrader focuses on availability for end users, high security and providing support for a multitude of standards for the entire process, from SAT (the standard for SIM cards) and WAP (interface for wireless clients, mainly for mobile phones) to various Internet protocols and a variety of standards for digital

signatures and certification for encryption keys.

"Although WAP is the most important feature for the end user, the client, it is actually only a filter that will no longer play a role when the mobile networks' transmission speeds increase. Demon WapTrader is a server solution that is not dependent on the client," says Christian Testman.

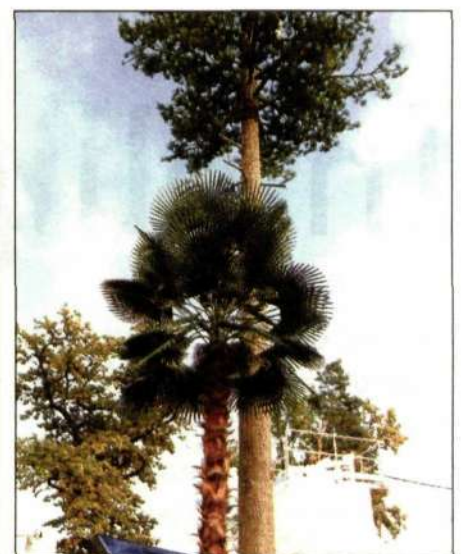
The components in Demon are a conventional web server, an SMS gateway (Sonera/Smarttrust), a WapGateway 1.1 and a client – a WAP telephone from Ericsson. A security adapter – a security solution comprising a number of modules for the identification of user SIM cards, encryption keys and passwords, among other applications – is also included.

Security adaptations

Ericsson's mobile e-commerce product, Mobile E-pay, consists of the following three modules: Access, a module for basic functions, such as operation and connection to the network infrastructure. Security, a module that facilitates secure payment transfer across the board, from the content supplier to end-user. The level of security can be adapted to application requirements and be upgraded as new technology is introduced. Payment, the final module, comprises comprehensive solutions for transactions and account handling.

Mobile E-pay is being marketed to mobile phone operators and ISP (Internet Service Providers) that aim to build mobile portals for wireless e-commerce.

Mats Lundström



Specially designed camouflage for telecom masts, to help them blend in with the surrounding vegetation, were exhibited at Telecom99 in Geneva.

Ugly antennas disguised

► Vehement criticism of ugly telecom masts has led to the emergence of companies that specialize in camouflage for antennas. At Telecom99 in Geneva earlier this autumn, one exhibitor demonstrated how masts can be concealed. Many inquisitive visitors flocked around this company's stand and it took them some time to actually realize what they were seeing. The camouflage can be specially designed to blend in with virtually all environments, from pine trees to palms on a sunny beach.



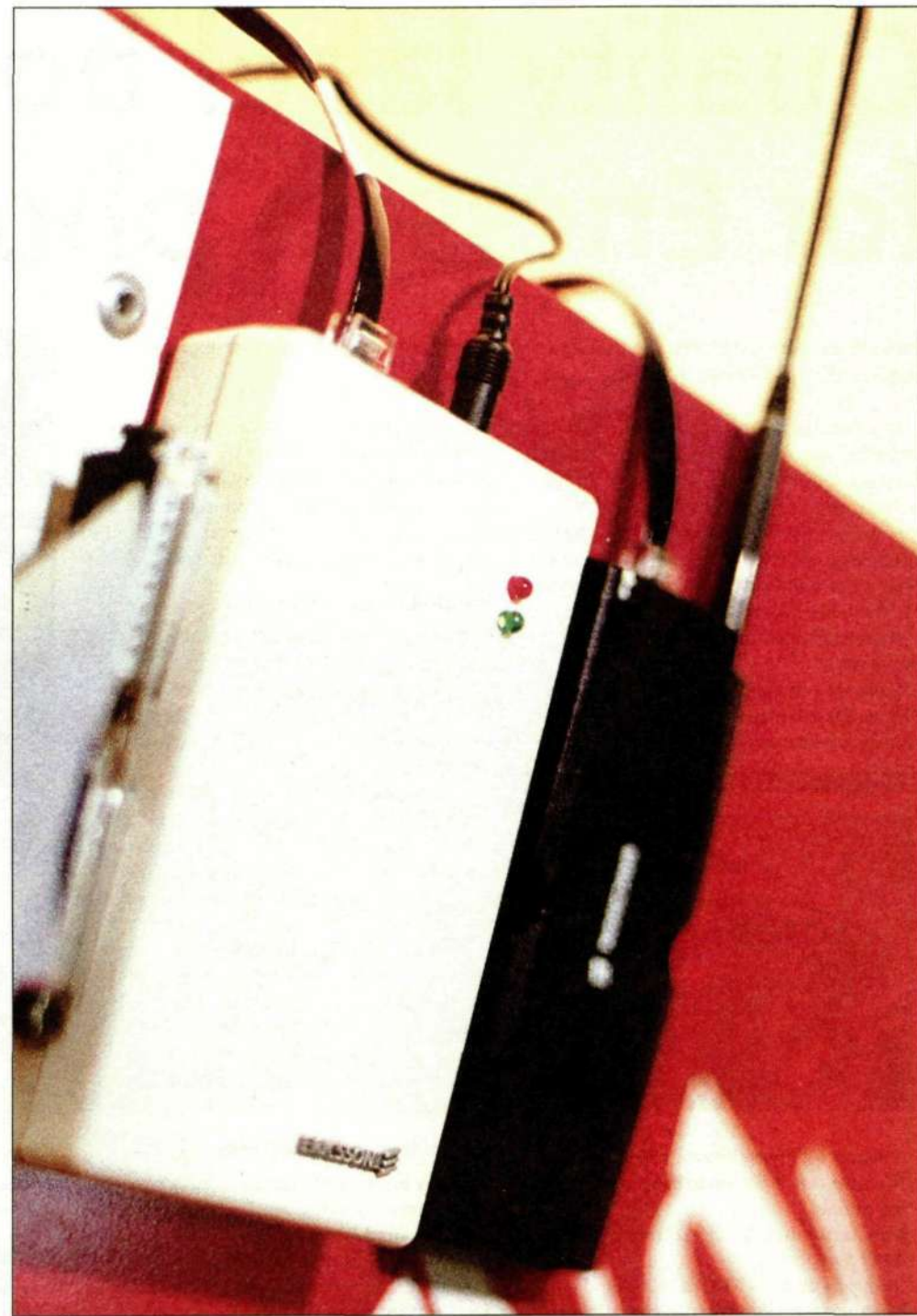
Pär Karlsson, who has worked on developing the Telematics technology.



Jörgen Johansson, head of marketing for the Telematics unit at Ericsson Software in Karlskrona



Maria Sahlberg, project manager for the prototype work.



This is a prototype of Ericsson's Remote Terminal Unit coupled to a scaled-down GSM telephone, that could be used in a vending machine for example. Photo: G.T. Nyberg

Intelligent machines will

The next big users of telephone and data networks will be machines. Soon, tens of thousands of vending machines, elevators and electrical meters will be hooked up to mobile networks and the Internet. Thanks, in part, to Ericsson, which is one of the first companies to develop total network solutions for companies with large machine parks.

When Alfons Jonsson tires of working at his PC and goes out into the hallway for a cup of cappuccino from the coffee machine, the machine informs him that, "the cappuccino is finished here, but is available in the nearest vending machine on the fourth floor." Alfons goes there, gets his cup of coffee, and technology triumphs again.

A technology known as Telematics is behind the simple message generated by this dumb machine. It involves transmitting data back and forth between machines. In this instance, the coffee machine was equipped with some form of intelligence, including a sensor that was able to inform a central server that the vending machine was out of cappuccino. The server, in turn, had data from all the other machines and consequently "knew" where the nearest vending machine with cappuccino could be found.

"The technology of remote sensing has been in existence since the 1970s when it was called Telemetry," says Jörgen Johansson, head of marketing for the Telematics unit at Ericsson Software in Karlskrona. "At that time, it mostly involved collecting data from various machines. Today, we offer a total solution with a virtual network, where communication goes in

both directions, and involves controlling machines."

The Telemetry solution was specially adapted and consequently expensive, and the market was slow to respond. Many factors are now giving a boost to Telematics. Good, inexpensive carriers in the form of GSM and the Internet are available and processing power is cheaper today, enabling many machines, such as washing machines, to have built-in intelligent features. Moreover, the market is ready, especially in the U.S. On the one hand, customers, that is the machine owners, have become aware of how much money is lost when their machines do not function. On the other hand, end users, such as the ordinary electricity subscriber, no longer accept having to pay a fixed bill in advance.

Customized solutions

"We're starting to notice this. Customers are now pounding at our door wanting customized solutions," says Jörgen Johansson. "But what we are really trying to do is move towards as generalized solutions as possible. We don't want to have to go inside their appliances, they know their parts better than we do. Our strength is communications solutions and that is where we can fix their problems."

Technically speaking, the challenge is how to deal with tens of thousands of machines in a secure manner and to make it as cost-efficient for the customer as possible. When it comes to prices, it is best to develop standardized solutions that spread out development costs.

"It is mostly smaller companies that are involved with Telematics, so what is needed is for the big players, such as Ericsson, to move in and stimulate the market. Predictions put the value of that market at tens of billions of Swedish crowns in the next few years, in the U.S. alone."

Appropriate networks

"We call our product Virtual Private Telematics Network," says Pär Karlsson, from the research side. "Basically, that means that we use the network that is appropriate at the moment of transmission. That could be a wireless network or a wireline network. To start with, we're working with the SMS solution (Short Messaging Service) for GSM and an IP solution over CSD (Circuit Switched Data), but in the future there will be a common solution for any network. It's up to the customers to define and manage their virtual networks."

Ericsson's solution covers the customer's entire Telematics network, which is set up as a

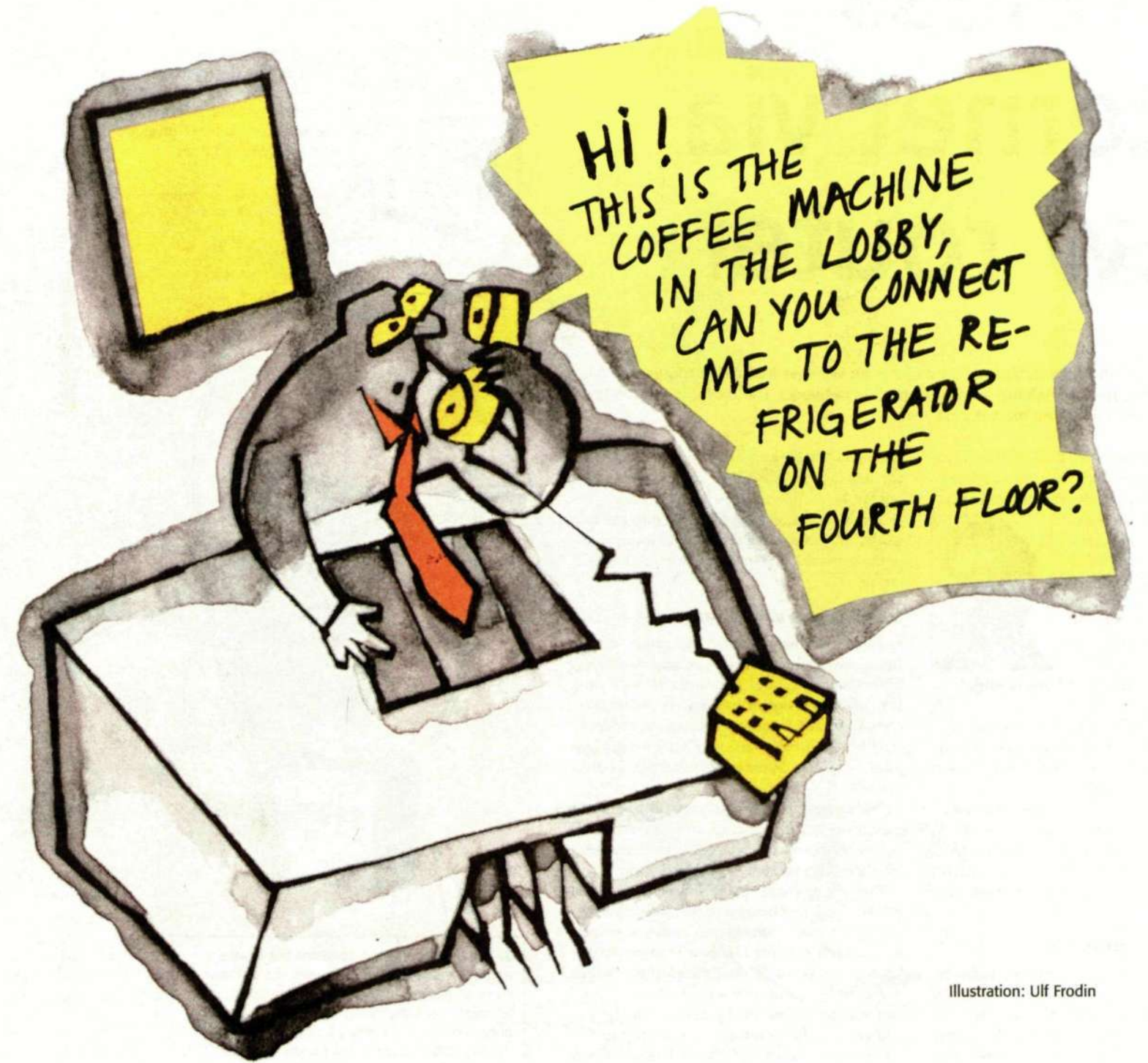


Illustration: Ulf Frodin

communicate via Net

virtual network on top of a communications network, such as GSM, the regular phone network or the Internet. Out at the vending machines, there is a unit called RTU (Remote Terminal Unit). At the other end is a central unit that goes by the working name of Telematic Management System Server.

GSM-based version

The RTU, which is responsible for the intelligence in the machine, consists of both the machine designer's information solution for their vending machine, and Ericsson's more general software solution that makes it possible to communicate over the networks.

In the first GSM-based version, a GM 12

module developed especially for telematic applications is used for the radio link. The GM 12 is a scaled-down GSM mobile phone without a display, keypad, microphone or speaker. As a prototype, the RTU is a larger device built using standard components, but will be reduced in size and built into the machines. This can be done either by having the customer buy software from Ericsson and build it into their machine, or by Ericsson developing a standard module for the RTU.

Normally, one RTU per machine is used, allowing them to communicate with each other via cable, Bluetooth or some other system. A more powerful RTU could also receive information from several machines.

The central unit containing the applications is essentially specific to Ericsson, and something that most competitors have not focused on. This unit ties the virtual network together and handles the customer's business systems. Applications, which could be sales reports that form part of a larger business system, are written using standard protocols.

Access connection for SMS

At the base of the server is an access connection out to the GSM network for circuit switched data and SMS. Currently, IP over the circuit-switched portion is supported, but in time packet data for GPRS will also be used. Above this is space for various communications ser-

vices and on the top are support services. There is also an Operation & Maintenance block to control the system.

"We now know which technology is needed and we have prototypes ready," says Maria Sahlberg, project manager for the prototype work. "We're now going to develop a base platform and begin field testing together with customers, and we'll need to at least double the size of our unit, which currently consists of ten people. We're looking for people internally now, and expect that by next year, the year 2000, we'll be in the testing phase."

Lars Cederquist
lars.cederquist@lme.ericsson.se

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Wireless Internet via new router

Ericsson will soon introduce its first realtime router for wireless Internet, a router that has been optimized to handle realtime services in mobile networks. The router is the world's first of its kind and will hit the market next year.

"This is a major step toward being able to introduce IP in all networks including the mobile telecom networks. We are seeing that telecom operators increasingly want exclusively IP-based networks. Our realtime router is a factor in making this possible," says Johan Börje, responsible for marketing at the unit responsible for routers for wireless networks.



Johan Börje

Ericsson is moving into an entirely new playing field, namely, routers for wireless communications – the future wizards of realtime services. In other words, the new field is based on familiar Ericsson ground: voice and mobility.

"We're focusing on a well defined segment, a niche for wireless realtime communications. This is where our strength lies. We understand the requirements of the wireless environment and can optimize our routers accordingly," says Johan Börje.

Delay-sensitive queuing

The wireless environment sets several special requirements on the new router, which is a type of switch for packet-data transmission (see adjacent article). A router connected to the mobile telecom networks is limited by the slow transmission speeds of these networks. That is why it is important the router can detect which IP packets are sensitive to delay, such as small voice packets, and give them the right of way. This involves a new, more advanced method of classifying IP packets as high-priority versus those that can wait.

The router must also be able to divide up large packets, such as e-mail packets, into smaller ones. Otherwise, they can clog the flow in the router and cause millisecond-long delays, which would be quite irritating in telephone calls or video conferences. By dividing up large packets, high-priority realtime-sensitive ones can slip by and not have to wait for their turn.

A router for wireless telephone networks must

also be as reliable as other equipment in today's wireless networks. No one would accept lower quality in mobile telecom services simply because the operator introduced IP into the networks. Moreover, it must be easy to integrate into the networks, and include automatic configuration.

Supports new and old languages

Another advantage is that the router understands two protocols, the IP version 4, which is today's standard, and the newer IP version 6. IPv6 involves major advantages since it offers essentially unlimited numbers of Internet addresses. With the current version of the Internet protocol, version 4, Internet addresses will become scarce.

"We foresee people being constantly online in the future. In the future, all users and terminals will be constantly connected. This will require a lot of new IP addresses," says Johan Börje.

The new realtime router will be available in two versions, one being a stand-alone router deployed in network solutions for radio-access networks. Known as the Ericsson Realtime Router RX1820, it is based on the Cello platform, which is also the foundation for several other new Ericsson systems for the third generation. In the second version, the realtime router is integrated in other systems, such as Cello and GSM/TDMA systems. It is built into the base stations, which thus become combined base stations and routers.

Sales start in one year

The router will be beta-tested in the spring and will be commercially available at year-end.

"In five years, IP will be the dominant carrier for all services in all networks. The time is ripe to begin discussion with our customers on how IP will affect networks in the future, what the requirements will be and what solutions Ericsson offers," says Johan Börje.

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

Bomb-proof network

What we now know as the Internet was born in the mid-sixties, right in the middle of the cold war. Data communications had been around for several years. However, as with telecommunications, data communications had so far involved fixed connections via circuit-switched communication. If a line was destroyed, all communication on it would have been lost. There was no way to redirect traffic.

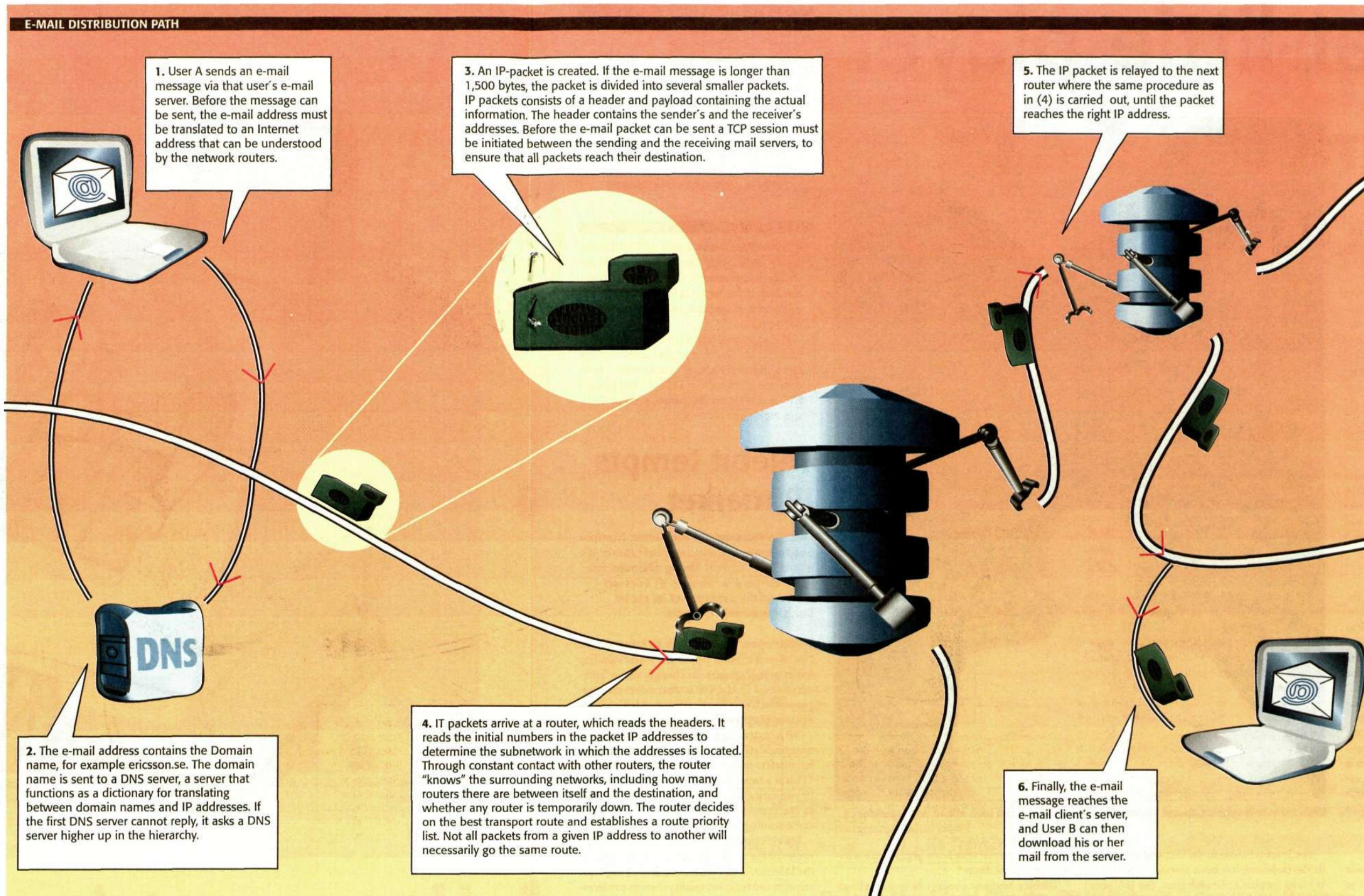
Probably some gray-haired American general realized this was unacceptable and turned to the researchers at the U.S. defense-research organization, ARPA.

"Listen, this is appalling. The Russians are building masses of nuclear arms, and what happens if they attack us here? All our communications would be wiped out. We wouldn't even be able to reach the President. Do something about it!"

It could well have sounded that way. The idea, in any case, was to create a network that could

withstand an atom-bomb explosion and automatically redirect traffic. The American researchers went to work and created a robust network they called the ARPANET. The first inhabitants of the network, apart from the military, were the universities in the U.S. Eventually, the network grew and in the mid-1980s the military withdrew to build their own network. In 1993, when the Internet was opened to companies and private individuals, the real Internet boom began.

Mia Widell Örnung



The diagram shows the path of an e-mail message across the Internet via routers. So far, Internet traffic has mainly consisted of e-mail, web surfing and file transfer. In the future, the volume of realtime-dependent services, such as IP telephony, will increase. This creates new requirements for robust network routers, nodes and bandwidth. Ericsson's strategy is to invest heavily in the Internet, wireless data, IP-based telephony and multimedia.

Accurate high-speed mail distribution

A new word has recently become popular Ericsson jargon: routers. With Ericsson's investments in ADD, Juniper, Telebit and Torrent, routers have become as ubiquitous as AXE or ATM. Naturally, the reason is that routers are a key piece in the Internet puzzle – and that Ericsson aims to be best in Internet technology, especially wireless Internet technology. But what exactly is a router? And why are routers the current catchword?

In simple terms, a router is a high-speed, intelligent mail distribution center that can decide how to direct packets through the networks – which routes to send them on.

The router connects different types of networks – such as ethernet or token ring. Such networks combine to form the Internet.

Despite the fact that different types of networks are involved, all network communications are based on the same principle – packet-switched data according to the IP Internet protocol. In circuit-switched networks such as the telephone networks, lines are dedicated, since a connection must be established between sender and receiver before data is transmitted. This is uneconomical in that lines are occupied even when no data is being sent, which requires more complicated switches, since all switches along the way

must keep information on every connection that goes through the switch.

Small packets created and dispatched

Packet-switched communication is often called connectionless because it does not require a dedicated connection. In Internet communications, small IP packets are created using one of the TCP/IP family of protocols, of which TCP and IP are the most important. IP packets consist of two parts, one of which is the actual information – for example, an e-mail message, a Web page or voice. The other part is an IP header containing information such as the receiver's and the sender's IP addresses. If the message is divided into several packets, which it must be if the volume of information is too great, the packets are assigned serial numbers.

In this way, the packets can be recombined on arrival.

Router to router relay

The router has two main tasks: to compile a route priority list called a routing table and to read the addresses in the IP headers on individual packets. Based on the table, the router sends the IP packet further to the next subnetwork and the next router. The next router carries out the same procedure, until the IP packet reaches its final destination.

The intelligent aspect of the router is that it can communicate with other routers and obtain information on the best route, which is the basis for the routing table. This makes the router network robust.

If a certain part of the network is down, the router detects the problem and sends the IP packet by another route. This is what is meant by the statement that "Internet communications are connectionless." In other words, packets belonging to the same message can be sent through the networks by various routes.

The router also reads the "time-to-live" information in the IP packets and discards packets that have circulated in the network too long and can only cause congestion.

While all routers function in basically the same way, there are several variations where different characteristics are given different emphasis. There are high-speed routers for the backbone – the Internet superhighway. A high-speed router switches IP packets quickly even in heavy traffic. The most powerful can transmit information at gigabits per second.

The main suppliers here are Cisco and Juniper, the American router manufacturer in which Ericsson invested earlier this year. Router speed depends on how fast a packet can pass through the router and how long packets must wait to enter the router. If many packets arrive simultaneously, a delay can occur.

Coping with rapid growth

A gigabit router must also be able to cope with the rapid growth of the Internet. How well a router performs as the Internet grows depends on its ability to generate routing tables and store

information on all the other routers in the network.

This is called BGP, Border Gateway Protocol, and its purpose is to enable all routers, or at least backbone routers, to "know" the routes to all of the thousands of Internet subnetworks. This information is updated automatically. When a new router is installed in the network, the operator only needs to feed the router a small amount of information. The router itself obtains other necessary information by communicating with other routers.

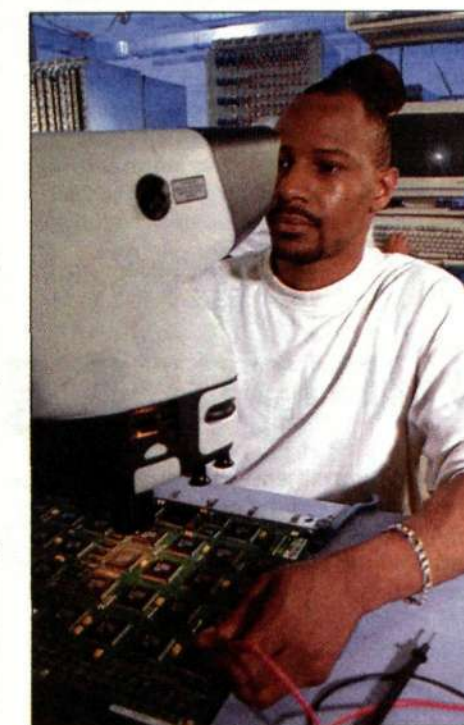
Access routers at the network's edge

Other routers include the routers at the edge of the network. These "access routers" need not cope with data volumes as large as those handled by the high-speed routers. Instead, they must be adapted to the networks in which they operate. An example is realtime routers for the wireless networks (see adjacent article), which depend on their ability to prioritize realtime-dependent packets ahead of packets that can afford to wait.

Mia Widell Örnung

BASIC GLOSSARY

- **TCP/IP:** Transmission Control Protocol and Internet Protocol, the family of communications protocols used in the Internet.
- **Router:** A type of intelligent network component used to connect different types of networks in the Internet.
- **Bit and byte:** Computers process all information as ones and zeros. One such digit is called a bit. Eight bits make a byte. A gigabit router can handle 1,000,000,000 ones or zeros per second.
- **Transmission speed:** Indicates the speed at which data can be transmitted between communicating entities. Frequently expressed as Kbit/s, Mbit/s or Gbit/s.
- **Server:** A high-capacity computer in a network. A server stores data that can be used by others in the network. Servers can store Web pages, IP address or software for various services.
- **IP address:** A 32-bit (IPv4) or 128-bit (IPv6) number indicating a unique address on the Internet. The addresses are allocated centrally by IANA. All components of a network, including routers, have one or more IP addresses.
- **Node:** A network element, such as a computer, a router, a gateway or a bridge.
- **Gateway:** A network intersection that connects and translates between two networks of different construction, structure and type. A gateway is an intelligent network component with its own IP address on each network.
- **Hub:** A connection point in a network. It may be a simple connection box, or it may serve as a bridge, repeater or router.
- **Bridge:** A bridge connecting two networks that have different cables but otherwise identical characteristics – for example, packet-switching.
- **Repeater:** A type of amplifier that restores signal quality in long-haul transmissions in a network.



Assad Niang tests circuit boards for the AXI 580 router, which was developed by Torrent, a company that Ericsson acquired last spring.

Photo: Dennis Brack

A great little player

With seven years under its belt, the Danish Telebit company is an established player in the Internet market. Boasting the world's most advanced IPv6 router, the company is challenging the US domination in the market.

Taking up this challenge, however, requires financial muscle. By joining the Ericsson family, Telebit has acquired the stamp of approval needed to win customers' confidence.

In the middle of the next year, the Internet will take a major step toward the future, as several national networks – for instance, in the U.K., Germany, France and Japan – are connected to each other, forming the world's first international IPv6 network. IPv6, the next-generation Internet protocol, will make Internet telephony possible.

With a product portfolio that includes the world's most advanced IPv6 router, the Danish company will automatically have a place in this EU-initiated project.

It is not the first time that Telebit, whose head office is located outside Århus, has allied itself with a telecom giant. With customers like the Japanese operator NTT, Britain's BT and France Telecom, Telebit moves with aplomb among industry giants.

Aged gracefully

It all began as early as 1992, when the first Internet wave hit Europe. The EU took the initiative of linking up the computer networks of the European universities to form an international research network, and the job of developing the IP router for the network was given to the newly started Telebit.

The router for the European research network is still the cornerstone of Telebit's product range. However, it has aged gracefully. Through a series of updates, the Danish engineers have succeeded in creating a router that is unique in the world in its ability to handle essentially all protocols on the market – including IP, ATM, Frame Relay and X.25 – inside a single box.

"Grabbed a head start"

With its deliveries to the European research network, Telebit made a name for itself in the Internet market. When the time came to develop the next generation of Internet protocols, IPv6, the company was seen as the obvious partner, explains Telebit president Svend Møller Nielsen.

"We participated in the design of the protocol, and in 1995 we were the first in the world to present a functional IPv6 router. The Americans were still investing enormously in Version 4, which enabled us to grab a head start which we've had ever since."

There is still conflict about which Internet protocol will prevail in the future. The European countries and Japan stand behind IPv6, while the U.S. continues to support IPv4.



With Ericsson's support, Svend Møller Nielsen and Telebit can look ahead with confidence. Photo: Niclas Henningsson

The Internet arose in the U.S. and until now its development has been steered from there. With its surplus of IP addresses, the U.S. sees no need to change to new versions, but in the rest of the world addresses are becoming scarce. When the Internet goes wireless and every cellphone will need an IP address for Internet access, a great many new addresses will be needed. IPv6 is much better prepared to meet the expected onslaught of new users.

High security requirements

"Europe and Asia hope to advance their positions via IPv6," explains Svend Møller Nielsen. "And if the Internet is to become truly mobile, IPv6 is essential. Apart from its superior address management, IPv6 meets the high security requirements of mobile Internet use. I am

convinced that IP telephony begins with wireless communications."

Telebit's business concept is to be well advanced in the development of routers for standard protocols. The company will never be a volume supplier. Telebit's annual production is modest compared with market giants such as Cisco Systems.

"Ericsson's purchase of 75 percent of Telebit is therefore extremely important," Svend Møller Nielsen explains. "As a small supplier it can sometimes be difficult to win customers' confidence. However, Ericsson's production facilities and financial backing give us the stamp of approval customers need to feel secure in their purchasing."

Niclas Henningsson

TELEBIT MILESTONES

- 1992: company formed, first router for Internet traffic developed
- 1994: combined IP router/ATM switch presented
- 1995: company presents the world's first IPv6 router, resulting in nomination by the Datacom International magazine for "Most Innovative Internet Company of the Year," together with companies such as Cisco and Bay Networks
- 1999: Telebit purchased by Ericsson

IPV6 FORUM

In June 1999, Telebit launched IPv6 Forum, where participants compare notes and exchange information on IPv6. Another important task of the forum is to promote the development of applications for the new Internet protocol.

The approximately 50 members of the forum include router manufacturers such as Cisco, Hewlett-Packard and Compaq, telecom operators such as AT&T, BT and Japan's NTT, and telecom companies such as Ericsson, Nokia and Motorola.

Telebit tempts IP market

Ericsson's strategy for the future: Number one in wireless data communications. It's a goal that requires strong alliances. For its investment in wireless IP, Ericsson draws on the expertise of its recent Danish acquisition, Telebit.

Telebit, whose head office is in Århus on the Danish east coast, is one of the world's leading router manufacturers. Its strength lies in Internet protocol IP, and that is what makes the company attractive – so attractive that last summer Ericsson purchased 75 percent of its shares.

"IP is increasingly important in wireless data communications," says Peter Heintz, manager for wireless routers at Ericsson Radio Systems. "This is a trend being driven by market forces. IP simplifies the operator's commitment, and as the protocol achieves greater penetration, the technology may become less expensive."

Telebit's product portfolio includes the first router in the market for the next generation of the Internet, IPv6. With considerably superior security and function quality than its predecessor, IPv4, IPv6 is expected to achieve enormous impact when the Internet becomes wireless. An improved addressing function also makes IPv6 better equipped to deal with the expected tidal wave of wireless-Internet users.

"Mobile Internet systems where users are constantly connected require a unique address for every individual terminal," says Peter Heintz. "IPv6 solves this problem elegantly. IP functionality is also built into Telebit routers right from the start – a significant advantage over other products that must be updated to handle the new protocol."

Niclas Henningsson

Juniper's gigarouter sole winner in test

Ericsson's investment in the American Juniper Networks company slightly over two years ago marked the beginning of a fruitful partnership. Juniper's M40 gigarouter, marketed as Ericsson's AXI 520, is currently the Ericsson's router for the Internet backbone. In a test conducted by the Data Comm magazine, the AXI 520 obtained top marks.

In May this year, Data Comm tested routers. The test results were published on September 22. Only one supplier, Juniper, was prepared to cooperate. The magazine applauds Juniper, not only for its cooperation, but also because its router passed the test with distinction.

Data Comm agrees with operators in their complaints about router suppliers. Router sup-

pliers promise equipment that will deliver extremely high speeds and more capacity than any of today's largest routers. The magazine comments that such promises are repeated month after month.

To find out which router really is the best, Data Comm decided to test them, in cooperation with the European Network Laboratories

in Paris. The test was intended to be the largest to date of Internet backbone equipment. Since several router manufacturers had badgered Data Comm to write about their equipment, the reporters were surprised at the lack of interest in the test. The magazine concluded that the equipment was not yet ready.

Of the eleven companies invited to participate in the router test, ten declined. The reporters were most surprised that market-leader Cisco Systems refrained from taking part. At first the company was interested and offered its GSR 12000 routers. However, on

the day before the test the company withdrew.

Whereas Cisco and the others were uninterested in participating, Juniper was highly enthusiastic, offering four M40s for testing.

The tests showed that this router can handle an Internet six times as large as today's and faster than any other equipment tested by the magazine.

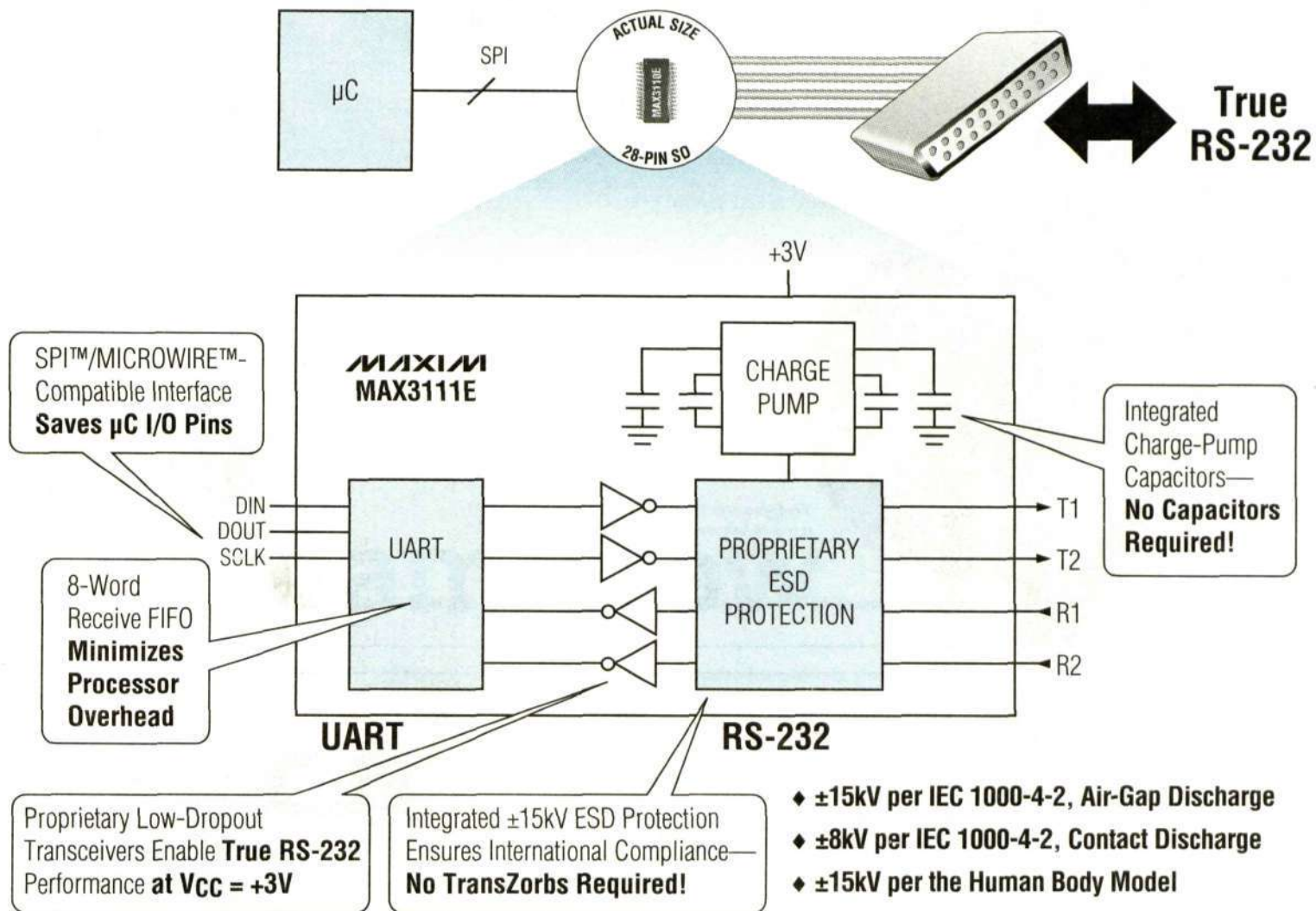
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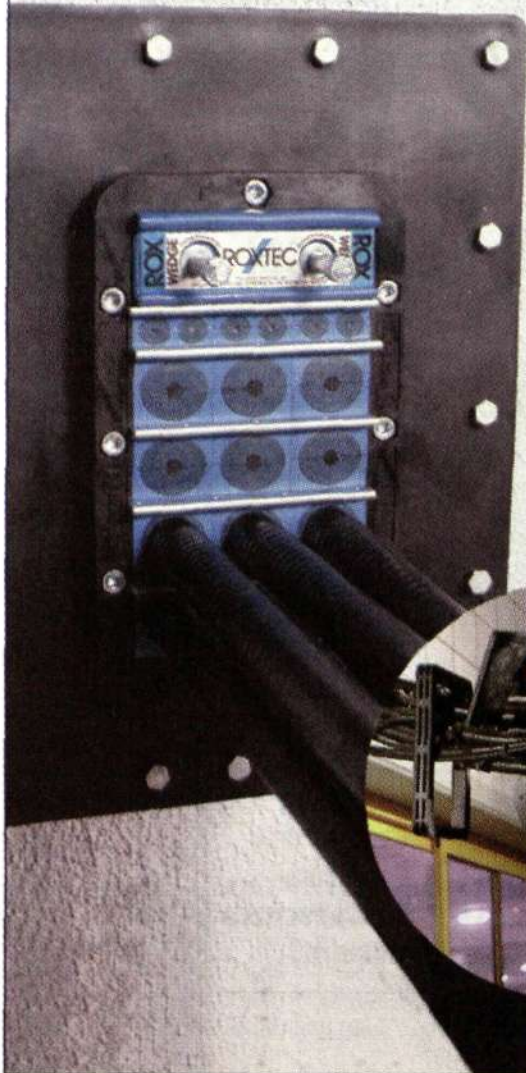
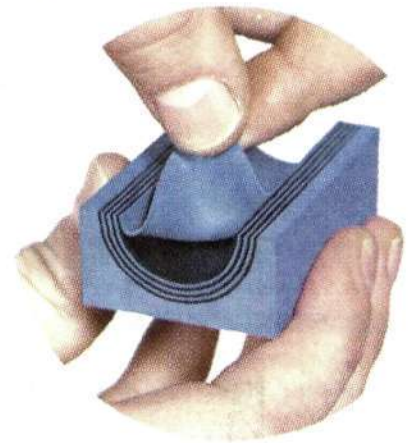
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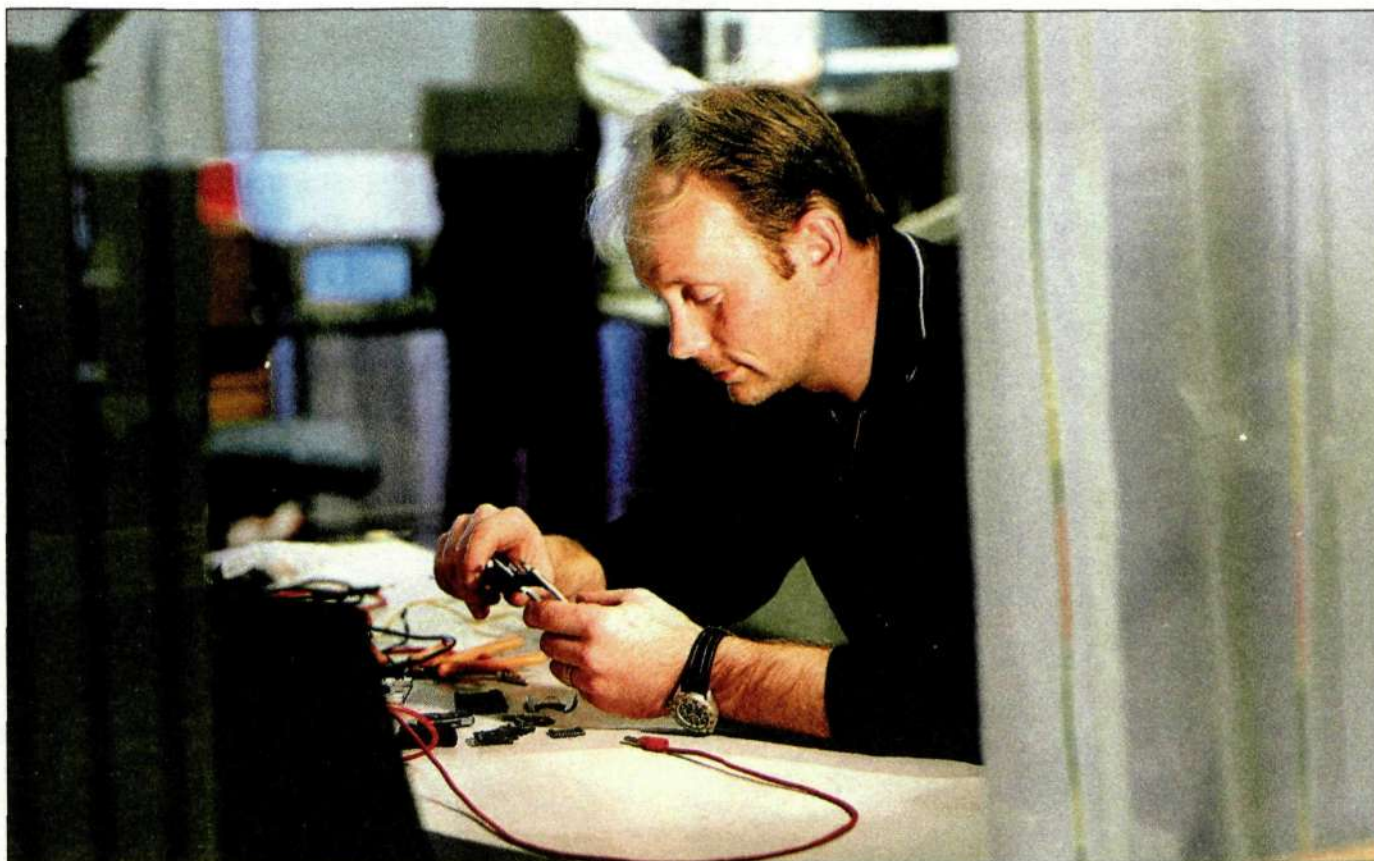


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Prototypes of tomorrow's products and accessories are developed at the product workshop in Lund. Here, Göran Schack is testing an mp3 player mechanism. Photo: Jeffery Richt

Mighty products from bits of foam grow

They are the innovators and technical specialists. The concepts for the mp3 player and the new Bluetooth headset came from them. At their product workshop in Lund, Sweden, prototypes for new phones and accessories are being turned out at a furious rate.

"The basic idea for the mp3 player was conceived during a coffee break. There were actually three of us who came up with the idea simultaneously," explains Anders Borgström, project manager at the Ericsson Mobile Communications product development unit in Lund.

Developing new telephones and accessories is a fairly long process that follows a predetermined route with a certain number of stops. Ericsson usually calls this process Time To Market.

Market research helps determine what consumers want, while actual ideas come from throughout the entire organization. Sometimes ideas are generated at the product workshop in Lund.

Prototype development of new telephones and accessories has to be done quickly, since there are several stops prior to selling the finished product in stores. In order to maintain momentum, small, unpretentious working groups are key.

"We have to be responsive to various trends in society. A diverse age spectrum within the group is good, and it's important to listen to what one's teenage daughters and sons have to say – both when testing new ideas and to find out what's popular right now. At the same time, we need to have the courage to listen to our own intuition and sometimes allow ourselves to fail – that's also important," says Torbjörn Gärdenfors, head of development in the unit.

"We have a top 1,000, a top 100 and a top 10 list of products that we'd like to develop. Ideas come from throughout the entire organiza-



Prototype of the T28 and the final product.

tion. The top three on the list are the ones we'll work on. What keeps us awake at night is whether or not we've focused on the right products," says Torbjörn Gärdenfors.

Styrofoam prototypes

Everything starts with a good idea from someone. That idea is presented to product management and if the go-ahead is given, an initial prototype is made, frequently out of styrofoam. Industrial designers are brought in at an early stage, in order to help generate a feel for and an idea of what the product will look like. The concept for the mp3 player (a digital music player that can be connected to a mobile phone) was hatched in May and a working prototype was unveiled at Telecom99 in September. It was met with great enthusiasm by trade show visitors, who were disappointed to find out that it was unavailable for purchase. Consequently, it was decided during the first few days of the trade fair that it should become a product.

"Trade shows are one of several good ways to find out what consumers think. We receive feedback and are able to discuss the pros and cons with them. Sometimes we return home and redo a product or make some alteration," says Anders Borgström.

Feedback during trade shows has, in some cases, led to Ericsson discontinuing certain

projects. For example, during the CeBIT trade show this year, a fingerprint reader that could be connected to a mobile phone and used instead of a PIN code, was unveiled. Response to the device was cool, and consequently the product was not developed.

"You can always disagree over why the response was so poor. Some believe that the market was not yet ready, but that perhaps it could become popular within a few years. Others feel that the technology needs to be made even better before it becomes a popular accessory. The most important thing is that we find out how consumers feel about prototypes," explains Anders Borgström.

Trade shows are one of several opportunities for evaluation. Market research, which is the most common method, forms the basis for deciding which products should be developed. During work on a prototype, constructive criticism and critical analysis within the group are important. Later, other people, who have skills related to marketing issues, are brought in from within the company to provide important feedback.

Many fun accessories

The past six months has been the age of fun accessories, such as the mp3 player, FM Radio and Chatboard. Suddenly, Ericsson has become attractive to Generations X and Y. That has also generated expectations. Will the company continue to develop fun accessories? Torbjörn Gärdenfors does not want to reveal too much.

"Our main focus, and the biggest investment of our time, is going into developing new telephones, but of course we'll continue to develop fun accessories. Go to CeBIT in February and you'll see a few examples," he says with a shrewd smile.

Ulrika Nybäck
ulrika.nybäck@lme.ericsson.se

Prizes for best inventors

When Ericsson handed out the "Inventor of the Year" awards for the fifth year in a row, it was for research within the core fields of wireless communication, Internet protocols and transmission.

A market leader like Ericsson needs to have a strong patent portfolio. In order to encourage patent work within the company, Ericsson Radio Systems established an inventor's award in 1995. As of this year, the award has been extended to apply to all of Ericsson.

"The award has received a great deal of attention, both within the company and from the industry at large," says Göran Nordlundh, head of intellectual property law issues, including patents, at Ericsson. "Internally, it has contributed to an increased level of enthusiasm. In recent years, we've had approximately 1,200 new patent applications per year, which is a very good level."

Good role models

This year's prizewinners – David Koilpillai, Reiner Ludwig, and Sven Mattisson – come from Research Triangle Park in the U.S., Ericsson's German research company and the mobile terminals development company in Lund, respectively. All have made important contributions, of both technical and commercial value, within several of Ericsson's key areas. Moreover, they have served as role models for their colleagues and have generally supported everyday work with patent issues in their units.

David Koilpillai leads a group that is very active in the patent area, focusing on basic research pertaining to signal processing and transmission technology for TDMA and CDMA systems. For several years, Reiner Ludwig has actively worked on building up patent operations at EED's research unit, and supporting his colleagues. His work has focused on improving and integrating IP protocols in wireless systems.

Bluetooth patent work

The third award winner is Sven Mattisson, of Lund, who has conducted his patent work within the Bluetooth program. He was awarded the prize for his very product-oriented work as well as his deep involvement in the work of his colleagues.

"All of our award winners, both new and old, have contributed to Ericsson's good reputation within the industry and our strong position in the realm of standardization and in the marketplace," says Göran Nordlundh. "Our strong patent portfolio garners respect."

The award, which, as on previous occasions, consists of a beautiful glass plate decorated with a communications motif, together with shares worth SEK 50,000, was presented by Ericsson CEO, Kurt Hellström, at a ceremony in mid November.

Lars Cederquist
lars.cederquist@lme.ericsson.se

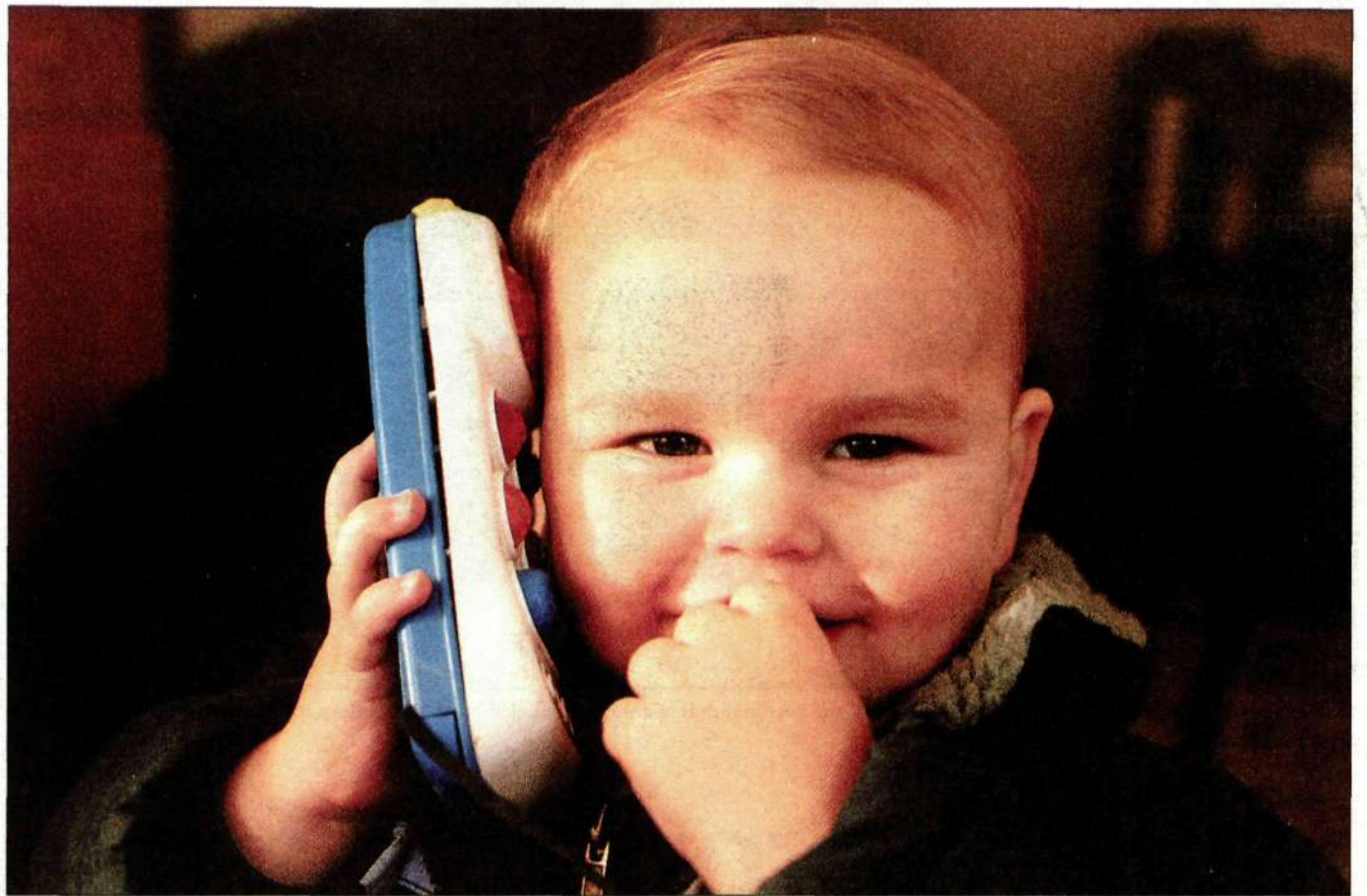


Sven Mattisson, Reiner Ludwig and David Koilpillai all received the "Inventor of the Year" award. Photo: Kjell Appelgren

It's almost that time again. Do you put your presents under the tree or does Santa deliver them? Perhaps you fill stockings that are emptied on Christmas morning.

Regardless of your traditions, buying Christmas presents can often be stressful and trying. What should you buy?

A tie for dad, bath salts for grandma, clothes and computer games for the kids... Does this sound familiar? Here are a few mobile phone product tips for those of you who feel a lack of imagination.



Small children seem to have an intimate love of telephones. Once upon a time, toy telephones had wheels and had long, curly cords. Today, mobile phones are the only thing that count, even for young kids. Toy mobile phones come in a variety of shapes, prices and quality.

Photo: Lars Åström

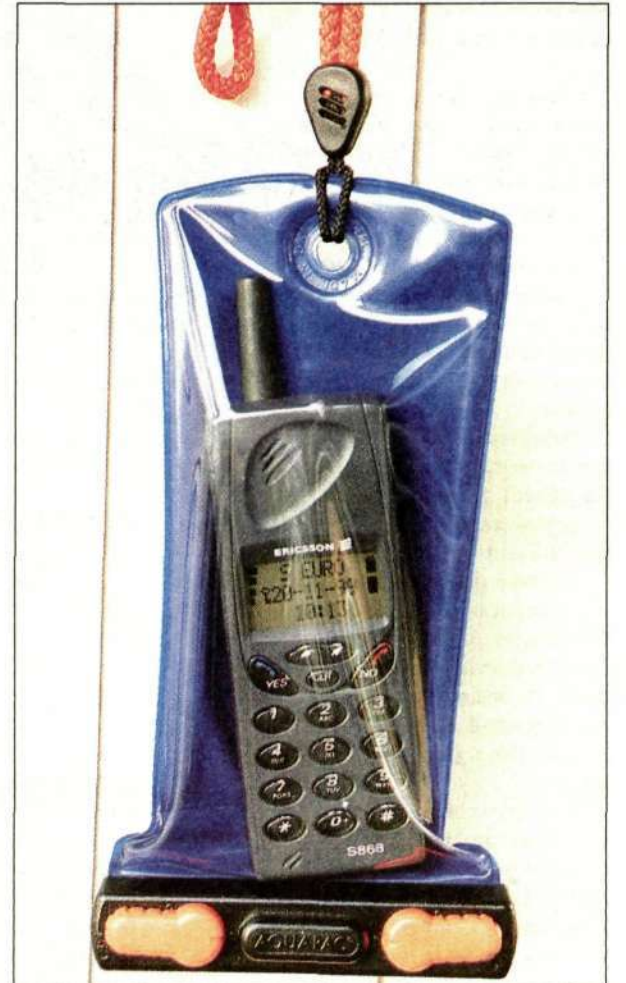
Mobile gadgets for the holidays



Chatboard is an Ericsson product aimed at the younger generation. The mini keyboard attaches to the mobile phone and can be used to send e-mail, chat and send SMS messages. It was launched this autumn and received high marks from the young people who tested it. New, fun and incredibly popular. Compatible with several Ericsson models.



Barbie and her friends are modern girls. Dolls in the Generation Girl series are sold with various accessories. Whether they like to paint, skateboard, swim or sing, they all have one thing in common – all of them have a mobile phone. On the other hand, they have a difficult time bending their arms so that they can put the phones up to their ears. Perhaps next Christmas Barbie can receive a Bluetooth headset?



Boaters and skaters might need to protect their mobile phones from taking an unexpected plunge. Special waterproof plastic holders are available for this purpose. Hang it around your neck or attach it to the roof of your boat. This bag from Aquapac comes in a variety of sizes for all models and is sold at boating stores, among other places. According to a number of people who have tested the bags, it's possible to call and talk on your phone without removing the phone from the bag.

Give your tired, worn-out mobile phone a break and let it relax in this specially designed rubber easy chair.

A present for people who regard their mobile phone as a friend. Designed to fit all phone models. The chair is made by the Italian firm Viceversa and is designed by Momou.

