TETRA Touch

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Major test for VIRVE at Helsinki airport
– fast and reliable communication for rescue services

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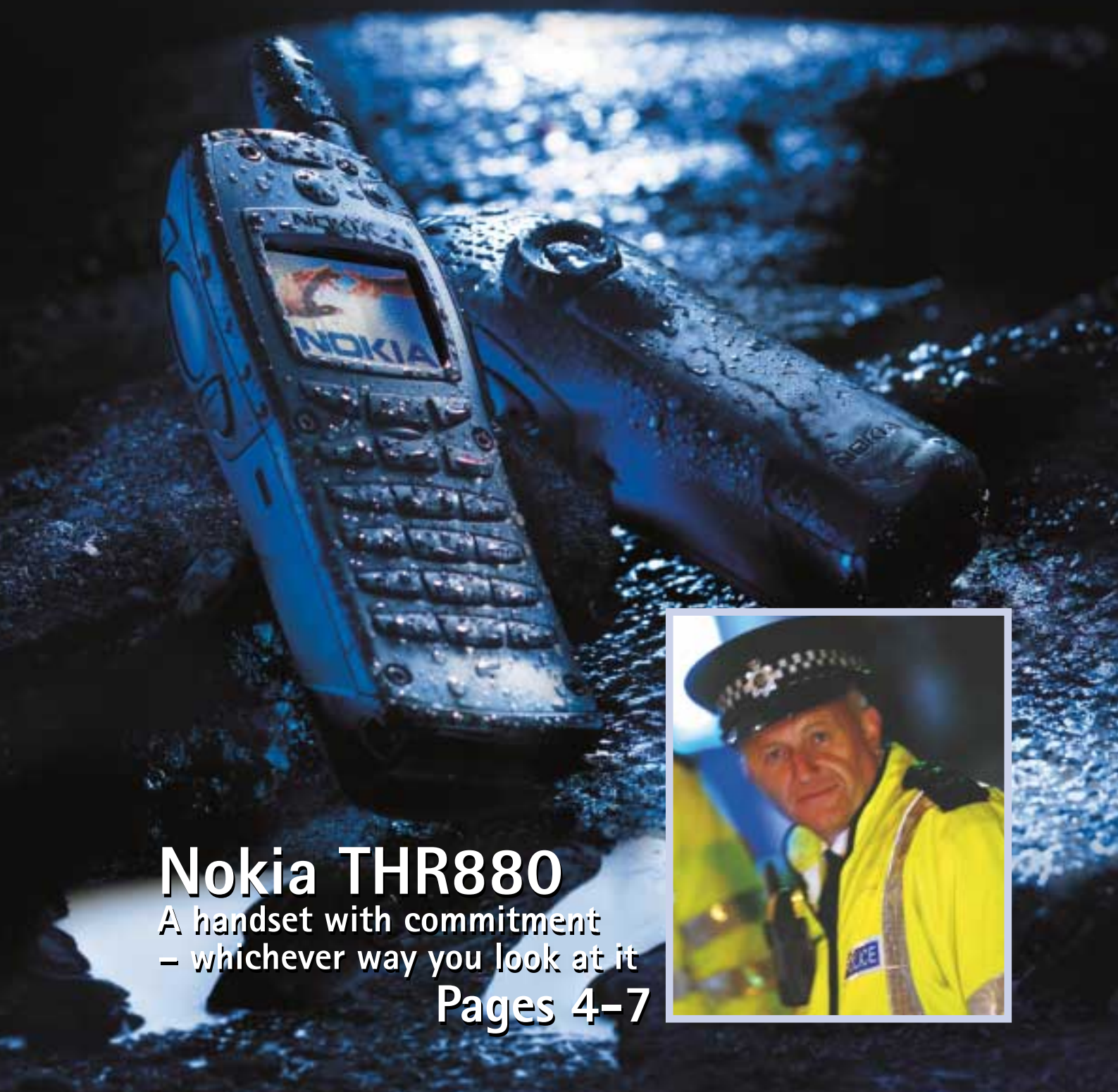

Nokia THR880
A handset with commitment
– whichever way you look at it

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Editorial

Complete commitment

In this issue of TETRA Touch we profile the latest addition to the Nokia range of TETRA terminals. The just announced THR880 is packed with innovation. From its two-sided design to its advanced talk group management features to its colour display, the THR880 is devoted to making the working life of officers in the field easier.

First deliveries of the Nokia THR880 are expected to be made during the first quarter of 2003

Nokia has taken great care to fully investigate the market's needs and has undertaken a considerable amount of research and development in producing this new terminal, which underlines our commitment to the TETRA standard. Nokia is a strong advocate of TETRA and is committed to the market for the long haul.

Such commitment to TETRA is an important consideration for organisations looking to deploy advanced professional communications. They need to know that they are investing in a system that will not become outdated; that their networks and terminals will be supported in the long term; and that the technology will be continually developed to meet their changing and more advanced needs.For example, the THR880 is one of the most durable TETRA Terminals available, designed to have a long lifespan despite the tough environment in which it operates.

Our demanding customers are dedicated to their work and we are dedicated to them – to making their working lives better, easier and safer by providing them with the very best and latest technology.

Please take some time to familiarise yourself with the new product and I hope to see you at the TETRA World Congress in Nice 19 – 22 November!

Kenneth Björklund
Director TETRA Terminals
Nokia

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A handset with commitment – whichever way you look at it

The newest Nokia TETRA terminal, the Nokia THR880, has a revolutionary front and back. TETRA Touch profiles all sides of this important new product.

Nokia THR880 – the thinking behind the design

TETRA Touch interviews chief designer Petteri Kolinen, the father of the THR880, to find out the inside story of its unusual concept.

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Major test for VIRVE at Helsinki airport

Data messaging over TETRA is put through its paces during a simulation of a major airport disaster in Helsinki. We find out how it went.

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Dolphin sees clear water ahead

Dolphin Telecommunications is back from its financial troubles that lasted nearly a year. TETRA Touch talks to new boss Tony Greaves to find out what the future holds.

www.nokia.com/public_safety

In the wearable active holder the new Nokia THR880 TETRA handset is easily accessible when you need it.

TETRA WORLD

APPLICATIONS

CUSTOMER WIRE

TETRA Touch

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NOKIA
CONNECTING PEOPLE

Editor-in-Chief:
Anna-Marja Vainio
anna-marja.vainio@nokia.com

Layout: Jari Stolt, Spokesman Oy

A handset with com – whichever way

Size 1:1

Is it a phone or is it a professional mobile radio? You may ask when you see the new Nokia THR880 TETRA handset, but the answer is both. The product's two-sided layout makes it one of the most convenient, safe and easy-to-use professional TETRA terminals ever produced. Other innovations include speech feedback, a wearable active holder and a multi-mode group selector switch, all of which combine to help users focus on their job rather than on how they communicate. The Nokia THR880 is also one of the most robust terminals available, being shock resistant and rated at IP55 to protect against the ingress of water and dust. Constructed from rigid materials and fitted with elastomer bumpers, the terminal is easily able to survive the every day knocks, drops and bangs that are unavoidable in the field.

The flip side to Nokia's latest TETRA Terminal

At first sight, Nokia's latest TETRA terminal, the THR880, may look like a mobile phone. But flip it over and it looks just like a conventional PMR handset. The dedicated radio side is uncluttered and has only the essential control keys needed to reliably operate the radio and these are placed so they fall easily to hand. Even in extreme emergencies the user is not distracted by unnecessary or awkward controls.

Meanwhile, the phone side has the look and feel of a normal Nokia mobile phone. The keys are placed in familiar positions, its functions are accessed through a simple menu system and it features a colour display. Anybody used to handling a Nokia phone will instantly know how to use the THR880's phone side. Yet, the Nokia THR880 has many advanced features for sophisticated professional mobile radio communication in TETRA, such as WAP and IP Packet Data, Direct mode operation and Dynamic Group Number Assignment (DGNA)

Working in groups is easy

Most users of the new terminal will belong to one or more talk groups, so being able to easily manage communications within these groups was a high priority for the Nokia THR880's designers. The rotary group selector switch on the radio side allows groups to be selected quickly. When operating in Direct mode, the same group selector switch is used for selecting the DMO channel. A new 'Back' function makes it easy to quickly change between frequently used groups. A simple press of the back key returns the radio to the previously used group or the home group.

NOKIA
THR880

mitment you look at it

Managing and organising many different groups is simplified by the use of a folder system that is familiar to any PC user. 1,300 different talk groups can be programmed into the THR880 and Dynamic Group Number Assignment can be used by the dispatcher to add or modify groups over the air. Furthermore, scanning of groups can be quickly activated by voice command or by using the voice key. The user can even define the priority of scanned groups.

This terminal has a voice

The Nokia THR880 actually talks to you, eliminating the need to look at the display when selecting functions. Called voice feedback, this feature guides the user when selecting talk groups. The terminal says the talk group number as each is selected and when the group switch is held down to activate the home group, the user will hear the radio say "home".

Voice feedback also guides the user when scrolling through the menu of functions by pressing the voice key. As each function is reached, the radio says the name, for example "Scanning on" or "Silent profile".

Part of your uniform

The Nokia THR880 can be supplied with a wearable active holder that makes the terminal a part of the user's clothing. When in the holder, the terminal's radio side faces outwards and can be used without distraction, freeing the user's hands and concentration to focus on the real work. The holder can be worn on the lapel, which places the radio in the best reception position and eliminates the need for additional microphones or speakers. Alternatively, the holder can be clipped to the belt or other parts of the user's clothing, according to preference.

Other accessories include an active car kit for hands-free operation, a desktop stand and a travel charger and cigarette lighter charger. The robust acces-

Size 1:1

The Nokia THR880 actually talksto you, eliminating the need to look at the display when selecting functions.

sory connector allows other manufacturers to adapt their professional accessories and peripherals to the Nokia THR880.

Colour that makes a difference

Back to the phone side of the Nokia THR880 and one the first things that strikes you is the large colour display. Not only does the screen provide excellent visibility by using a high level of contrast, but colour-coded symbols make it easy to quickly gather information. A colour display also instills confidence in users that they are being allocated the latest and most advanced technology to help them in their jobs.

Data when you need it

Using the latest technology, the Nokia THR880 is fully equipped with WAP and IP data features. Data is playing an increasingly important role for many PMR user organisations and the new terminal makes working with data fast and accurate. The handset allows field forces to access their organisation's databases and the use of WAP makes it easy to browse for information.

If more sophisticated data access is required, the terminal can be connected to a laptop PC to give high-speed wireless access to applications or for retrieving data or transmitting reports from the field.

So, whichever way you look at it, from the front or the back, the new Nokia THR880 is a TETRA handset that's so easy to use you hardly need to think about it. This terminal is as devoted to the work of the emergency services as its users are.

NOKIA THR880 – the thinking behind the design

With its many innovative features, the new Nokia THR880 is setting new standards for usability and advanced professional communications. But what was the thinking behind the design? Here, TETRA Touch interviews Petteri Kolinen, Design Manager at Nokia and gains an insight into the THR880's look and feel.

TETRA Touch: What were the main requirements that you had to meet when designing the new handset?

Kolinen: The Nokia THR880 is designed for use in the most demanding situations. Therefore, usability was the primary requirement for our design work. In addition, we were asked to make the product as functional and as reliable as possible. These requirements guided us throughout the design process, but of course we were also conscious that this is a mainstream Nokia product and so it had to have that Nokia feel and look to it.

Petteri Kolinen

TETRA Touch: How did you finally manage to fulfil all these requirements in the handset's final design?

Kolinen: We believe the handset looks right and when you pick it up, you immediately know it is right. There is a certain simplicity and balance in the design that makes the product easy and comfortable to use. This product has no needless details. I am very happy with the rounded profile of the phone - it makes the product sit snugly in your hand, it feels good. And the colouring is well balanced, giving a functional yet attractive appearance.

We were asked to make the product as functional and as reliable as possible.

TETRA Touch: What are the major details of the design that you like best?

Kolinen: The most obvious new idea is the handset's two-sided design. We really believe this innovation is at the core of the THR880's usability. The group selector switch falls easily to hand, yet it still manages to be unobtrusive - it has a good feel and efficient ergonomy. We did a lot of research to avoid this element looking like a clumsy knob that had to be there. We think this detail is at least as good as some of the advanced designs currently being used in the consumer electronics industry.

Another innovative feature is the way that the battery is located inside the product under the radio's protective cover, which itself has only a small opening for installing the battery. I got this idea from some designs for professional tools, for example some drills have this concept. And the battery cover is integrated with the radio so that it does not drop off and risk being lost when you change the battery.

The keypad is also a good feature I think. We have used wide keys and have spaced them well apart so that the keypad can be conveniently used even when wearing gloves, as many professional mobile radio users do.

TETRA Touch: And what about the wearable concept - how did you devise this?

Kolinen: Well there were two considerations that led us to this solution. Firstly, the wearable holder gives you easy access to the handset. You can quickly detach it and put it back. This is important in many situations that professional users could find themselves in. The last thing they want is to have to fiddle to get the radio out when they need it quickly. The second point is that the wearable concept frees the user from carrying any extra elements, such as a separate microphone. He or she can concentrate on performing the work they are doing; the product is easily to hand when you need it and it does not require any special attention in order to use it.

TETRA Touch: How do you get your design ideas?

Kolinen: The ideas come from many different directions – by working closely with product marketing, our design team, end users, the usability team, trend analysts and so on. There are always different requirements that you have to meet when designing a product - for some it is appearance, for others it is self-expression. For the THR880, the major need was usability, combined with the unique Nokia style that makes our products so desirable. I feel comfortable with the result and I feel sure that most users will be too.

Easier to work with integrated voice and data

The control room system is the heart of an emergency centre, incorporating the functions of call-taking, dispatching and command and control during field operations.

Radio communication is a vital part of field operations and integrating the control room system with the TETRA network greatly improves the dispatch workflow process. This integration is aided by comprehensive interfaces which allow subsystems, voice and data services to be combined into one system, providing numerous benefits - automatic unit location and status information improves field force management, while data dispatching can be used to improve the accuracy of information flow and channel efficiency.

Integrating the voice and data messaging functions into a single interface makes them easier for the dispatcher to use and automates various functions. This allows the dispatcher to concentrate on making the best use of resources to protect the public and agency personnel.

Powerful interfacing

Integration is achieved using an Application Programming Interface (API), IP packet data services and audio access interfaces and products. The API provides TETRA radio system services to the control room system. Typical services comprise voice services, voice management, group management, organisation management and radio subscriber management services. The TETRA Communications Server (TCS) is the API for the fixed network side while the Nokia Activ Server API is the interface for WAP application integration.

The TETRA Connectivity Server (Nokia TCS) is a software platform that provides various administration and dispatching tools and application programming interfaces for third party

client applications. It eases and shortens the development cycles of third party client applications and allows the operator to add new services on top of the Nokia TETRA services. Great attention has also been paid to the reliability of the Nokia TCS.

Developed to meet the needs of demanding TETRA PMR user groups, the Nokia TCS reinforces today's Nokia dispatcher services and offers new ones in a cost-effective manner. The services are for instance access to speech and data services, and operational management and control functions of the Nokia TETRA System. The customer controls these services and only authorized client applications can have access.

The Nokia TCS has been carefully developed to construct an environment for the customer where service access and service creation are fast, secure, simple, and very responsive to market dynamics, and more importantly, cost-effective. To achieve this, the Nokia TCS has different performance grades based on the number of connected clients. These are:

- Single-user
- Basic
- Medium
- High

Through the Nokia TCS, third party applications are able to use the following NTS services network-wide:

- Control TETRA voice calls
- Send and receive status and short data (SDS) messages and callback requests as well as messages based on a set of SDS-TL protocols
- Perform tasks related to data management and track changes concerning:
  - radio subscribers
  - groups
  - group memberships
  - group overlays
  - organisation blocks
  - workstation users (only local, network-wide management is done with the Nokia DWSi)
  - client applications
  - organisation-specific parameters

Minimal maintenance

Nokia TCS also ensures that maintenance demands are kept to a minimum even though the functionality or capacity of the system increases. Any changes in the radio system configuration such as Nokia TBS or Nokia DXTip, cause changes in the Nokia TCS.

Nokia TCS uses Microsoft Component Object Model (COM) as an interfacing method between TCS API and clients. Remote applications can access the API through the Microsoft DCOM middleware product, which gives several advantages:

- COM/DCOM exists as a standard feature in Windows 2000
- Professional and Windows NT compatible, minimising costs and installation effort.
- COM/DCOM is available in many UNIX platforms
- COM/DCOM API can be used from many programming languages, including C, C++, Microsoft Visual Basic, and Borland Delphi.

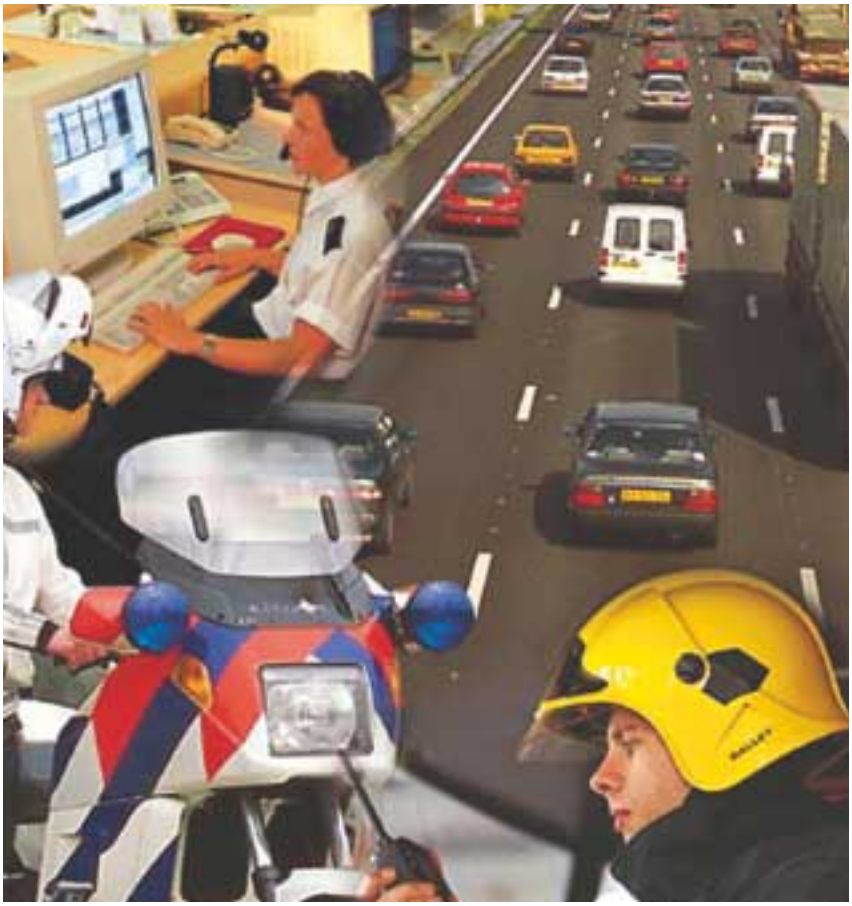
Both Nokia TCS and NokiaActiv Server are open and well documented and testing tools are also available for solution partners. Open interfaces bring several benefits for TETRA users:

- More choice of solution provider
- Wider availability of complementary applications
- Investment in R&D is a lower risk for a mainstream technology
- More third party applications and the ability to provide more services
- More experience and know-how
- Scalability and redundancy
- IP technology enables operating costs to be minimised?

They also bring benefits for partners:

- Larger markets because Nokia TETRA interfaces are very similar and in some cases identical to GSM/GPRS/3G interfaces
- Faster adoption of technology by markets

This all means that integrated subsystems can exploit the benefits of the Nokia TETRA system. Nokia provides the most advanced interfaces and support services to integrate radio communication and command and control systems into a single seamless entity and the world's leading integrated TETRA systems have been supplied by Nokia.

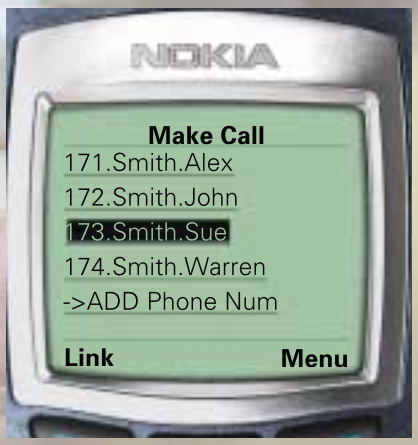


TELEPHONY, WAP, AND OTA!

AS EASY AS 1,2,3

The WAP Forum, an International standards body and now part of the Open Mobile Alliance group have released the Wireless Telephony Application (WTA) and Wireless Telephony Application Interface (WTAI) standards. If your TETRA WAP phone has WAP Forum compliant software installed like the Nokia THR850 does, then from a WAP session you will be able to make duplex calls, add phone book entries, and even send DTMF, all with a few touches of a button! What's more, integrating these features with Over the Air (OTA) push messaging provides a powerful synergistic combo.

But what does this mean for TETRA users in the field? The examples below provide an insight so lets first take a look at a phone book search that leads directly to a call being placed.



A Police Officer in the 22nd Precinct wants to contact her new counterpart SGT Sue Smith in the 17th Precinct using TETRA. The officer quickly accesses a Phone Search WAP application then keys in #17smith. Within seconds a results deck arrives, and the required entry is selected. If required, Officer Smith's name and phone number can be added by accepting the phone book entry so there is no more keying. Additionally, a duplex call can be made to Office Smith whilst in the WAP session! But how did the Officer get the Phone Search bookmark in the first place? A dispatcher had pushed the "Phone Search" bookmark to her TETRA terminal so no keying was required by the Officer.

Q. Did you know that it is possible to provision many terminals with service settings or bookmarks with just one push message?

Hard to believe? One push message to many terminals? WAP and telephony working together? Well, here is another example but this time highlighting the TETRA terminals powerful built-in features like phone memory and micro browser.

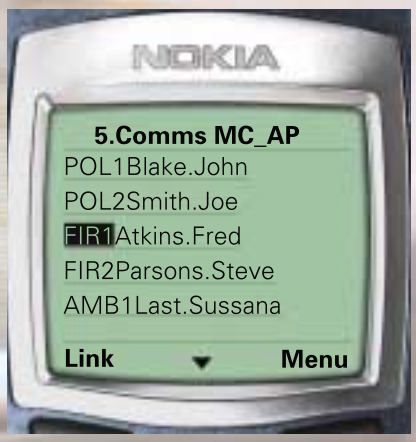
A state emergency had resulted from a bush fire raging across a remote national park. A community in its path is in danger and must be evacuated immediately. At a mobile command centre the Officer in Charge is about to issue orders to the leaders of a multi-authority team consisting of State Police (POL1,2), State Fire Fighters (FIR1), Volunteer Fire Fighters (FIR2), Ambulance (AMB1,2), and a Military Reserve Detachment (DEF1,2,3).

In seconds. Having delivered the orders and taken questions, the OIC publishes a concise summary of the orders to a single WAP deck. In just one action taking a few seconds, a mobile dispatcher pushes the deck's bookmark to all officers in the mobilized team. Seconds later their TETRA terminals buzz with the alert message that has just come through. The officers click the bookmark and in seconds download the entire deck and find the orders menu card (left) appearing in their

phone's micro browser. This card, complete with all the linked cards contains succinct information about the operation and remains in phone memory even while calls are being made!

The "Comms" link card (right) contains Make Call and Add Phonebook entry links to each member of the team. Therefore, each member of this diverse team can self provision their own TETRA phone with the phone number and name of each member of the team without keying in one character, and without going to any other WAP site, and all with just a few clicks of a button!

But is this really possible, right now? Yes it is, and if you would like to find out more about these advanced features please contact your local Nokia TETRA representative now and discover out how easy it is to implement this powerful combination of Telephony, WAP and OTA in your TETRA network.



IP-based TETRA system for Berlin

Nokia's first IP-based TETRA professional mobile radio system will be delivered to the German transport company Berliner Verkehrsbetriebe (BVG).

Designed around the Nokia DXTip switch, the system allows different Nokia TETRA components to be connected using an IP-based backbone.

The network will be used initially by the Berlin subway and the contract covers delivery, installation and commissioning of a TETRA DXTip switch, the TETRA base stations necessary to provide coverage and the dispatcher workstations. Deliveries to T-Systems International GmbH, the general contractor, will start in September 2002. T-Systems will deliver an end-to-end solution to BVG, comprising the Nokia TETRA network, terminals and applications.

BVG chose TETRA for its cost-effectiveness and technical capabilities. Holger Seedorf, vice director information and communication at BVG, says: "TETRA is the most cost-effective option to meet the functional requirements in the subway area with innovative digital mobile communications."

"We are delighted to be delivering the Nokia TETRA system to BVG," says Friedbert Leschny, Senior Account Manager for TETRA, Nokia Networks, Germany. "This further strengthens Nokia's position as a world leader in TETRA networks."

Nokia has a proven track record in delivering multiswitch TETRA networks capable of providing all TETRA services in nationwide networks. The open interfaces of Nokia TETRA solutions enable seamless integration to command and control systems.

BVG is the leading municipal public transport company in Germany and controls nine subway lines with 170 stations, more than 160 bus lines and 28 tram lines.

Taiwan's Coast Guard chooses Nokia's TETRA for its emergency services

The Coast Guard Administration (CGA) of Taiwan has chosen Nokia's state-of-the-art TETRA solution, as the platform for evaluating its future professional mobile radio communication needs. This is the first such deployment of a TETRA digital professional mobile radio system in Taiwan.

Under the terms of a contract just signed between the CGA and Highpull Technology Co., Ltd., the Nokia-authorized reseller in Taiwan, Nokia will provide its TETRA solution and Highpull will oversee the implementation of the system. With the Nokia system, the CGA will learn first-hand the advantages of using TETRA's open-standard digital TETRA technology trunk for its emergency communications along the coast of Taiwan, thus improving public safety at sea.

Equipment deliveries are estimated to begin in September, with the system becoming operational in February, year 2003.

The Nokia TETRA system will provide improved coverage and new services to the CGA. In particular, Nokia and Highpull will provide easy-to-use automatic vehicle location and data enquiry solutions for the CGA's evaluation, as well as operational training.

"Taiwan is waking up to TETRA. And this deployment with the CGA is pivotal, as it will go a long way towards demonstrating the benefits of TETRA, not only to the CGA but to the Taiwanese market as a whole," says Topi Kinnunen, Director, Professional Mobile Radio, Nokia Networks. "Now that the radio spectrum for TETRA have been opened in Taiwan, both public-safety services and commercial operations are taking a very serious look at TETRA especially in the areas of data use. We are sure confident that our proven high-quality and reliable TETRA solution will give the CGA a clear picture of the benefits of TETRA and win them over."

Dolphin sees clear water ahead

After 10 months of turmoil that saw the company going into administration, Dolphin Telecommunications is back, with a new owner, a new CEO and a new vision of its future.

With the company losing £1.6 million pounds every month in the UK and some complaints from customers about lack of service, new CEO Tony Greaves has a lot of work ahead. Greaves is candid about the serious problems that have dogged Dolphin: "The overall level of service has not been good enough, including not answering billing enquiries and customers not being able to get the handsets they want as quickly as they need. We also have too much capacity and not enough network resilience. We want to improve this and give better service than before."

Greaves certainly has the pedigree needed to turn Dolphin round. Formerly head of Airwave at O2, he is also senior vice-president of operations for Dolphin Telecommunications' new owner, Inquam. He has already made his mark on the business, increasing staff levels by 30% and recruiting eight new distributors in the first five weeks.

"Our immediate objective is to drive down the cost base and drive up customer numbers," says Greaves. Currently, Dolphin has 45,000 UK customers – Greaves wants to see this rise to 90,000 by 2004, with the aim of reaching the break even point of 120,000.

"To do this, we need to target specific user groups. TETRA is the right technol-

Tony Greaves, CEO of Dolphin Telecommunications

Nokia are an important partner for us on both the infrastructure and terminal side.

ogy for our key segments, which include construction, transport, logistics, utilities, local authorities, police and health users. However, TETRA is not the right technology for the mass market."

The company already has good references in many of these areas, with organisations like Canary Wharf Contractors Ltd., TNT, WH Smith Distribution and the South Yorkshire Police Force already in the bag.

Greaves continues: "We will put more effort and much more energy into getting companies that ought to be large TETRA users, such as utilities, on to the network. With the changes that we want to make to the network and our processes, we should be able to get these on board. Previously, the marketing effort was too widespread and not targeted enough."

Developing the network

Part of the effort will involve discussions with customer groups, to see how the company can serve key customers more effectively and how the network and the services it offers can be evolved. Currently the UK network has in excess of 1,000 base stations, with more equipment in storage. Greaves intends to use this stock to develop the network without increasing capital expenditure.

For Inquam, Dolphin fills a slot in the company's core business. Chris Bataillard, CEO of Inquam, says: "This acquisition is a reflection of Inquam's strategy in Western Europe to operate low frequency wireless networks for business users in niche markets. Inquam is a well-funded company and in an excellent position to turn the Dolphin business around."

Inquam's £25 million purchase also included Dolphin's operation in France. MD for Dolphin France is Thierry Balenbois: "The Dolphin take over is very good news. Inquam bought the assets, the people, the contracts and the debts – it was not just an asset take over. We see this as a very positive solution - Inquam is here for the long term."

Balenbois' first objective is to start pushing sales and revitalize Dolphin's activities. Fortunately, sales didn't tail off during the period of administration and the company actually saw the number of subscribers double since the start of the problems.

Thierry Balenbois, MD of Doplhin France

"The fact that subscribers have kept coming to us is encouraging and so we believe there is demand," says Balenbois. "We have been transparent with the customers, so they know what is happening and this has maintained customer confidence.

"We currently have 7,000 digital and 20,000 analog customers, with many of them being completely new. To be profitable we need 150,000 subscribers."

Balenbois agrees about the need to keep Dolphin focused on a very niche market: "Services, healthcare, transportation, town halls – users that like the push-to-talk facility. The launch of the Nokia THR850 will be a big help. This is a wonderful product and will help to broaden the customer base."

Different channels

Dolphin France will increase its subscriber numbers via two channels, direct sales and indirect sales through distributors. It aims to make more sales to industrial companies, such as those working at major construction sites and will review its network of 18 distributors, with a view to making it more efficient. Balenbois says: "We need to push the technology through direct sales, but when the technology is accepted, we need indirect sales, which then become easier to rely on."

Unlike the UK operation, Dolphin France has restricted its coverage to particular areas, mostly around Paris and Lyon and along the major highways. It plans to continue with this strategy, improving existing networks, filling in holes in coverage and improving quality and network stability. Any new investment will mainly be made to improve quality. The network has some data capabilities and Dolphin will ask Nokia to work with them to improve these.

Dolphin is enthusiastic about its relationship with Nokia: "We need them," says Balenbois. "They are one of the best partners we could dream of. They have good technology and their network has performed very well during the troubled times. Nokia has been extremely supportive. We had a good relationship with them and now we are starting to work together again. I am sure this success will open many other markets for them."

Greaves agrees that Nokia is crucial to Dolphin's future: "Nokia are an important partner for us on both the infrastructure and terminal side – they are the infrastructure provider for the UK and France. We need a lot of assistance in the short term, as the networks haven't been maintained as they normally would have been. Many of the software releases are outdated and Nokia is being very helpful.

"We are confident that if we stick to what TETRA is good at we will turn the business around – I've seen nothing since I took over that indicates there is anything to stop us doing this. We have plans that can be easily met by the UK market. We are confident we can do it."

Major test for VIRVE at Helsinki airport

It is a normal summer's night at Helsinki's Vantaa Airport. Yet the peace is about to be shattered.

Midnight and the local police are alerted to a possible bomb on an aircraft. A search reveals a suspicious package aboard one of the aeroplanes and an immediate evacuation of the area is ordered. The airport fire service and ambulances are put on standby.

Unfortunately, the package was found just too late – it explodes, destroying the airliner. 95 passengers and five crew members are caught in the explosion. Several are killed instantly and many others are badly injured.

Immediately following the explosion, the emergency plans for this area, which covers one fifth of the total area of Finland, are put into operation. Töölö Hospital acts as the Medical Chief's Command Centre and alerts all local hospitals to prepare to receive casualties. To co-ordinate the rescue effort, a pre-planned communications structure is brought into use. Everyone involved gets themselves and their equipment ready as quickly as possible. It's going to be a long night.

Fast, secure communications key to success

Fortunately, this incident was merely an exercise, but to those involved, it may as well have been real. The exercise was designed to allow different public safety organisations to test their operations. The Hospital District of Helsinki and Uusimaa (HUS) tested a new emergency management structure and its emergency readiness procedures. "One of the key factors in managing rescue operations is reliable and fast communications within one rescue organisation and between different rescue services," says Mr. Pekka Koskinen, Emergency Manager, Hospital Group Management, HUS. "In the Helsinki SAR exercise in June 2002, an emergency communications structure was set up according to a predefined plan and performed well in supporting the rescue operations. This exercise was a very positive experience strengthening our understanding of the necessary communications structure. The VIRVE service and these Nokia radios that we are testing at the moment enable us to manage very well."

Yet the peace is about to be shattered...

Planning and training ensured seamless communication over a wide area

HUS planned the rescue effort so that casualties would go through a number of stages - rescue from the plane, triage (analysing the severity of a patient's injuries) and transportation, followed by hospital treatment. The exercise allowed HUS to train users, test data messaging to handle triage information (the first of its kind in the world) and to practice co-operation with other emergency service organisations.

The communications plan was based on VIRVE. Designed to handle emergency scenarios of all types, VIRVE is the Finnish nationwide TETRA network for the emergency services and government agencies. A special talk group for all the hospitals in the Helsinki area was formed immediately, with the co-ordinating doctor based at Töölö. The medical commander had his own group, shared with the next level of medical officers, while smaller medical teams had their own communication groups.

"We had nine big hospitals and several ambulances, together with forces and border guards, backing us up with helicopters for transportation," explains Mr. Koskinen. " We used SDS (short data service) to send the most urgent patient information to the hospitals to improve the patient data accuracy. It was the first time in the world this has been done. A smooth IT network is obviously required to co-ordinate with the radio traffic."

Like every exercise, this one raised some new issues: "We are all human and can follow only a limited number of simultaneous activities. The number of talk groups for each member of the rescue team has to be considered carefully. In particular, the higher your rank, the more groups you must follow. In order to keep everything under control the number of groups must be kept reasonably low."

Preplanned talk groups support the rescue services operational model

All the necessary talk groups and their priorities are defined in the readiness plan, which forms a solid base for a structured communications flow and

controlled rescue operations. All hospitals are alerted at the same time, which means that instead of the nine phone calls that would have been needed before today, only one group call is now all it takes, saving a lot of time.

Another remarkable improvement in the communications was the security that the VIRVE network offers. The rescue forces could operate more effectively secure in the knowledge that information was not being passed to uncontrolled recipients (both inside and outside of the network). Controlled access to sensitive patient data is limited only to authorised medical forces.

Hectic moments for the rescue forces

The rescue operation started immediately after the first alarm. The first analysis of the incident clarified the need for the use of the readiness plan. It was clearly a major catastrophe in which all the worst-case procedures had to be taken into use immediately. Starting as an airport police operation it quickly grew to cover the airport fire services and paramedics. While the rescue services at the scene were already working to recover the injured and control the fire, there was very heavy radio traffic within and between different emergency service organisations to call for more forces and to manage the operations. More than 50 organisations took part in the rehearsal, with more than 500 professionals testing their ability to co-operate and communicate.

Temporary command centre operational in minutes

A fully operational command and control centre was built up in only minutes using the basic VIRVE service and network equipment. Appropriate communication groups were created to give an overall view for the highest commanding officer in the operation. With the Nokia DWSi (Enhanced Dispatcher Work Station with ISDN connection), the commander had full access to all communication groups and their members. He could easily monitor their locations, statuses and current tasks. Even when things were at their most hectic, commands and instructions reached the right officers at the right time.

Shared VIRVE network ensured seamless cooperation

"The cooperation between different public safety organisations was effective and hence very impressive," says Ms. Raija Kaskinen, Planning Officer, Public Authority Network of Finnish Emergency Response Centre Administration.

Talk groups were formed instantly and specifically to support the organisational hierarchy. "This way we really knew who was talking to whom. Also, the voluntary rescue services were easy to manage with VIRVE. Information security is top class hence those not authorised for some of the information will not get it: they don't hear those calls or receive those SDSs not meant for them," Ms Kaskinen continues. "This kind of major catastrophe really shows us the importance of the cooperation between different organisations. This exercise was as close to a real catastrophe as you can get. In real incidents every detail has to be in place and work perfectly - in this exercise it did!"

Patient 's Trauma Severity Classification — Triage.
Minimising human errors with secured data communications (SDS).

TETRA at COMBINED ENDEAVOR 2002

Nokia has provided TETRA technology for the second year running to the world's largest military communications and information systems exercise.

Held at Lager Aulenbach in Germany in May, Exercise Combined Endeavor saw 40 NATO and European countries coming together to test the compatibility of their communications equipment. This year's event was the largest of the eight annual exercises held so far.

Finland took part for the fifth time, with 15 persons from the Finnish Defence Forces attending. The main objective for the Finnish delegation was to test its military communications solution with the other Nordic countries.

Nokia's contribution to Combined Endeavor 2002 was a Nokia TETRA switch in a container, together with a Nokia TETRA Base Station and appropriate antennas. Last year, TETRA facilities were limited to DMO only.

The Nokia TETRA network was tested for its ability to connect the Finnish delegates to each other as well as to connect the Finnish delegates to the international test groups. The system functioned well and future plans for the exercise call for the TETRA system to be integrated to the main communications system of the Finnish delegation.

TETRA technology is increasingly attracting attention from the various countries taking part in Combined Endeavor and delegates from many countries visited the Finnish site to familiarise themselves with the TETRA system.

Overall, the event was regarded as a success both for the Finnish delegation and for Nokia TETRA.

Naantali poses tough challenge for Nokia terminals

Naantali is a popular tourist resort – home to the Moomin world theme park, Scandinavia's largest Spa hotel, the President's Summer Residence and an attractive marina lined with medieval houses and lush gardens.

Yet this town of 13,100 also has a busy roll-on/roll-off harbour, a very large ship repair yard, the largest grain storage facility in Finland and a petrochemical refinery with its own oil harbour – the area is a serious challenge for the Naantali Fire & Rescue department.

Fire Chief Antti Luoto and his assistant Heikki Laakso are responsible for Naantali's fire and rescue operations. With their crew of 23 fire fighters working in three shifts, they handle over 1600 alarm calls per year. 1300 of these are ambulance calls and 300 fire & rescue alarms. The most risky targets in the area have their own primary fire brigades, but the Naantali Fire & Rescue Department is responsible for all targets in its area.

A major boost to the department's efficiency will come with the arrival of VIRVE in the Naantali area, due to be operational by early May. The department is currently testing six TETRA radios (three TMR420, two THR420 and one THR850) and expects to eventually have around 25 units for operational use.

Nokia's Jouni Suoranta, Marketing Manager for TETRA terminals, spent a day as a guest of the Fire Department, talking to fire crews about their requirements for the VIRVE system and the TETRA radios. "As with all new radio systems, the users have some questions and concerns," says Suoranta. "Will the system work in confined or restricted spaces? Will there be enough free channels? Will the cables and headsets be durable enough? Nokia has tested the THR420 terminal's direct mode under very severe conditions and even in the engine room of a cruise ship docked in Naantali's repair yard - the radios worked perfectly."

The department's ambulance drivers are particularly interested in the data transfer capabilities of the THR850. They need two radios, one for voice and one for data as sending EKG-faxes to hospital is their main application. In short, fire fighters need a terminal that is small, durable, reliable and easy to use.

Tough challenges, but ones that Nokia TETRA radios can meet.

Jouni Suoranta

CLP Power launches the first 800MHz TETRA System in Hong Kong

CLP Power Hong Kong Limited (CLP Power) launched earlier its newly installed mobile radio system built on the Terrestrial Trunked Radio ('TETRA') technology to further improve its communications efficiency and reliability. CLP Power is the first company in Hong Kong to deploy 800MHz TETRA system as well as the first company in the world to use the Nokia TETRA terminal of this frequency. The innovative technology has been widely proven in Europe, Australia and Southeast Asia.

The TETRA system is an all-in-one solution integrating the functions of trunked mobile radio, cellular phone and pager, enabling not only voice transmission but also data transmission. With improved spectrum efficiency and more sophisticated data services, the TETRA system provides a highly reliable communications channel amongst site staff and control engineers, which is crucial to CLP Power's daily operation and emergency situations.

With the new system in place, dispatch of work orders and update of work status can be conducted instantly through the all-in-one trunked radio between the control centre and operation staff. It also allows access to, and retrieval of, information from the central database. In addition, the TETRA system enables communication in underground substation and confined area during construction phase. The sophisticated device with robust and intrinsically safe design can even operate in a gas-fired power station.

Representatives from CLP Power including Mr. Stewart Saunders, Chief Operating Officer (fourth from the right); Mr. Paul Poon, Director, Power Systems (third from the right);; and the senior management of Nokia officiate at the launching ceremony of CLP Power TETRA System.

"CLP Power is always proactive in introducing advanced technology to continuously strengthen its capabilities. The launch of the TETRA system marks a new era of CLP Power in mobile communications. Leveraging on the superior functionalities and comprehensive features offered by this state-of- the-art technology, we can further excel in our operation efficiency and in turn serve our customers even better, " said Mr. Paul Poon, Director of Power Systems, CLP Power.

CLP Power is the largest power utility in Hong Kong serving the business and domestic communities in Kowloon and the New Territories, including Lantau and most of the outlying islands. Operating a vertically integrated electricity generation, transmission and distribution business, CLP Power provides a highly reliable supply of electricity and excellent customer services to over two million customers in its supply area.

Tianjin Water TETRA network operational

The Tianjin Water 800MHz TETRA network has been officially accepted and is now in full operation. System acceptance tests were completed and a Certificate of System Acceptance from Tianjin Water was issued to Nokia on May 25, 2002.

Tianjin Water network is the first and largest 800MHz TETRA network in mainland China. The network will provide both voice communication and data applications, which will be used in the field of Water Telemetry.

Work on the network began in October 2001 following contract signing in January 2001. Full implementation took until May 2002. First reports say that the network is stable and running beautifully.

The network comprises one DXT 64 with 16 carrier capacity, 15 TBS800 with one carrier each and one NAWS + one DWS. Terminals are Nokia THR850 and Simoco SRM100 and the interoperability of the Simoco terminal in the network is reported as being good.

Nokia and Beijing sign MoU

Nokia has signed a Memorandum of Understanding with the Beijing National Infrastructure Office, to help the Beijing Municipal Government develop its vision of a 'Digital Beijing', increasing the use of IT to improve the city's economy.

Nokia has been committed to a long-term partnership with Beijing since opening its first representative office in 1985. To support Beijing's bid for the 2008 Olympic Games and its hosting of the World Institute of Sport Games in 2001, Nokia has donated a 3 million US dollar TETRA system to the Beijing Municipal Government.

Nokia will take an active part in the overall construction of Beijing's communication system and will provide consultancy services in relevant technologies and management skills as well as personnel training.

TETRA Interoperability News

Goals set for TETRA IOP

Interoperability testing in Finland. from left: , Ivano Luciani, ISCTI; Daniele Biondini, ISCTI; Marta Fontecha, Teltronic; Janne Nohkola, Nokia

The goals for TETRA IOP work have been set for the next 12 months at a Helsinki meeting of the TETRA MoU Operator/User Association (OUA) and Technical Forum (TF).

The meeting recognised that the TETRA Interoperability Profile (TIP) specification creation process had produced a significant amount of TIP specifications in the past and was seen as working to everybody's satisfaction.

Because of this success, the focus is now shifting towards enhancing the creation of TIP test plans as well as the TIP certification process. The target is to create TIP test plans for existing TIP specifications and publish them for the TETRA MoU Membership. This will allow TETRA operators and users to concentrate on their field and acceptance testing on items beyond TIP certification.

The new TIP Compliance Testing Process has been used for the first time in a TETRA IOP testing and certification session.

Supervised by Instituto Superiore delle Comunicazioni e Tecnologie dell'Informazione (ISCTI), the session was hosted by Nokia in Helsinki with six TETRA terminal manufacturers covering all TIP certifiable functionality. By supervising the session, ISCTI fully established itself as the provider of TETRA IOP testing and certification.

New TIP certificates issued

TIP certificates have been issued for Packet Data, Authentication, Dynamic Group Number Assignment (DGNA) and Short Data Service (SDS).

Nokia can now declare itself as the only TETRA manufacturer to be awarded all available TIP certificates. "We are very happy to see the long term commitment and devotion to interoperability and open standards bearing fruit," says Tero Pesonen, Technical System Manager. He continues: "This could not have been achieved without the support from our customers, who have demanded multivendor supply and an open market."

TIP specifications in TETRA MoU Members' Enquiry

The following specifications are currently going through the members' enquiry process:

- Service interaction
- TIP v.4 part 1: Core
- Air to ground
- Air Interface Migration Phase 2
- Call Authorized by Dispatcher
- Inter Systems Interface (ISI) Mobility Management ANF ISIMM Implementation with Air Interface Signalling
- Inter Systems Interface (ISI) Individual Call ANF-ISIIC Implementation.
- A number of test plans, such as numbering and security functionalities

See the latest IOP developments at TWC

Nokia will be using this year's TETRA World Congress (TWC) to showcase its advanced position on IOP. Nokia has been able to follow the TIPS specification timetable and has completed scheduled work on time.

Customers benefit from Nokia TETRA Center

As part of its service to customers, Nokia has established a TETRA Application Verification Center at its Helsinki headquarters. More than just a simple laboratory or testing room, this state of the art verification center can be totally reconfigured to suit a variety of TETRA projects and Nokia application partners.

The facilities available include: A TETRA System switch with all supported TETRA features; Base station and frequencies; Nokia open API (Application Programming Interface) servers; Terminals; Network management; Application servers and laptops; Testing tools and analysers; Reference log taking

Nokia's environmental and application testing provides practical benefits for customer projects. Project delivery times are shorter because subsystems and TETRA service integration can be tested before real projects are installed. The quality of the whole system is also significantly better.

Partners can reserve the center at a reasonable price for application testing and more than 25 companies have already used the TETRA Application Verification Center's services.
One satisfied company who has used the center is Seasam House, whose public transport dispatcher system was tested in the Verification Center before installation with its customer, Helsinki City Transport. Project Manager Olli Turpeinen from Seasam House says: "The Centre is an excellent environment and this, together with the expert staff who helped the project testing phase, helped guarantee that the project was delivered on time."

TETRA Interoperability testing is also done at the same facility. Terminal vendors verify their product functionality against the Nokia TETRA System and IOP "authorities" are present to oversee these sessions.